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Department of the Senate
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By email: community.affairs.sen@aph.gov.au

ACCIONA Energy welcomes the opportunity to contribute to the Senate Inquiry into the Social and Economic Impact of Rural Wind Farms.

In framing our response, we first provide a summary of ACCIONA Energy's renewable energy credentials. We believe our long-term and international experience in the wind energy sector could bring a unique perspective to the Senate's Inquiry.

About ACCIONA Energy

ACCIONA Energy belongs to the ACCIONA group, a world leader in renewable energy, water services and infrastructure development in over 30 countries on five continents.

We are one of the largest pure renewable energy companies in the world, having installed over 9,000 MW of renewable energy capacity across the five major generation technologies of wind, solar photovoltaic, solar thermal, hydro and biomass. With respect to wind power, we have installed over 7,700 MW of wind energy capacity (5% of the total capacity installed worldwide) in 271 wind farms in more than 14 countries. We are the third largest wind farm operator in terms of global wind capacity ownership^[1], as well as a major wind turbine manufacturer.

ACCIONA Energy has been operating in Australia since 2002 and in that time has invested over A\$650 million and employed more than 500 people locally. Our business is the development, construction and operation of renewable energy generation facilities, evidenced by the 66 MW Cathedral Rocks wind farm, which we own jointly with Roaring 40's and the 192 MW Waubra Wind Farm in Victoria. Waubra is the largest wind power project operating in Australia. We have over A\$799 million in wind power projects in our development portfolio ready for delivery over the next three years, with our 46.5 MW Gunning wind farm in New South Wales already well under construction.

^[1] Spanish Wind Energy Association (AEE): *Wind Power 2010*.



Submission Responses to the Terms of Reference

(a) Any adverse health effects for people living in close proximity to wind farms.

In our opinion, wind farms are a safe form of technology to work and live around.

In Spain, where wind energy capacity represents 12% of the cumulative installed capacity worldwide ^[2], ACCIONA Energy and other companies that operate wind energy facilities do not encounter health complaints in the regular course of their business. Around the world, we have integrated safety and respect for people with how we design, plan, build and operate wind energy technology.

Globally, wind energy generation is a mature technology that has been successfully operating for more than 20 years. In fact, more than 150,000 wind turbines have been installed worldwide. Accordingly, there has been significant opportunity for any negative human health effects to be identified, studied and reported. This is a question for science.

In response, there is no scientific, peer-reviewed research to support any assertion that wind farms negatively affect human health. Australia's leading government-based independent medical research body, the National Health and Medical Research Council (NHMRC), found that *"there is currently no published scientific evidence to positively link wind turbines with adverse health effects."*^[3] This finding is consistent with a wide range of studies that have been conducted in Australia and worldwide. In fact the 2010 NHMRC report went further, stating: *"there are no direct pathological effects from wind farms."*^[4]

This view is reinforced by the Victorian Department of Health which states there are no direct health effects that can be attributed to modern wind turbines.^[5]

After examining the current literature to identify the impact of wind turbines on both human health and human safety, the Chatham-Kent Public Health Unit (Ontario, Canada) indicated that *"...opposition to wind farms on the basis of potential adverse health consequences is not justified by the evidence."*^[6]

Prof. Gary Wittert, Head of the Discipline of Medicine at The University of Adelaide^[7], was engaged by Thomson's Lawyers as an independent medical expert to assist the Environment Resources and Development Court. In assessing the extent of any anticipated adverse health effects associated with the establishment of the Allendale wind farm in South Australia, he underlined in his evidence to the Court that *"there is no credible evidence of a causal link between the physical outputs of a turbine (or sets of turbines)...and adverse health effects."*^[8]

[2] Global Wind Energy Council (March 2010): *Global Wind 2009 Report*. Available at www.gwec.net.

[3] National Health and Medical Research Council (July 2010): *Wind Turbines and Health - Public Statement*.

[4] National Health and Medical Research Council (July 2010): *Wind Turbines and Health - A rapid review of the evidence*.

[5] Department of Health, State Government of Victoria, Australia: [Victorian Government Health Information](#).

[6] Chatham-Kent Public Health Unit (June 2008): *The Health Impact of Wind Turbines: A Review of the Current White, Grey, and Published Literature*. Chatham-Kent Municipal Council, Chatham Ottawa.

[7] Dr. Gary Wittert's credentials are attached as part of this submission.

[8] Environment Resources and Development Court (end October 2010 - ongoing): Statement of Dr. Gary Allen Wittert, paragraph 38.3.

Based on his knowledge of animal physiology and his professional background in experimentation involving animal trials, Dr. Gary Wittert noted that: *"if wind farms were causing physiological impacts on human beings, you would expect to find some evidence of physiological impact on animals...and I cannot find any information that primary production in Europe has been affected by the presence of wind farms – and I use Europe as the example because of the densest concentration of wind farms."*^[9]

Although at the time of making this submission the Court has not handed down its decision in the Allendale appeal, this line of evidence is independent and authoritative given the credentials of Dr. Gary Wittert.

We acknowledge that some individuals living near operating wind farms suffer real and demonstrable health conditions. People living in all parts of Australia, irrespective of the proximity of an operating wind farm, report similar health issues typically similar to hypertension symptoms. There is simply no evidence to suggest that the people living near an operating wind farm have a higher incidence of "ill health" than people elsewhere; nor that their adverse health outcomes are caused by the wind farm. Casual suggestions that link such effects to the wind turbines by the dramatically termed "wind turbine syndrome" are unproven. In fact, "wind turbine syndrome" is not a recognised medical diagnosis.^[10]

From a scientific perspective, the health complaints of a few select individuals living near operating wind farms are anecdotes. When asked about the utility of the anecdotal evidence in forming opinions about cause and effect, Dr. Gary Wittert outlined that *"anecdotal evidence is not a reliable form of evidence when trying to determine a plausible cause and effect relationship between events...anecdotal evidence cannot characterise the typical experience of the majority of people."*^[11]

Anecdotal evidence forms the basis of Dr. Sarah Laurie^[12] and Dr. Pierpont's^[13] assertions about the effect of wind farms on the health of people. However, this type of evidence is not research and must be distinguished from peer-reviewed, scientific evidence. Dr. Gary Wittert emphasized the problem with using anecdotal evidence: *"...We might, in the face of some compelling and uniform stories, believe that people are genuinely abducted by aliens."*^[14]

Separately, there are possible scientific explanations for these anecdotes.

As such there is research that purports to explain the anecdotes may be attributable to a "nocebo" effect. The nocebo effect can be defined as *"an adverse outcome, a worsening of mental or physical health, based on fear or belief in adverse effects"*. Further *"...the large volume of media coverage devoted to alleged adverse health effects of wind turbines understandably creates an anticipatory fear in some that they will experience adverse effects from wind turbines.....The resulting stress, fear, and hyper vigilance may exacerbate or even*

^[9] Environment Resources and Development Court (end October 2010 - ongoing): Testimony of Dr. Gary Allen Wittert, page 879.

^[10] Colby et al. (December 2009): *Wind Turbine Sound and Health Effects An Expert Panel Review*.

^[11] Environment Resources and Development Court (end October 2010 - ongoing): Statement of Dr. Gary Allen Wittert, paragraphs 27 a), 27 c).

^[12] Witness who provided evidence at the Environment Resources and Development Court in relation to the Allendale Wind Farm (end October 2010 - ongoing).

^[13] The main proponent of the termed "wind turbine syndrome."

^[14] Environment Resources and Development Court (end October 2010 - ongoing): Statement of Dr. Gary Allen Wittert, paragraph 27 a).

create problems which would not otherwise exist. In this way, anti-wind farm activists may be creating with their publicity some of the problems they describe."^[15]

Anecdotal health complaints are also attributed to somatoform disorders, which "refer to those that occur when physical symptoms cannot be identified as resulting from physical problems...It is the recognition of the connection between one's mind and body."^[16] As an example, when asked to comment on the evidence presented by Dr. Sarah Laurie, Dr. Gary Wittert noted, "...what's interesting is...when someone moves away from the personal diary within hours of driving out of Waubra [Wind Farm] they seem to be cured...it makes one wonder about the mind/body connection for some of these things...if you don't like what you fancy you feel in a particular environment and you change environments you'll feel better – and that's not uncommon."^[17]

To the extent any such nocebo reaction or somatoform disorder is based on fear and apprehension about a set of unknown and potentially aggravating circumstances we observe that wind energy is relatively new in Australia and, as with any new technology, wind turbines will take time to gain the community's confidence and understanding. With such confidence, the level of stress, to the extent it is based on the "fear of the unknown", should decrease. However, to counter the fear that arises from imbalanced publicity, proactive education backed by the large body of existing scientific research may be required.

Lastly, whether further research should be conducted on the subject is also a question for science. When asked on the justification for the allocation of funding to conduct further research, Dr. Gary Wittert responded "...I'm always a fan of research, and I would be delighted to personally to get more funding for research but I would have a hard time writing a business plan...and saying that this is the basis for wanting to do further study, I don't think I would get the money to do so."^[18]

A complete copy of the transcripts of the testimony by both Dr. Wittert and Dr Laurie is included as part of this submission. A copy of the Court's judgement will be forwarded to the Inquiry when it is delivered by the Court.

Recommendations

We suggest it is important to implement educational programs that address and refute concerns regarding the alleged adverse health impacts linked to wind turbines driven by negative media campaigns. We envisage that the Government can lead this process by providing the community with information sourced from appropriate public medical authorities, such as the NHMRC and corresponding international bodies. This could be effective in ensuring the community is well informed by credible, medical and scientific analysis. Such programs could be designed with reference to similar programs implemented by the Commonwealth as part of supporting the roll-out of mobile telephony. For instance, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) plays a key role in

[15] Colby et al. (December 2009): *Wind Turbine Sound and Health Effects An Expert Panel Review*.

[16] Environment Resources and Development Court (end October 2010 - ongoing): Statement of Dr. Gary Allen Wittert, paragraph 36.

[17] Environment Resources and Development Court (end October 2010 - ongoing): Testimony of Dr. Gary Allen Wittert, page 882.

[18] Environment Resources and Development Court (end October 2010 - ongoing): Testimony of Dr. Gary Allen Wittert, page 896.

effectively addressing unfounded public concerns that link mobile phones with adverse health impacts.^[19]

The industry would have a role to play in supporting the dissemination of the government's materials.

(b) Concerns over the excessive noise and vibrations emitted by wind farms, which are in close proximity to people's homes.

Noise is not a health issue and thus it is appropriately discussed as a separate topic. In particular, *Colby et al 2009* examined noise annoyance as a possible "effect" of wind turbine operations, stating: "*annoyance is a subjective response that varies among people to many types of sounds.*" They also noted, "*it is important to note that although annoyance may be a frustrating experience for people, it is not considered an adverse health effect or disease of any kind. Certain everyday sounds, such as a dripping faucet – barely audible – can be annoying.*"

The report also adds that "*the low frequency sound emitted by spinning wind turbines could possibly be annoying to some when winds are unusually turbulent, but there is no evidence that this level of sound could be harmful to health. If so, city dwelling would be impossible due to the similar levels of ambient sound levels normally present in urban environments Colby et al (2009).*"^[20]

To some, noise at a particular level might be annoying, but this is a subjective reaction. For example, Australia's NHMRC stated, "*there are difficulties with measuring and quantifying subjective effects of noise such as annoyance...Some people are very annoyed at quite low levels of noise, whilst others are not annoyed by high levels.*"^[21]

In our opinion, wind farms do not generate excessive noise and vibrations.

Noise standards and guidelines applied in Australia are amongst the most stringent in the world. Each State and Territory presently assesses the noise from wind farms under a range of standards. Generally, the maximum noise limits imposed on wind farms are:

- Neighbouring properties: +5dBA^[22], or a level of 40dBA L95, whichever is the greater.
- Host properties: +5dBA, or a level of 45dBA L95, whichever is the greater.

In providing some context, 40dBA L95 is about the noise level of a quiet library or a refrigerator^[23].

Wind farm noise is said by some to affect sleep. Sonus, the independent expert noise consultants found that the baseline limits of the Australian standards are sufficiently stringent to prevent the potential onset of sleep disturbance. As a reference, the World Health Organisation (WHO) recommends a limit of 30dB inside a bedroom to prevent potential sleep disturbance effects (30dB correlates to an external noise level of the order of 45dB). By comparison, the typical baseline

[19] ARPANSA: <http://www.arpansa.gov.au/radiationprotection/FactSheets/index.cfm>

[20] Sonus (November 2010): *Environmental Noise - Wind Farms Technical Paper.*

[21] National Health and Medical Research Council (July 2010): *Wind Turbines and Health – A rapid review of the evidence.*

[22] Measured as an increment to the pre-existing or so-called 'background' noise.

[23] EPA publication 406.3 (October 2008): *EPA Victoria: Annoyed by Noise?.*



limits of Australian wind farm standards and guidelines (35 – 40dB), are significantly more stringent, ie less noisy, than the WHO recommendation of 45dB.^[24]

ACCIONA Energy recognises that noise compliance is a critical consideration when designing and operating a wind farm. Noise levels vary with weather and topography. Importantly, noise can be measured and managed.

In relation to noise measurement, we commission independent acoustic experts to monitor a wind farm's noise levels once it begins operating. For Waubra Wind Farm, ACCIONA Energy was required to commission a Post Construction Noise Monitoring Assessment as part of the planning permit conditions. This consisted of a 12-month monitoring program by an independent acoustics expert and their assessment of the results. The report was submitted to the Victorian government in October 2010.

Secondly, as part of our operational practices, ACCIONA Energy administers a complaint management system. We commission acoustic monitoring in response to all complaints about audible noise within two kilometres of the wind farm and provide the results to the complainants. If the complainant is unsatisfied with the monitoring or the results, monitoring will be repeated two more times.

To date we have been compliant in all these circumstances. If we were to find the wind farm is exceeding noise limits, we would develop a noise reduction plan, for example operating the influential turbines in noise reduced mode to ensure noise compliance at the residence in question.

We regularly communicate with the local community so that we can identify any noise complaints and act accordingly. To this end, we may offer noise mitigation options to properties within the vicinity of the wind farm such as double glazing windows, providing air conditioning and installing noise reduction drapes.

Separately, in response to questions regarding infrasound, we cite that *"...several authors have suggested that low frequency noise or infrasound emitted by wind turbines is minimal and of no consequence (Leventhall, 2006; Jakobsen, 2005)."*^[25] We also refer to the Sonus study^[26] that indicated *"the infrasound generated by wind turbines is well below established guideline perception thresholds;...For purposes of comparison, they added: "the level of infrasound in the vicinity of the two Australian wind farms are of the same order as that measured from a range of sources including the beach..."*

Finally, with respect to noise, we offer an anecdote of our own. Rural wind farms are generally supported by the vast majority of the local community. As an example, at our Waubra Wind Farm, noise complaints have been limited to around 15 families out of the 700 residents living within 4 km of the wind farm. Currently, only 5 complaints are ongoing. We believe this statistic indicates a high level of support for the wind farm and that its noise levels are within the community's expectations.

^[24] Sonus (November 2010): *Environmental Noise - Wind Farms Technical Paper*.

^[25] National Health and Medical Research Council (July 2010): *Wind Turbines and Health – A rapid review of the evidence*.

^[26] Sonus (November 2010): *Infrasound Measurements from Wind Farms and other Sources*. A study prepared for Pacific Hydro.

(c) The impact of rural wind farms on property values, employment opportunities and farm income.

- **Property values**

The empirical evidence demonstrates that property values are not negatively affected by wind farms. This has been shown in both Australian and international studies. The most influential^[27] of these was *Hoehn et al 2009*^[28], which found that *"neither the view of the wind facilities nor the distance of the home to those facilities is found to have any consistent, measurable and statistically significant effect on home sales prices."* In Australia, the *Duponts (2009)* study, which sought to provide objective information on likely impacts of wind farms on land value in Australia said its *"main finding was that wind farms do not appear to have negatively affected property values in most cases"*^[29].

There are various factors in determining a property's value. Contrary to city areas, in rural areas the main factor influencing a property's value is the land's productivity. This is a function of its resource endowment and its condition, both of which are unaffected by the presence of a wind farm nearby.

Furthermore, aesthetics are subjective. The view of a wind farm could be perceived as a positive or as a negative determinant in an individual's decision to purchase and the price they are willing to pay for a rural property. In line with this, the *Duponts (2009)* study states *"whether the view of a wind farm is considered to be a negative one or not is largely subjective and studies looking at people's perceptions often find varying opinions."*

Also in relation to property value, wind farms provide an economic boost to the rural community as we outline below. This increases local wealth and possibly demand and, if anything, consequently should support local property prices.

In reference to properties hosting the wind turbines, wind farms should have a direct positive effect on their value. These properties receive a long term, reliable revenue stream for the placement of a wind turbine that coexists easily with other land uses, i.e. it does not materially affect the productivity of the land, generally occupying around 1.5-2% of the total land area. In some cases, the provision of improved access tracks and supply of power to remote areas of a property may also create improvements in the land's productive capacity.

- **Economic Impact**

- **Farm income**

Wind farms provide landowners with a reliable revenue stream unaffected by climate, crop or produce prices nor other volatile elements.

This income is long term and secured by contract. This helps strengthen the landowner's balance sheet and may assist them to make long term investment

^[27] According to Duponts (now Preston, Rowe, Patterson) for the NSW Valuer General (August 2009): [Preliminary Assessment of the Impact of Wind Farms on Surrounding Land Values in Australia.](#)

^[28] Hoehn, B., R. Wiser, P. Cappers, M. Thayer, and G. Sethi (December 2009): [The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis.](#)

^[29] The vast majority of the property sales analysed (i.e. 40 out of 45) did not show any reductions in value, whereas five properties were found to have lower than expected sales prices. The report adds that further work is needed to confirm the extent to which the price reductions in those five properties were due to the wind farm or if other factors may have been involved.



decisions for their farming operations, e.g. pasture improvement, fencing or equipment purchases.

- **Employment opportunities and economic growth**

As a result a wind farm project, the local region as well as the state in general experiences economic benefits in terms of additional output and direct and indirect employment. The flow-on effects of such an investment are demonstrated in various studies that quantify the economic impact of wind farms, e.g. the *Economic Impact Assessment of the Hallett Wind Farms*^[30], in which consultants SKM estimated that for every job created directly by the wind farm, around three further jobs are created indirectly (i.e. a multiplier of three).

In addition, rural wind farms enable the diversification of the region's economic base.

Whenever possible, we source employment locally. For example, our Waubra Wind Farm in rural western Victoria sourced approximately 80% of the jobs from the region during both the construction and operations and maintenance phases of the project. There are approximately 30 permanent operations and maintenance ongoing roles and there were 200 jobs during the 18 month construction period.

Besides the quantitative impact assessment, the development of rural wind farms stimulates high quality employment at a local and regional level, requiring specialised multi-skills and offering in turn high remuneration. For instance, the operation and maintenance of a wind farm requires electrical and mechanical skills.

The wind energy sector contributes to building skilled employment, which is particularly relevant to addressing skill gaps and providing a pathway for industry growth in the renewable energy industry, a long-term and worldwide industry. As an example of the upskilling of the local workforce, at ACCIONA Energy we provide in-house training for tradespeople to become technicians that acquire both electrical and mechanical skills. Moreover, many of the skills are transferable to other industries, both locally or further afield.

On a national scale, the wind industry provides 2,184 full time equivalent jobs, which is expected to increase to over 19,000 by 2020. In 2009-10 alone, wind energy in Australia generated around \$1.6 billion in investment^[31].

Dr Robert Passey describes this in a 2003 report^[32]: "*Australia is already reaping significant employment and financial benefits from wind power, particularly in the rural and regional sector through employment and inward investment*".

On an international scale, we cite a European Union report^[33], which in addition to considering the impact of renewable energy policies on all sectors of the economy (ie the multiplier effect), captures the net effect of these policies in the whole

^[30] SKM (8 July 2010): *Economic Impact Assessment of the Hallett Wind Farms*.

^[31] Clean Energy Council (2010): *Clean Energy Australia 2010*.

^[32] SGS Economics & Planning, March 2008: *Silverton Wind Farm: Far West region NSW – Assessment of the social and economic impacts*.

^[33] Fraunhofer ISI, Ecofys, Energy Economics Group, Rütter + Partner Socioeconomic Research + Consulting, Lithuanian Energy Institute, Société Européenne d'Économie (April 2009): *The impact of renewable energy policy on economic growth and employment in the European Union*. This study was conducted on behalf of the European Commission's Directorate-General Energy and Transport. NOTE: "*It is the first study to assess the economic effects of supporting energy from renewable sources in this detail, looking not only at jobs in the renewable energy sector itself, but taking into account its impact on all sectors of the economy.*"



economy, ie both the positive effects (eg investment in clean energy) and negative effects (eg investment reduction in fossil energy). Thus, it concluded: "*Policies that support renewable energy sources give a significant boost to the economy and the number of jobs in the EU. Improving current policies so that the target of 20% of energy from renewable sources in final energy consumption in 2020 can be achieved will provide a net effect of about 410,000 additional jobs and 0.24% additional gross domestic product (GDP).*"

- **Other community benefits**

At ACCIONA Energy, we engage with the local community in the development of all our projects. Some examples include:

- Providing additional rates to local council at virtually no extra cost burden. For example, in Victoria, a typical rate contribution from a wind farm is \$40,000 + \$900 per megawatt of rated capacity per annum. Over 20-25 years of a 100 MW wind farm, this can equate to \$130,000 per year or \$3.6 million (indexed to CPI) in local rates in aggregate.
- Making financial contributions to the community to support local projects. The Community Benefit Fund for Waubra Wind Farm, for example, provides \$64,000 per year (indexed to CPI) which will contribute over \$1.6 million to that community over the initial term of the project.
- In addition, supporting community festivals, local environmental and education programs and sporting teams.
- Operating community reference groups, providing a forum for the community to ask questions about the operations about their local wind farm.
- Hosting tours of interested groups to learn about the wind farm and renewable energy.

Overall, the development of rural wind farms provides benefits that extend well beyond direct lease payments to the landowners.

(d) The interface between Commonwealth, state and local planning laws as they pertain to wind farms.

The development of renewable energy is supported by high level climate change policy at both Commonwealth and State level. There is however a disconnect between that high level policy and local environmental objectives applied by state and federal referral authorities.

In our experience, securing a planning permit for a wind farm development is a time consuming and costly process. These extensive timeframes and costs reflect the complex and inconsistent regulatory approval systems adopted by each state.

Policy Framework

In the emerging policy framework, ACCIONA Energy is concerned that the development of multiple overlapping statutory and non statutory guidelines, is at the very least, confusing for all parties and undermines the value of such guidelines.

Our principal concerns are:

- The inconsistency between the “National Wind Farm Development Guidelines” and the relevant State guidelines, in a circumstance where planning control lies with the State.
- These inconsistent requirements only result in generating confusion among communities, local and State authorities, in addition to creating unnecessary burdens to the already rigorous planning process developers are subject to.

Requirements and complexity of applications

Government authorities, particularly in Victoria and New South Wales, typically take a conservative and precautionary approach when dealing with wind farm developments. The approach to environmental issues can be heavily influenced by community or individual concerns, rather than the objective threat or the specific statutory planning criteria that apply.

This is most evident when managing the impact on threatened avifauna where the species’ decline is typically a result of broad changes to the regional climate or a loss of habitat through agricultural land use practices. In almost all cases where conflict arises between wind farm development and threatened avifauna, a conservative, precautionary approach is taken. The wind farm development is refused or conditions that make it unviable are imposed. However there is no corresponding investment into the species at risk. ACCIONA Energy advocates a more proactive approach. For example, in this scenario we would support taking active steps in partnership with government to support the species, such as habitat enhancement, as part of finding a sustainable and commercial model for the wind farm to proceed.

Locating Rural Wind Farms

To be most productive, a wind farm should be located in an area of consistent winds and reasonably close to the electricity grid. Such locations are relatively rare across the country. More significantly, these are rarely isolated from at least some local residential population.

In response to a vocal minority of residents, a number of local planning authorities^[34] have implemented local planning controls with restrictive provisions including a 2 kilometre setback requirement from residences.

ACCIONA Energy opposes local planning authorities imposing additional localised controls. We believe the potential amenity effects of a wind farm, such as noise and visual concerns, are not efficiently addressed by merely setting an arbitrary setback. Amenity impacts vary from site to site, such that residential and environmental impacts may be negligible at distances much closer than 2 km or any other set distance. Equally, in some circumstances, site conditions may dictate a greater buffer such as for a setback from certain bird flocking sites.

Prescriptive setbacks are not applied to any other form of infrastructure development. To follow such a path will significantly hamper industry development and lead to difficulties in satisfying the Commonwealth’s Renewable Energy Target (RET) legislation.

^[34] Glen Innes Severn Council (NSW), Upper Lachlan Shire Council (NSW), Oberon Council (NSW) and Inverell Shire Council (NSW)..

Recommendation

The constraints associated with identifying suitable areas to develop wind farms, principally consistent wind resource and grid connectivity, should be recognised in the development of any national, state or local planning guidelines. Any measures to implement prescribed universal buffers should be avoided in favour of measures that recognise the variations in site conditions.

(e) Any other relevant matters.

In the transition to a low carbon economy, renewable energy has an important role to play worldwide. By legislating the expanded RET, Australia has committed to sourcing 20% of its electricity from renewable energy sources by 2020. Renewable energy experts Green Energy Markets estimate that the RET will require 11,000 MW of new capacity in Australia to meet this 2020 target.

Utility scale wind energy is likely to supply the greater part of that target. Wind energy is the lowest cost form of renewable energy; it is also competitive with the construction of other forms of energy generation when carbon is priced appropriately. Further, as the industry develops with further research and development activities and scale, wind energy may become cheaper yet. Accordingly, wind energy must be a significant part of Australia's future electricity supply taking into account our cost and sustainability objectives. In this context, it is important that the Government supports the development of wind farms.

Wind energy will also contribute reliably to the future electricity supply portfolio; it is a proven, mature technology. In Spain, wind energy alone covered over 14% of the national electricity demand in 2009^[35]. In Denmark, wind farms provide enough power to cover 20% of the country's electricity needs^[36].

Finally, there is a misconception that renewable energy will be the main or a significant driver behind rising electricity costs. Studies demonstrate the impact of the RET on power bills is relatively small when compared to other components such as transmission network infrastructure. For instance, the Department of Climate Change estimates the enhanced RET will increase electricity costs by around \$4 for an average household per year^[37]. If a carbon price is applied by 2020, ROAM Consulting predicts the total cost of the LRET to consumers with a carbon cost is around \$4/MWh in 2020^[38]. Furthermore, this cost is borne equitably by all energy consumers, which disproves the assertion that "city-based" people do not share in its cost, or that it absorbs government money.

Conclusion

We are very enthusiastic for the prospects for wind energy generation in Australia. This country has strong wind resources and many areas of open land. It also has growing electricity demand and recognises the need to develop a cleaner, less carbon-polluting economy. This is essential to Australia maintaining its international competitiveness and doing its share for sustainability.

[35] Spanish Wind Energy Association (AEE): *Wind Power Observatory 2010*.

[36] Global Wind Energy Council (March 2010): *Global Wind 2009 Report*. Available at www.gwec.net.

[37] Department of Climate Change (February 2010): *Enhanced Renewable Energy Target* factsheet.

[38] ROAM Consulting (25 May 2010): *The true costs and benefits of the enhanced RET*.



ACCIONA Energy is very proud to be part of this movement. We operate with care and respect for the stakeholders in our projects and overall, with the belief that wind energy generation makes a very large and positive contribution to society. In this spirit, we would be pleased to present to the Senate Inquiry in person, or alternatively to provide further written input if necessary.

Sincerely,

A handwritten signature in blue ink, appearing to be "Tricia Kent", written in a cursive style.

Tricia Kent
Director - Communications
ACCIONA Energy Oceania Pty Ltd

CURRICULUM VITAE

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QUALIFICATIONS: MB Bch (with distinction), University of Witwatersrand 1983
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CURRENT APPOINTMENTS:

Professor of Medicine, University of Adelaide (Personal Chair)
Mortlock Professor and Head, Discipline of Medicine, University of Adelaide
Founding Member, Freemasons Centre for Men's Health
Member, Hanson Research Institute
Senior Consultant Endocrinologist, Royal Adelaide Hospital
Co-ordinator, Endocrine Test Unit, Royal Adelaide Hospital
Co-ordinator Obesity Clinic, Royal Adelaide Hospital

PREVIOUS APPOINTMENTS AND PROFESSIONAL EXPERIENCE:

1984 Intern, Johannesburg Hospital, Johannesburg, South Africa
1985 Senior House Officer, Hillbrow Hospital, Johannesburg, South Africa
1985 House Officer, Waikato Hospital, Hamilton New Zealand
1986 Medical Registrar, Waikato Hospital, Hamilton, New Zealand
1987 General Practitioner, Oxford, New Zealand.
1988 Medical Registrar, Christchurch, New Zealand.
1989-1990 Senior Registrar, Endocrinology Unit, The Princess Margaret Hospital,
Christchurch, New Zealand
1991 Locum Lecturer in Medicine, University of Otago,
Christchurch Clinical School, Christchurch, New Zealand
1991-1993 Research Fellow of the Fogarty International Centre,
Childrens Hospital of Boston and Harvard Medical School
1993-1994 Clinical and Research Fellow, Oregon Health Sciences University, and
Vollum Institute of Advanced Biomedical Research, Portland Oregon
1994 – 1999 Senior Lecturer in Medicine, University of Adelaide.
2000 – 2004 Associate Professor Department of Medicine, University of Adelaide
2004/2005/2006 Acting Dean – Faculty of Health Science – April, September 2004, January,
July 2005, June 2006.
2006-2009 Head, School of Medicine, University of Adelaide

AWARDS AND DISTINCTIONS:

Undergraduate

1982	Kurt Gillis Award for Psychiatry
1983	David Lurie Memorial Medal for Surgery Abelheim Medal and Prize for Obstetrics Medical Association Medal for the most distinguished graduand

Postgraduate

1991	Fogarty Fellowship, National Institute of Health, USA
1994	RACP Pharmacia Research Fellowship
2004	Florey Lecture, University of Adelaide
2008	Finalist – South Australian Science Award for Public Good.
2008	ARI – Research Accolade Award
2009	Elected to Fellowship of the Royal College of Physicians, London.

CURRENT REGISTRATIONS/ MEMBERSHIP OF PROFESSIONAL ORGANISATIONS:

1993 -	US Endocrine Society
1993 -	American Diabetes Association
1994 -	Medical Board of South Australia
1994 -	Royal Australasian College of Physicians
1996 -	Australian Society for the Study of Obesity.
2009 -	Royal College of Physicians, London.

LEADERSHIP DEVELOPMENT

2005	Harvard Macy Residential Development Program for Academic Leaders
2008	Heads of Schools Leadership Program – Palm Consulting.

COMMITTEE AND OTHER APPOINTMENTS:

1995-1996.	Secretary, General Medicine Committee RAH
1995-1996.	Member, Human Ethics Committee, University of South Australia
1996-1999.	Chair, Organising Committee, Endocrine Society of Australia, Postgraduate Seminar.
1996-2001	Convenor, Clinical Years Management Committee, University of Adelaide
1996-2001	Curriculum Committee
1997-1998	Curriculum Review Committee
1999-2000	Medical School Accreditation Task Force.
1999-2000	Convenor, Internal Medicine Service Bed Structure Committee
1999- 2002	Treasurer, Australian Society for the Study of Obesity
1999-2003	Roche Obesity Educational Advisory Board
2000-	Australian Advisory Board on Mens Health – Committee On Androgen Function in Men

2001-2003	Medical Advisor - Endocrine Nurses Society of Australia Inc.
2002-2003	Department of Health and Aged Care, Medical Services Advisory Committee on Laparoscopic Adjustable Gastric Banding
2002	NH&MRC project grants – Committee 3c
2002-2006	Programme organising committee – International Congress on Obesity, Sydney 2006.
2003-2005	President Australasian Society for the Study of Obesity.
2003	Member Level D Promotions Committee, University of Adelaide
2003-2004	Member Curriculum Resourcing Review Committee – Faculty of Health Sciences, University of Adelaide.
2004	Department of Education Science and Training. Co-operative Research Centres 2004 Round Panel Member
2004 -2005	Deputy Chair/Chair Standing Committee To Advise the DVC(R) On Clinical Trials Management.
2004 -2007	Co-Leader of Ageing Research Cluster – University of Adelaide.
2004	Expert Advisory Group of key investigators conducting longitudinal research relevant to ageing. – Australian Institute of Health and Welfare.
2004 -2007	Board Member – Centre for Reproduction and Development, University of Adelaide.
2004	Member of Organising Committee – Cottrell Conference 2004. Royal Australasian College of Physicians.
2004 -	Chair, Projects Grants Committee, RAH/IMVS Research Committee
2005-2007	Member of Health Ministers task force for Development of a Men's Health Strategy.
2005	Central and Northern Adelaide Health Service Research Strategy Think Tank.
2005-2006	Member National Obesity Task Force Scientific Reference Group.
2005	Member Level E Promotions Committee
2006	Chair South Australian Dept Health Men's Health Task Force Operations Group
2006 -	Chair, Board of Examiners MBBS Course -Year 3.
2006	Member NHMRC Grant Review Panel
2006 -	Vice President – Asian Oceania Society for the Study of Obesity
2007	Chair – Infant and Early Childhood Working Group. Childhood Obesity Forum – Senator Guy Barnett's Obesity forum, Canberra, 6 June 2007
2007	Member faculty of Health Sciences Level B and C promotions committee
2007 -	Member faculty of Health Sciences Level E promotion committee
2007 -	Advisor to the Centre of Military of Veterans Health, Brisbane: Obesity in the armed forces and of admission criteria relating to weight and body composition that regulate entry to the ADF.
2008 -	Independent Chair of the Weight Management Council of Australia.
2008	Invited Participant Kevin Rudd's 2020 Summit.
2008	Member NH&MRC Grant Review Panel Selector Committee B.

2008 -	SA Health Research Reform Implementation Group and Analysis Working Group
2008 - 2010	NH&MRC Centres of Clinical Research Excellence Grant Review Panel
2009	Expert Review – NH&MRC guidelines on the management of type 2 diabete mellitus
2009	Council of Australian Governments – Healthy Communities Initiative Quality Assurance Workshop.
2009	Invited member of External Review and Advisory group for Diabetes CCRE.
2009	Member Scientific Advisory Council – International Obesity Task Force.
2009 -	Member, Human Research Ethics Committee CSIRO Nutritional Sciences.
2010 -	Andrology Australia Men’s Health Curriculum Development Working Group.
2010 -	Member of the Advisory Board of National Diabetes, Obesity and Cholesterol Disorders Foundation, India.
2010 -	Food Standards Australia New Zealand Epidemiology Scientific Advisory Group on Conjugated Linoleic Acid

INVITED LECTURES:

Local:

Departments of Zoology, Pharmacology, Medicine, Obstetrics and Gynaecology, Psychiatry, University of Adelaide. Modbury Hospital, Royal Adelaide Hospital, Queen Elizabeth Hospital, Adelaide Clinical Endocrine Society. South Australian Society for Post Graduate Medical Education. Institute of Medical and Veterinary Science, Royal Adelaide Hospital, Hanson Institute, Marsupial Biology Group, Numerous talks for Endocrinologists, Cardiologists, Renal Physicians, General Physicians and General Practitioners.

National:

Florey Centenary - Adelaide, 1998

Sir John Hunter Hospital, Newcastle, Medical Grand Round, 1998

Hanson Symposium - Adelaide, 1998

Australian Menopause Society –Hormonal regulation of Leptin Annual Conference, 1999

Australian Endocrine Society – Satellite Symposium, Melbourne 1999

5th Annual General Practitioner Conference, Sydney, May 2000.

ustralasian Society for Biological Psychiatry – Plenary lecture "Neurobiology of Obesity, December 2000.

Royal Australasian College of Physicians – Annual meeting 2001 – “Pathogenesis and Management of Obesity”

National Workshops on Obesity for GP’s and Physicians – Pfizer and Roche 1999, 2000, 2001.

Rheumatological Society of Australia – National Meeting, “glucocorticoids and the cardiovascular system” Adelaide 2001.

Royal Australasian College of Surgeons. “The Role of Surgery in the Management of Obesity”, Adelaide, 2002.

Post-graduate weekend for Physician Trainees – Astra Zeneca. “The Management of Obesity” – Coolum, 2002.

Australian Gastroenterology Week. “Obesity – the way out”. Adelaide 2002

Update for Physicians “Workshop on the Metabolic Syndrome” Sanctuary Cove, February 2003.

Australasian Society for the Study of Obesity. Dietary fat and the management of Obesity” Newcastle, September 2003.

Australasian College of Sexual Health Medicine. “Androgens and the Aging Male: Myths, Mysteries and Mischief”. Sydney, March 4, 2004.

Pfizer Regional Specialists Meeting, Aging and Hormones in Men. Novotel Barossa, April 14-18, 2004.

Nutrition Research Foundation University of Sydney. “Will we ever get it right – diet for a new millennium” April 22, 2004.

SAWA Cardiology Meeting. Obesity and Cardiovascular Risk. Glenelg, May 8 2004
Royal Australasian College of Physicians. Medical Approaches for The Management of Obesity. Canberra. May 17 2004.

Annual Florey Lecturer, University of Adelaide, and Florey Foundation October, 2004.

Endocrine Society of Australia Seminar Meeting, Sebel Yarra Valley, April 16-19 2005.

The National Centre for Functional Foods Symposium. The Value and Benefits of Glycaemic index and Glycaemic Load. Wollongong, June 2005.

Australasian Society for the Study of Obesity Annual Conference, Obesity in the Elderly, Adelaide, October 2005.

New South Wales Diabetes Summit. Obesity and Diabetes Mellitus. Sydney, April 2006

Central and Northern Adelaide Health Service, The Obesity Epidemic, What Should We Do? Adelaide, June 2006.

Prostate Cancer Foundation of Australia. Public Health Promotion Forum. Preventing Diabetes Mellitus. Melbourne, 12 August 2006.

Jewish Family and Community Services Annual Lecture. The Obesity Epidemic – An Intergenerational Problem: Causes and Consequences. Adelaide. October 29, 2006.

South Australian Diabetes Educators Refresher Day. Plenary Lecture - Metabolic Syndrome a risk for the Heart. Adelaide. 24 November 2006.

Friends of the Hebrew University of Jerusalem. Ethics of Embryonic Stem Cells and Related Technologies. Adelaide. 4 February 2007.

International Diabetes Institute. A weight based approach for the management of Type 2 diabetes Mellitus. Melbourne 6 February 2007.

Astra Zeneca Cardiovascular Symposium. Workshops on Obesity Management. Sanctuary Cover 2-4 March, 2007.

Conference on Gender and Ageing. Plenary lecture. The Florey Adelaide Male Ageing Study. Newcastle, NSW, Australia, July 9-10 2007.

Diabetes ACT. Obesity and Men's Health –Opportunities and Challenges, Canberra, August 2, 2007.

7th National Men's Health Conference. Keynote Speaker. Adelaide Convention Centre, Adelaide 3-5 October 2007.

Research Tuesday, University of Adelaide. Obesity, Physical, Psychological and Sexual Well-being: Implications for Ageing Men. University of Adelaide, 11 March, 2008.

How to Implement a Lifestyle Management Program. GSK Gold Program for GPs and Specialists, Sydney May17-18, 2008.

Cardiac Society of Australia and New Zealand. Obesity and Heart Disease, August 7-10, Adelaide 2008.

Australian Health and Medical Research Conference. Obesity and Sexual Function in Men. November 19-21, Brisbane 2008.

Cardiovascular Specialist Symposium. Workshop on Obesity Management: February 27- March 01, 2009.

Southern Area Health Research Week. Testosterone and Cardio Metabolic Risk in the Ageing Male Melbourne May 5, 2009.

Healthy Male Forum. Gonadal Steroids, Diabetes and Cardiovascular risk. Gold Coast June 19-21, 2009.

Sansom Institute, University of South Australia. Ageing, Sex Steroids and Cardio-Metabolic Risk. July 16, 2009.

Building a clinical Research Community. CRX09, MCG, Melbourne, August 20, 2009.
Australian Diabetes Society. Bariatric Surgery for the Management of the Obese Type 2 Diabetic – A Debate. Adelaide, August 2009.

Uroscience Forum. Obesity Sleep and Androgens. Melbourne, Sept 5, 2009.

Uroscience Forum. Debate: AGAINST: The hypogonadal man – testosterone therapy or not, Melbourne, Sept 2009.

Novo Nordisk VIC/TAS Endocrine Weekend Meeting. Adrenal/pituitary Steroid Replacement. Creswick Novotel Hotel, Creswick, 17-18 July 2010.

Pfizer Cardiovascular Forum. Obesity, Diabetes Mellitus and Cardiovascular Disease in Children. August 14 2010.

ANZ Society for Geriatric Medicine. Key Note Speaker: Management of Obesity In The Elderly: For Whom, When and How or If at all. September 11-12, 2010.

Fertility Society of Australia. Medical and Other Disorders in Klinefelters Syndrome. Adelaide Convention Centre from 10 - 13 October 2010.

International:

Rowett Institute, Aberdeen, Scotland, 1996

Obesity Reseach Centre, VA Medical Centre, Minneapolis, Minnesota, 1997

Endocrine Society of India Annual Conference, Plenary speaker: Leptin Physiology in humans. Lucknow 1997.

International Congress on Sports Science, Sports Medicine and Physical Education – Invited to present a lecture in a symposium on “Macronutrient Regulation of Food Intake – Lessons From Human and Animal Studies. Brisbane, September 2000.

New Zealand Endocrine Society – Invited Speaker: Androgen Function in Aging Men, Wellington, April 2001.

International Conference on Obesity – Invited symposium participant – Obesity in Aging Adults, Sao Paulo Brazil, August 2002.

Indonesian Obesity Society/Roche Indonesia – Management of Obesity – Jakarta - June 2003.

Eli Lilly Symposium. Androgens and the Aging Male. Auckland, August 2003.

Indian Obesity Society/Abbott India – Causes and Management of Obesity - Delhi, Mumbai, Chennai, Bangalore – September 2003.

Asia Pacific Heart Network – Obesity, a global problem. Singapore, January 2004.

3rd International Academy on Nutrition and Aging. The problem of obesity in the elderly. St. Louis Missouri May 6-8, 2005.

European Obesity Meeting. Effect of Orlistat on Obesity Co-morbidities. Roche Symposium, Athens, June 1, 2005.

Childhood Nutrition Research Institute. Baylor College of Medicine, Houston, Texas. Dietary approaches for the management of obesity: Is there an optimal macronutrient composition? June 9, 2005.

Combined Scientific Meeting of Singapore Health and National University of Singapore. Invited Plenary Lecture. Ageing Frail or Ageing Robust – Determinants and Interventions. Raffles City Convention Centre, Singapore, November 4-6 2005.

5th Congress of Asian Pacific Society of Atherosclerosis and Vascular Diseases, Novel pharmacologic approaches to diabetes management. 12-15 April, 2006 Jeju, Korea.

10th International Conference on Obesity. Invited Symposium: Clinical Effectiveness of Weight Management Drugs, Sydney Convention Centre, September 3, 2006.

Annual Scientific Meeting of the National Heart Association of Malaysia, Integrating Adiposity As A Target In Global Cardiometabolic Risk Reduction. Hilton KL/ Le-Meridien Sentral, 13th – 15th April 2007.

Korean Diabetes Association, 20th Spring Congress. Endocannabinoids for the treatment of Obesity and Metabolic Syndrome. Seoul, May 10-12, 2007.

International Academy for Ageing and Nutrition, Body composition, nutrition and activity in older men. Adelaide Convention Centre 5-8 September 2007.

International Association for Ageing and Nutrition. Management of Morbid Obesity. Adelaide Convention Centre 5-8 September 2007.

6th World Congress of the Ageing Male. Tampa, Florida, USA. "Epidemiology of Ageing Males in Australia". February 21-23rd, 2008

6th World Congress of the Ageing Male. Tampa, Florida, "Obesity in the Older Male". USA. February 21-23rd, 2008

Hypertension, Diabetes and Lipid Symposium, 2008. Shanghai, China, "Metabolic Syndrome and Sexual Dysfunction in Men: Implications for the Cardiovascular System" and "Type II Diabetes Mellitus: Emerging Treatment Strategies and Concepts" July 16-21, 2008.

15th International Congress 2008 on Dietetics, Yokohama, Japan, Invited Symposium – “Obesity and the Metabolic Syndrome”, Sept 8-10, 2008.

Asia Oceania Association for the Study of Obesity. Sleep restriction, obesity and metabolic syndrome., February 5-8, Mumbai, India 2009

Australasian Conference on Obesity. Management of Obesity: Prioritising the Options in a Patient Centred Approach. Auckland, 4 December 2009.

Fatty acids and the regulation of energy metabolism. Childhood Nutrition Research Institute, Baylor University. Houston, 15 April 2010.

Testosterone, Sexual and Lower Urinary Tract Function in Men: Effects of Obesity and Diet-Induced Weight Loss. Boston University Medical Centre. 10 May 2010.

2010 Australian-Canadian Prostate Cancer Research Alliance Symposium. Metabolic Syndrome and Prostate Cancer. Gold Coast, August 8th 2010.

SUPERVISION OF HONOURS STUDENTS

1996.	Ms R Willis (Honours IIa)
1997	Ms Fiona Clements (Honours IIa) Ms Rosalie Vozzo (Honours IIa)
1998	Ms Clarice Chian (Honours I)
2000	Mr Matthew Haren – Honours I
2000	Ms Zoe Holthouse – Honours I
2000	Ms Jane Mudge – Honours IIa
2003	Mr Darren Roffey – Honours I
2005	Mr Paul Cavuoto – Honours IIa.

SUPERVISION OF HIGHER DEGREE STUDENTS:

1995-1998	Ms P Hope, (PhD awarded 1999), prize for best abstract Australian Society for Comparative Physiology and Biochemistry 1998.
1998-1999	Mr Chris Barton (MMSc awarded 2000)
1998-2001	Ms Rosalie Vozzo PhD candidate (Joint with Dr Ian Chapman)
1998-2002	Ms Natalie Luscombe PhD candidate (Joint with Dr P Clifton CSIRO) Award for best poster International Congress on Sports Science, Sports Medicine and Physical Education, Brisbane, 2000, Award for best oral presentation Australasian Society for the Study of Obesity, Gold Coast, September 9-11, 2001, Young investigator of the year, Australasian Society for the Study of Obesity.2003.
2001-2004	Mr Matthew Haren - PhD
2001 2004	Dr Stephen Nicolls – PhD (Joint with Prof P Barter).
2004-2007	Mr Dominik Kaczorowski – PhD with Dr Greg Goodall.
2004-2010	Mr James Smith – PhD (Joint with Prof Janet Hiller and Dr Megan Warin)
2004-2007	Ms Eleanor Need – PhD (joint with Prof Wyne Tilley, Dr Peter O’Loughlin)
2004-2007	Dr Cynthia Piantadosi –PhD (joint with Prof Stephen Worthley)

2004-2007	Mr Donel Martin – PhD (joint with Dr Nick Burns).
2005-2009	Ms Julie Franzon – PhD (joint with Prof Graham Hugo)
2005-2008	Ms Kirsten Dunn – PhD (joint with Dr Carlene Wilson and Dr Phil Mohr)
2005-2009	Ms Emily Brindal – PhD (joint with Dr Phil Mohr and Dr Carlene Wilson)
2006-2009	Ms Yan Lam, PhD (Joint with Dr Andrew McAinch and Dr Alena Janovska)
2006-2010	Mr Paul Cavuoto (Joint with Dr Andrew McAinch and Dr Alena Janovska)
2007-	Ms Lisa Philip (Joint with A/Prof Graeme Mayrhofer and Dr Alena Janovska)
2008-	Mr Sean Martin (Joint with Prof Wayne Tilley and Prof Richard Ivell).
2008-	Ms Eva Pedersen (Joint with Prof Peter Clifton and A/Prof Manny Noakes)
2008-	Mr Andrew Trotta (Joint with Prof V Marshall, Dr Grant Buchanan and Dr Eleanor Need.
2009-	Mr Hany Dimitri (Joint with Prof Prash Sanders)
2009-	Mr Brett Scholz (Joint with Dr Shona Bass and Dr Evan Atlantis)
2010-	Ms Nadja Klafka (Joint with Dr Jaklin Elliott and Prof Ian Olver).

FINANCIAL SUPPORT FOR RESEARCH (1994-PRESENT):

1994	University of Adelaide B3 grant	\$10,000
1994	Ramaciotti Foundation	\$10,000
1994	RACP Pharmacia Research Fellowship	\$40,000
1995	RAH/IMVS Research Review Committee	\$20,000
1995	ARC small grant	\$16,000
1996	ARC small grant	\$10,000
1996	RAH special purposes fund	\$20,000
1997-1999	ARC large grant	~\$156,000
1998	Ramaciotti Foundation	\$10,000
1998-2000	Veterans affairs	~\$240,000
1999	University of Adelaide B3 grant	\$10,000
1999	University of Adelaide Nutrition Trust	\$20,000
1999-	Dairy Development Research Corporation	\$44,000
1999	Organon	\$70,000
2000	Bayer \$40,000	
2000	ARC small grant	\$10,000
2000	B1 Grant	\$10,000
2000	Analytica	\$20,000
2001-2003	NH&MRC Project Grant	\$204,000
2001	ARC small grant	\$10,000
2002	ARC small grant	\$10,000
2002	Silhouette Medical	\$120,000
2003	University of Adelaide Grant	\$10,000

2003-2006	Florey Foundation: The Florey Adelaide Male Ageing Study: promoting health wellbeing and utilisation of health services by middle aged and older men	\$450,000
2003	University of Adelaide	\$100,000
2005-2008	Linkage Grant Linkage: Obesity, health, social disadvantage an environment in Australia: relations and policy implications. ARC	\$1.4 Million
2004	NHMRC equipment grant	\$63,000
2005-2006	Dietary interventions for overweight/obese women prior to pregnancy – safety and efficacy of low calorie and low carbohydrate diets Noakes M, Brinkworth G, McMillen C, Clifton P, Norman R, Wittert G. Brailsford Roberston Grant	\$200,000
2005	Faculty Small Grant	\$21,000
2006-2008	The Florey Adelaide Male Ageing Study: promoting health wellbeing and utilisation of health services by middle aged and older men Premiers Science Research Council	\$300,000
2007-2008	Impact of nutrition, including long-chain Omega-3 polyunsaturated fatty acids on cognition and functional ageing Danthiir V, Wilson C, Nettelbeck T, Wittert G Brailsford Robertson Award:	\$200,000
2007-2009	Discovery Grant Declining mental efficiency, cognitive performance and individual differences in aged function Nettelbeck TJ, Burns NR, Wittert GA ARC DP0772346:	\$240,000
2007-2011	NH&MRC Clinical Centre of Research Excellence- Nutritional Physiology, Interventions and Outcomes Horowitz M, Clifton PM, Wittert GA, Chapman I, Fraser RJ, Rayner CK, Feinle-Bisset C, Jones KL NHMRC 453557:	\$2 Million
2007	Building a fit and healthy Australia. Premiers Science Research Council	\$1.4 Million

2007	Socio-economic status and overweight/obesity: supply of and access to (un)healthy food . Strategic Health Research Program South Australian Health Dept	\$200,000
2007	Automated image analysis system for the high throughput immunohistochemical analysis of clinical and experimental samples Tilley W, Owens J, Norman R, Findlay D, Rodgers R, Roberts C, Wittert G, Ricciardelli C et al NHMRC Equipment Grant 467207:	\$100,695
2007-2009	The safety and efficacy of rapid weight-loss using a modified very low calorie diet, followed by a weight maintenance strategy, on cardiovascular risk factors, vascular and ventricular structure and function in obesity and obesity related cardiovascular disease – [‘Healthy Weight for Life Project’]. Wittert G, Worthley S, Piantadosi C, McAinch A MBF Foundation Ltd:	\$146,955
2008-2010	Project Grant: Limiting weight gain in overweight and obese women during pregnancy to improve health outcomes – a randomised trial Dodd J, Turnbull D, McPhee A, Wittert G, Robinson J NHMRC 519240:	\$1,466,625
2008-2010	GPCRP: Better outcomes for obese children in general practice: randomised control trial of a new shared-care-model vs usual care Wake M, Gunn J, Gibbson K, Wittert G, Gold L NHMRC 491212:	\$640,000
2008-2009	Cardiovascular and Inflammatory Effects of Dietary Intervention in Obesity Worthley S, Wittert GA, Worthley M et al National Heart Foundation	\$120,000
2008	Healthy Ageing Research Cluster (HARC) Wittert G, Mayrhofer G, Ward L, Musgrave I, Gravier S University of Adelaide Research Committee (URC):	\$100,000
2008	Equipment for concurrent impedance, manometry and barostat recordings in nutritional physiology studies C Rayner, R Fraser, M Horowitz, G Wittert, C Feinle-Bisset, K Jones, P Clifton National Health and Medical Research Council Equipment Grant	\$52,000

2008	Distiller image analysis software and server, Tilley W, et al. NHMRC equipment grant	\$52,000
2009-2011	Australia's baby boomer generation, obesity and work – patterns, causes and implications Hugo GJ, Wittert GA, Adams RJ, Cobiac L, Daniel M, Findlay CC, Taylor AW, Wilson DH, Winefield HR, Woollacott AL, Ruffin R ARC Linkage project: 2009 \$221,000; 2010 \$207,000; 2011 \$213,000	
2009 – 2011	Effects of acute and longer-term dietary changes on gut function and appetite in lean and obese subjects Feinle-Bisset C, Clifton PM, Horowitz M, Jones KL, Wittert G. \$713,333	
2009-2011	Dr Amanda J Page, Prof L Ashley Blackshaw, Prof Gary A Wittert NH&MRC Project Grant 565186 Gastric hormones and vagal afferent satiety signals 2009-2011 \$529,500	
2010-2012	Wittert GA, Wilson DH, Adams RJ, Travison T, Taylor A, McKinlay J, Atlantis E. NH&MRC Project Grant 627227. Effect of sex steroids, inflammation, environmental and biopsychosocial factors on cardiometabolic disease risk in men. \$1,763,03.	

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PATIENT MANAGEMENT SOFTWARE AND EDUCATIONAL AIDS:

OBEMAN™ - Interactive, Obesity Management Software

HopSCOTCH – Software for the shared management of childhood obesity by hospital specialists and general practitioners.

PATENTS:

The use of AOD 9604 to treat depression – International Patent. #WO 03/09272 5 A1

PUBLICATIONS :

1. Wittert G.A., Donald R.A., Espiner E.A., Livesey J.H. The hormonal effects of pituitary surgery and irradiation: A review of 59 cases. *New Zealand Medical Journal* 1985, 98: 93-97
2. Wittert G.A., Joffe B., Shires R., Panz V., Seftel H. Clonidine has no effect on serum potassium changes during exercise. *New England Journal of Medicine* 1985, 5: 327
3. Wittert G.A., Joffe B., Shires R., Panz V., Baker S.G., Seftel H. Hypoglycaemic glucose counter-regulation in healthy subjects pre-treated with oral clonidine. *Journal of Endocrinological Investigation* 1987, 10: 621-622.
4. Wittert G.A., Espiner E.A., Donald R.A. Arginine Vasopressin in Cushings Disease. *Lancet* 1990, 335: 991-994.
5. Wittert G.A., Stewart D.E., Graves M.P., Ellis M.J., Evans M.J., Wells J.E., Donald R.A. and Espiner E.A. The plasma vasopressin (AVP) and Corticotrophin Releasing Factor (CRF) responses to intense exercise in athletes. *Clinical Endocrinology* 1991, 35:311-7.
6. Richards A.M., Wittert G.A., Espiner E.A., Yandle T.G., Frampton C. and Ikram H. EC 24.11 Inhibition in man alters clearance and bioactivity of atrial peptide. *Journal of Clinical Endocrinology and Metabolism*. 1991; 71:1317
7. Richards A.M., Wittert G.A., Espiner E.A., Yandle T.G., Frampton C. and Ikram H. Prolonged inhibition of endopeptidase 24.11 in normal man: Renal, Endocrine and Hemodynamic effects. *Journal of Hypertension* 1991; 91:1-8.

8. Richards A.M., Wittert G.A., Espiner E.A., Yandle T.G., Ikram H., and Frampton C. Effect of inhibition of endopeptidase 24.11 on responses to angiotensin II in human volunteers. *Circulation Research*. 1992; 71(6): 1501-7
9. Wittert G.A. and McKellar K. Thiazide induced hyponatraemia. *New Ethicals*, January 1992.
10. Wittert G.A., Or K.H., Livesey J.L., Richards A.M., Donald R.A., Espiner E.A. Vasopressin, corticotrophin releasing factor, atrial natriuretic factor, and pituitary adrenal responses to acute cold stress in humans. *Journal of Clinical Endocrinology and Metabolism*. 1992; 75:750-755.
11. Clyde J.W., Wittert G.A. Gilchrist N.L., Turner J.G., Donald R.A., Espiner E.A. The effect of parathyroidectomy on bone mineral density in primary hyperparathyroidism. *New Zealand Medical Journal* 1992; 105:71-2.
12. Wittert G.A., Livesey J.H., Or H.K., Donald R.A., Espiner E.A. Elevated corticotrophin secretion in Addison's disease is independent of change in plasma arginine vasopressin and corticotrophin releasing factor. *Journal of Clinical Endocrinology and Metabolism*. 1993; 76:192-196
13. Wittert G.A, Espiner E.A, Richards A.M, Donald R.A, Yandle T.G. Atrial natriuretic factor reduces vasopressin and angiotensin II, but not the ACTH response to acute hypoglycaemic stress in normal man. *Clinical Endocrinology*. 1993; 38:183-189.
14. Richards A.M., Wittert G.A., Crozier I.G., Espiner E.A., Frampton C. and Ikram H. Chronic inhibition of endopeptidase 24.11 in essential hypertension: evidence for enhanced atrial natriuretic peptide and angiotensin II. *J Hypertension* 1993; 11:407-416
15. Donald RA, Perry EG, Wittert GA, Chapman M, Livesey JH, Ellis MJ, Yandle T, Espiner EA. The plasma ACTH, AVP, CRH and catecholamine responses to conventional and laparoscopic cholecystectomy. *Clinical Endocrinology*. 1993; 38:609-615.
16. Majzoub J.A., Emanuel R.L., Adler G.K., Martinez C., Robinson B., Wittert G. Second messenger regulation of mRNA for corticotropin releasing factor. Chadwick DJ, Marsh J, Ackrill (eds), *Corticotropin releasing factor*, John Wiley & Sons 1993; Ciba Symposium 172:30-43.
17. Florkowski C.M., Wittert G.A., Lewis, J.G., Donald R.A., Espiner E.A. Glucocorticoid responsive ACTH secreting bronchial carcinoid tumours contain high concentrations of glucocorticoid receptors. *Clinical Endocrinology*, 1994;40:269-274.
18. Wittert G.A., and Loriaux D.L. Functioning disorders of the adrenal gland: A symptomatic approach. *Comprehensive Therapy*, 1994;20:358-362.
19. Wittert G., Hope P., Pyle D. Tissue distribution of opioid receptor gene expression in the rat. *Biochem Biophys Res Commun*. 1996, 218: 877-881.

20. Lavin J., Wittert G., Sun W-M., Horowitz M., Morley J.E., Read N.W. Appetite regulation by carbohydrate: Role of blood glucose and gastrointestinal hormones. *Am J Physiol-Endo Metab.* 1996 34:E209-214.
21. Yeap B.B., Russo A., Fraser R.J., Wittert G.A., Horowitz M. Hyperglycaemia affects cardiovascular autonomic nerve function in normal subjects. *Diabetes Care.* 1996, 19:880-882.
22. Wittert G.A., Livesey J., Espiner E.A., Donald R.A. Adaptation of the hypothalamo-pituitary adrenal axis to chronic exercise stress. *Medicine and Science in Sports and Exercise* 1996, 28:1015-1019.
23. Yeap Bu B, Burnet RB, Scroop G, Chatterton BE, Gaffney RD, Wittert GA. Chronic fatigue syndrome: is total body potassium important? *Med J Aust* 164(March):384 1996.
24. Nordin BE, Burnet RB, Wittert G, Fitzgerald S, Drummin L. Which bone to measure. *Australian Prescriber* 20(S3): 74-78, 1997.
25. Hope P.J., Wittert G.A., Horowitz M., Morley J.E. Feeding patterns of *S. crassicaudata* (Marsupalia: Dasyuridae): The role of gender, photoperiod and fat stores. *Am J Physiol.*1997, 272: R78-R83.
26. Perry III H.M., Morley J.E., Horowitz M.H., Kaiser F.E., Miller D.K., Wittert G.A. Leptin, Body composition and Age in African American Women. *Metabolism*, 46: 1399-1405, 1997.
27. Chapman I.M., Wittert G.A., Norman R. Circulating plasma leptin concentrations in polycystic ovarian disease. *Clinical Endocrinology* 1997, 46:175-181
28. Hope PJ, Pyle D, Daniels CB, Chapman I, Horowitz M, Morley JE, Trayhurn P, Kumuratilake J, Wittert GA. Identification of brown fat and a novel mechanism for energy conservation in the marsupial *Sminthopsis crassicaudata*. *Am J Physiol - Regulatory, Integrative and Comparative Physiology* 42(1): R161- R 167, 1997.
29. Hope PJ, Morley JE Chapman IC, Horowitz M, Wittert GA. Food intake and food choice: The role of the endogenous opioid peptides in the marsupial *Sminthopsis crassicaudata*. *Brain Research* 764: 39-45, 1997
30. Cook, C, Andrews J, Jones K, Wittert G, Chapman I, Morley J, Horowitz M. The effects of small intestinal nutrient infusions on appetite and pyloric motility are modified by age. *Am J Physiol - Regulatory, Integrative and Comparative Physiology* 42(2) R 755- R 761, 1997.
31. Scopacasa F, Horowitz M, Wishart JM, Need AG, Morris HA, Wittert G, Nordin BEC. Calcium supplementation suppresses bone resorption in early postmenopausal women. *Calcified Tissue Int* 62: 8-12, 1998.
32. Dummin, L. Burnet, R. B. Wittert, G. Fitzgerald, S. P. Nordin, B. E. C. Bone Densitometry in Clinical Practice: Forearm and Spinal BMD Changes in Untreated and Treated Postmenopausal Women *Osteoporosis International* 1997, VOL 7 SUPP/2, pages P067

33. Wittert GA, Hope P, Chapman I, Morley J, Horowitz M. Decreased glucose utilization does not increase food intake in the marsupial *Sminthopsis crassicaudata*. *Physiology and Behaviour*, 63: 31-34, 1998.
34. Chapman IM, Goble E, Wittert GA, Morley JE, Horowitz M. The effect of intravenous glucose and euglycaemic insulin infusions on short term appetite and food intake in healthy adults. *Am J Physiol - Regulatory, Integrative and Comparative Physiology* 43: R569-603, 1998
35. Lavin J., Wittert G., Andrews J., Horowitz M., Morley J.M., Read N.W. Appetite regulation by carbohydrate :The role of insulin and gut peptides. *American Journal of Clinical Nutrition*, 68:591-8, 1998.
36. Thomas N, Wittert GA, Scott G, Reilly P. Infection of a Rathke's cleft cyst - a rare cause of pituitary abscess. *J Neurosurg* 89 (4): 682, 1998.
37. Chapman IM. Goble EA. Wittert GA. Horowitz M. Effects of small-intestinal fat and carbohydrate infusions on appetite and food intake in obese and non-obese men *American Journal of Clinical Nutrition*. 69(1):6-12, 1999
38. Ng K-L, Vozzo R, Hope PJ, Chapman IM, Morley JE, Horowitz M, Wittert GA. Effect of dietary macronutrients on food intake and body weight and tail width in the marsupial *S crassicaudata*. *Physiology and Behavior* 66: 131-136, 1999.
39. Hope PJ, Chapman I, Morley JE, Horowitz M, Wittert GA. The effect of diet on the response to leptin in the marsupial *Sminthopsis crassicaudata*. *Am J Physiol*. 276 (Regulatory Integrative Comp. Physiol) 45: R373-R381, 1999.
40. Clements F, Hope P, Daniels C, Chapman I, Wittert GA. Thermogenesis in the marsupial *Sminthopsis crassicaudata*: Effect of catecholamines and diet. *Aust J Zool*. 46: 381-390, 1998.
41. Wittert GA. Obesity: The epidemic, recent advances and future trends. *South Australian Science Teachers Journal*, 98(3):27-, 1998
42. Vozzo R, Wittert G, Chapman I, Hope P, Horowitz M, Morley J. The effect of the nitric oxide synthase inhibitors L-NAME and L-NMMA on food intake in the marsupial *S crassicaudata*. *Comp Physiol Biochem Part C* 123: 145-151, 1999.
43. Kong M-F, Chapman I, Goble E, Wishart J, Wittert G, Morris H, Horowitz M. Effects of blood glucose and fructose on plasma concentration of GLP-1 and appetite in normal subjects. *Peptides* 20 (5): 545-551, 1999.
44. Vozzo R, Wittert GA, Horowitz M, Morley JE, Chapman IM. Endogenous nitric oxide does not affect short-term appetite and food intake in humans. *Am J Physiol* 276: R1562-R1568, 1999.

45. Hope PJ, Wittert GA, Turnbull H, Breed W, Morley J, Horowitz M. Ovarian steroids and alterations in photoperiod affect metabolic efficiency in the marsupial *Sminthopsis crassicaudata*. *Physiology and Behaviour* 69:463-470, 2000.
46. Hope PJ, Turnbull H, Farr S, Morley JE, Rice KC, Chrousos GP, Torpy GP, Wittert GA. Peripherally administered urocortin but not CRF is a potent anorectic factor. *Peptides* 21(5):669-677, 2000.
47. Hope PJ, Lok S, Webb GC, Hope R, Turnbull H, Wittert GA. Cloning of leptin cDNA and assignment to the long arm of chromosome 5 in the marsupial *Sminthopsis crassicaudata*. *Cytogenetics and Cell Genetics*. 90:1-2:, 22-29. 2000.
48. Nordin BE, Burnet RB, Fitzgerald S, Wittert GA, Schroeder BJ. Bone densitometry in clinical practice: longitudinal measurements at three sites in postmenopausal women on five treatments. *Climacteric*. Sep;4(3):235-42. 2001
49. Ainslie DA, Morris MJ, Wittert GA, Turnbull H, Proietto J, Thorburn AW. Oestrogen deficiency causes central leptin resistance and increases hypothalamic neuropeptide Y content in the rat. *Int J Obes Relat Metab Disord*. 25(11):1680-8, 2001
50. Su Y-C, Doran S, Wittert G, Chapman IM, Jones KL, Smout AJPM, Horowitz M. Effects of exogenous corticotropin releasing factor on antropyloroduodenal motility and appetite in humans. *Am J Gastroenterol*. 97(1):49-57, 2002.
51. Vozzo R., Su Y-C, Fraser R, Wittert GA, Horowitz M., Malbert CH, Shulkes A., Volombello T, Chapman IM. Antropyloroduodenal, cholecystikinin and feeding responses to pulsatile and non-pulsatile intraduodenal lipid infusion. *Neurogastroenterol Motil*. 14(1):25-33, 2002.
52. Vozzo R, Baker B, Wittert GA, Wishart J, Morriss H, Horowitz M, Chapman I. Glycaemic, hormones and appetite responses to monosaccharide ingestion in patients with type 2 diabetes. *Metabolism*. 51(8):949-57, 2002.
53. Matthew T. Haren John Morley Ian Chapman Peter O'Loughlin Gary Wittert. Defining "relative" androgen deficiency in aging men: How should testosterone be measured and what are the relationships between androgen levels and physical, sexual and emotional health? *Climacteric*. 5(1):15-25, 2002.
54. C Barton. March S, Wittert G.A. The Low Dose Dexamethasone Suppression Test: Effect of Time of Administration and Dose. *J Endocrinol Invest*. 25(4):RC10-2, 2002.
55. Luscombe ND, Noakes M, Clifton PM Wittert GA. Effects of energy-restricted diets containing increased protein on weight loss, resting energy expenditure, and adaptive thermogenesis in type 2 diabetes mellitus. *Diabetes Care*.25(4):652-7, 2002.
56. Keogh MA, Wittert GA. Effect of cabergoline on thyroid function in hyperprolactinaemia. *Clin Endocrinol (Oxf)*. 57(5):699, 2002.

57. Jesudason DR, Dunstan K, Leong D, Wittert GA. Macrovascular Risk and Diagnostic Criteria for Type 2 Diabetes: Implications for the use of FPG and HbA(1c) for cost-effective screening. *Diabetes Care.* 26(2):485-90, 2003.
58. Luscombe N.D. Noakes M., Farnsworth E, Clifton P.M, Wittert G. Effect of a high protein, energy restricted diet on weight loss and energy expenditure after weight stabilisation in hyperinsulinemic subjects. *International Journal of Obesity*;27:582-90. 2003
59. Farnsworth E, Luscombe N.D., Noakes M.,Wittert G, Argyriou E, Clifton P.M. Effect of a high protein, energy restricted diet on body composition, glycaemic control and lipid levels in hyperinsulinemic subjects. *Am J Clinical Nutrition*;78:31-9. 2003
60. Rosalie Vozzo, Gary Wittert, Carmel Cocchiario, Wen Chien Tan, Jane Mudge, Rob Fraser, Ian Chapman. High protein, high carbohydrate and high fat pre-loads and their effect on food intake in subjects who are free to choose when and how much they eat. *Appetite*;40:101-7, 2003
61. Gary Wittert, Ian Chapman, Matthew Haren, Shylie Mackintosh, Penelope Coates, John Morley. Low dose oral testosterone supplementation increases muscle mass and decreases fat mass in healthy elderly males with low-normal gonadal status. *J Gerontol*;58:618-25, 2003
62. Moran LJ, Noakes M, Clifton PM, Wittert G, Tomlinson L, Galletly C, Luscombe N, Tomlinson L, Norman RJ Ghrelin and measures of satiety are altered in polycystic ovary syndrome but not differentially affected by diet composition. *Asia Pac J Clin Nutr.* 12 Suppl:S52, 2003;
63. Benedikt Greutelaers, Katrin Kullen, James Kollias, Melissa Bochner, Anthony Roberts, Garry Wittert, Janice Pasioka, Peter Malycha. Pasioka illness questionnaire: its value in primary hyperparathyroidism *ANZ Journal of Surgery.* 74(3) 112. 2004.
64. Clements RH, Gonzalez QH, Long CI, Wittert G, Laws HL Hormonal changes after Roux-en Y gastric bypass for morbid obesity and the control of type-II diabetes mellitus. *Am Surg.* Jan;70(1):1—5, 2004.
65. Wittert GA Turnbull H, Hope P, Morley JE, Horowitz M. Leptin prevents obesity induced by a high fat diet after diet-induced weight loss in the marsupial *Sminthopsis crassicaudata*. *Am J Physiol Regul Integr Comp Physiol.* Apr;286(4):R734-9, 2004.
66. Brinkworth, G.D., Noakes, M., Keogh, J.B., Luscombe, N.D., Wittert, G.A., & Clifton, P.M. Long-term effects of a high protein, low carbohydrate diet on weight control and cardiovascular risk markers in obese hyperinsulinemic subjects. *Int J Obes Relat Metab Disord.* May;28(5):661-70, 2004.
67. Moran LJ, Noakes M., Clifton P, Wittert GA, Tomlinson L, Galletly C, Luscombe ND, Norman RJ. Ghrelin and measureds of satiety are altered in polycystic ovary syndrome but not differentially affected by diet composition. *J Clin Endocrinol Metab.* Jul;89(7):3337-44, 2004.
68. Hermann Toplak, Olivier Ziegler, Ulrich Keller, Andreas Hamann, Chantal Godin, Gary Wittert, Zanella, Zuñiga, Luc Van Gaal. Efficacy of orlistat in obese subjects receiving a mildly

reduced-calorie diet or moderate diet: Improved weight loss with early response to treatment. *Diabetes, Obesity and Metabolism*. Nov;7(6):699-708, 2005.

69. Darren Roffey, Natalie D. Luscombe Nuala Byrne Andrew Hills Max Bellon Chris Tsopelas Ian Kirkwood Gary A. Wittert. Use of [¹⁴C]-bicarbonate-urea to measure physical activity-induced increases in total energy expenditure in healthy men. *Asia Pac J Clin Nutr*. 14(1):83-90, 2005.
70. Haren MT, Wittert GA, Chapman IM, Coates P, Morley JE. The effect of 12-months of oral testosterone supplementation on the cognitive function, mood and quality of life of healthy elderly males with low-normal gonadal status: A randomised controlled trial. *Maturitas*. Feb 14;50(2):124-133, 2005.
71. Matthew T. Haren, Gary A. Wittert, Ian M. Chapman Penelope Coates John E Morley. Effect of 12-month oral testosterone on testosterone deficiency symptoms in symptomatic elderly males with low-normal gonadal status. *Age Ageing*. Mar;34(2):125-30, 2005
72. Holden C, McLachlan R, Pitts M, Cumming R, Wittert G, Handelsman D, De Kretser D. Men in Australia, Telephone Survey (MATEs) I: A National Survey Of The Reproductive Health And Concerns Of Middle Aged and Older Australian Men. *Lancet* Jul 16-22;366(9481):218-24, 2005.
73. Luscombe-Marsh ND, Noakes M, Wittert GA, Keogh JB, Foster P, Clifton PM. Carbohydrate-restricted diets high in either monounsaturated fat or protein are equally effective at promoting fat loss and improving blood lipids. *Am J Clin Nutr*. Apr;81(4):762-72. 2005.
74. McMahon CG, Stuckey BG, Lording DW, Wittert GA, Murphy A, Shin J, Sutherland PD, Palmer NR, Lowy MP, Jesudason DR, Fredlund P. A 6-month study of the efficacy and safety of tadalafil in the treatment of erectile dysfunction: a randomised, double-blind, parallel-group, placebo-controlled study in Australian men. *Int J Clin Pract*. Feb;59(2):143-9, 2005.
75. Lisa Moran, Natalie Luscombe, Gary Wittert, Jennifer Keogh, Manny Noakes, Robert Norman, Peter Clifton. The satiating effect of dietary protein is unrelated to post-prandial ghrelin secretion, *J Clin Endocrinol Metab*. 2005 Jul 12; [Epub ahead of print]
76. Gary A. Wittert, Helen Turnbull, Vicky Staikopoluos, Perdita Hope Exogenously Administered Leptin Increases Physical Activity in the Marsupial *Sminthopsis crassicaudata*. *Physiology and Behaviour*. 2005 Jul 20; [Epub ahead of print]
77. Carol A Holden, Robert I McLachlan, Robert Cumming, Gary Wittert, David J Handelsman, David M de Kretser, Marian Pitts Sexual activity, fertility and contraceptive use in middle aged and older Australian men: Men in Australia, Telephone Survey (MATEs). *Hum Reprod*. Dec;20(12):3429-34, 2005.
78. Chen R.Y.T, Wittert G.A., Andrews G.R. Relative androgen deficiency in relation to obesity and metabolic status in older men. *Diabetes Obesity and Metabolism* Jul;8(4):429-35, 2006

79. Smith J.A., Braunack-Mayer A, Wittert G.A. Help seeking and health service use among men: Are we working on the solution, or are we part of the problem? *Med J Aust.* Jan 16;184(2):81-3, 2006.
80. Wittert G & Chapman I. Physiology of gut hormones - An Overview. *Current Opinion in Endocrinology & Diabetes.* 13(1):36-41, February 2006.
81. Natalie.D.Luscombe, Christopher Tsopelas Max Bellon Peter.M.Clifton Ian Kirkwood, Gary.A.Wittert Use Of [¹⁴C]-Sodium Bicarbonate/Urea To Measure Total Energy Expenditure In Overweight Men And Women Before And After Low Calorie Diet Induced Weight Loss. *Asia Pac J Clin Nutr.* 15(3):307-16, 2006.
82. Moran LJ, Noakes M, Clifton PM, Wittert GA, Williams G, Norman RJ. Short-term meal replacements followed by dietary macronutrient restriction enhance weight loss in polycystic ovary syndrome. *Am J Clin Nutr.* Jul;84(1):77-87, 2006.
83. Ravinder Anand-Ivell, Jessica Wohlgemuth, Matthew T Haren, Perdita J Hope, George Hatzinikolas, Gary Wittert, members of the FAMAS consortium, Richard Ivell Declining INSL3 concentrations in men reveal true testicular aging. *Int J Androl.* Dec;29(6):618-26, 2006.
84. Haren MT, Kim MJ, Tariq SH, Wittert GA, Morley JE. Andropause: A Quality-of-Life Issue in Older Males. *Med Clin North Am.* Sep;90(5):1005-23, 2006
85. Holden C, McLachlan R, Pitts M, Cumming R, Wittert G, Handelsman D, De Kretser D. Men in Australia Telephone Survey (MATeS): predictors of men's help-seeking behaviour for reproductive health disorders. *Med J Aust.* Oct 16;185(8):418-22, 2006.
86. Jennifer B. Keogh, Manny Noakes, Natalie D. Luscombe-Marsh, Gary A. Wittert and Peter M. Clifton. Long term weight maintenance is not different after initial weight loss on a high protein or high fat diet which was similar in carbohydrate. *Br J Nutr.* Feb;97(2):405-10, 2007.
87. Donel M. Martin Gary Wittert, Nicholas R. Burns. Sex hormones and visuo-spatial cognition in males: implications for age-related cognitive decline; a review. *Aging Male.* Mar;10(1):17-29, 2007.
88. Sean A Martin, Matthew T Haren, Sue M Middleton and Gary A Wittert. The Florey Adelaide Male Ageing Study (FAMAS): Design, Procedures & Participants. *BMC Public Health.* 2007 Jun 27;7(1):126 [Epub ahead of print]
89. Martin S, Haren M, Taylor A, Middleton M, Wittert G, and Members of the Florey Adelaide Male Ageing Study (FAMAS). IJE Cohort Profile: The Florey Adelaide Male Ageing Study (FAMAS). *International Journal of Epidemiology.* Int J Epidemiol. April;36(2):302-6, 2007.
90. Philip Mohr, Carlene Wilson, Kirsten Dunn¹, Emily Brindal, Gary Wittert. Personal and lifestyle characteristics predictive of the consumption of fast foods in Australia. *Public Health Nutr.* Jun 13;1-8, 2007.

91. Cavuoto P, McAinch AJ, Hatzinikolas G, Cameron-Smith D, Wittert GA. Effects of Cannabinoid Receptors on Skeletal Muscle Oxidative Pathways. *Mol Cell Endocrinol*. Mar 15;267(1-2):63-9, 2007.
92. Lucy Gagliardi and Gary Wittert. Management of the Obese Type 2 Diabetic. "Management of Obesity in Patients with Type 2 Diabetes Mellitus. *Current Diabetes Reviews*, 3(2):95-101. May, 2007.
93. Martin D, Wittert G, Burns NR, Haren T. Testosterone and Cognitive Function in Ageing Men: Data from the Florey Adelaide Male Ageing Study (FAMAS). *Maturitas*. Feb 5; 20;57(2):182-94, 2007.
94. Wittert GA, Finer N, Caterson ID. Clinical Effectiveness of Medications for Weight-Loss. *Journal of Obesity Research and Clinical Practice*. 1(1): 1-5, 2007.
95. Moran LJ, Noakes M, Clifton PM, Wittert GA, Belobrajdic DP, Norman RJ. C- eactive protein Before and After Weight Loss in Overweight Women With and Without Polycystic Ovary Syndrome. *J Clin Endocrinol Metab*. 92(8):2944-51, 2007.
96. James A. Smith, Annette Braunack-Mayer, Gary Wittert, Megan Warin. "I've been independent for so damn long!": Independence, masculinity and aging in a help seeking context. *Journal of Aging Studies*, 21:325-335, 2007.
97. Moran L, Noakes M, Clifton P, Wittert GA, Le Roux CW, Ghatei MA, Bloom SR, Norman RJ. Post-prandial ghrelin, cholecystokinin, peptide YY and appetite before and after weight loss in overweight women with and without polycystic ovary syndrome. *Am J Clin Nutr*. Dec;86(6):1603-10, 2007.
98. Cavuoto P, McAinch AJ, Hatzinikolas G, Janovská A, Game P, Wittert GA. The expression of receptors for endocannabinoids in human and rodent skeletal muscle. *Biochem Biophys Res Commun*, Dec 7;364(1):105-10, 2007.
99. Martin DM, Wittert G, Burns NR, McPherson J. Endogenous testosterone levels, mental rotation performance, and constituent abilities in middle-to-older aged men. *Horm Behav*. Mar;53(3):431-41, 2008.
100. Janovska A., Hatzinikolas G., Staikopoulos V., McInerney, J., Mano M., Wittert, G.A. AMPK and ACC phosphorylations: Effect of leptin and muscle fibre type and obesity. *Mol Cell Endocrinol*. Mar 12;284(1-2):1-10, 2008.
101. James A Smith, Annette J Braunack-Mayer, Gary Wittert and Megan J Warin "It's sort of like being a detective": Understanding how Australian men self- monitor their health prior to seeking help. *BMC Health Services Research* 8:56, 2008.
102. Kirsten Dunn, Philip Mohr, Carlene Wilson, Gary Wittert. Attitudes Towards Fast Food in Australia: A Qualitative Analysis. *Appetite*. Sep;51(2):331-4, 2008.

103. Atlantis, E, Martin, SA, Haren, MT, Taylor, AW, Wittert, GA, Lifestyle factors associated with age-related differences in body composition: the Florey Adelaide Male Aging Study (FAMAS). *Am J Clin Nutr.* Jul;88(1):95-104, 2008.
104. Brindal E, Mohr P, Wilson C, Wittert GA. Obesity and the effects of choice at a fast food restaurant. *Obesity Research and Clinical Practice*;2:111-7, 2008.
105. Byles JE, Carroll M; Cumming B, Flicker L, Wittert G, Dobson A, Banks E, Mishra G, Russell C, Wainer. Mars and Venus: does gender matter in ageing? *Med J Aust.* Mar 3;188(5):271-3, 2008.
106. Sean A. Martin, Matthew T. Haren, Anne W. Taylor, Sue M. Middleton, Gary A. Wittert, and Members of the Florey Adelaide Male Ageing Study (FAMAS). Chronic disease prevalence and associations in a cohort study of Australian men: The Florey Adelaide Male Ageing Study (FAMAS) *BMC Public Health.* 30;8:261, 2008.
107. Jesudason D, Wittert G. Endocannabinoid system in food intake and metabolic regulation, *Curr Opin Lipidol.* 19(4):344-8, 2008.
108. Franzon, J, Hugo, G. Wittert, G. Wilson, D. Overweight and obesity in 4-year-old South Australian children and the stability of IOTF cut points in this age group. *Obesity Research and Clinical Practice* 2, 247—250, 2008.
109. Philp LK, Muhlhausler BS, Janovska A, Wittert GA, Duffield JA, McMillen IC. Maternal overnutrition suppresses the phosphorylation of 5'-AMP activated protein kinase (AMPK) in liver, but not skeletal muscle, in fetal and neonatal sheep. *Am J Physiol Regul Integr Comp Physiol.* Dec;295(6):R1982-90, 2008.
110. Smith J, Braunack-Meyer A, Warin M, Wittert GA, Qualities men value when communicating with GPs: Implications for primary care settings. *Med J Aust.* Dec 1-15;189(11-12):618-21, 2008.
111. Martin DM, Burns NR, Wittert G. Free Testosterone Levels, Attentional Control, and Processing Speed in Ageing Men. *Neuropsychology.* 23(2):158-67, 2009.
112. Cavuoto P and Wittert GA. The role of the endocannabinoid system in the regulation of energy expenditure. *Best Practice & Research Clinical Endocrinology & Metabolism.* *Best Pract Res Clin Endocrinol Metab.* Feb;23(1):79-86, 2009.
113. Chang J, and Wittert GA. Effects of bariatric surgery on morbidity and mortality in severe obesity. *International Journal of Evidence-Based Healthcare.* March; 7(1): 43-48(6), 2009.
114. Adam J Nelson, Matthew I Worthley, Peter J Psaltis, Angelo Carbone, Benjamin K Dundon, Rae F Duncan, Cynthia Piantadosi, Dennis H Lau, Prashanthan Sanders, Gary A Wittert and Stephen G Worthley. Validation of Cardiovascular Magnetic Resonance Assessment of Pericardial Adipose Tissue Volume. *Journal of Cardiovascular Magnetic Resonance.* *Cardiovasc Magn Reson.* May 5;11(1):15, 2009.

115. Evan Atlantis E Sean A Martin, Matthew T Haren, Peter D O'Loughlin, Anne W Taylor, Ravinder Anand-Ivell, Richard Ivell, Gary A Wittert and Members of the Florey Adelaide Male Aging Study, Demographic, physical and lifestyle factors associated with androgen status: the Florey Adelaide Male Aging Study (FAMAS) *Clinical Endocrinology*;71(2):261-272, 2009
116. Evan Atlantis, Sean A Martin, Matthew T Haren, Anne W Taylor, Gary A Wittert and Members of the Florey Adelaide Male Aging Study. Inverse associations between muscle mass, strength, and the metabolic syndrome. *Metabolism*. Jul;58(7):1013-22, 2009.
117. Eleanor F Need, Howard I Scher, Albert Cheong, Howard C Chen, Gerhard A Coetzee, Gary A Wittert, Lisa M Butler, Wayne D Tilley, Grant Buchanan. Amino Terminal activation functions cooperatively control androgen receptor signalling via the N/C interaction and p160 binding. *Endocrinology*. Jun;150(6):2674-82, 2009.
118. Eleanor F. Need, Peter D. O'Loughlin, David T. Armstrong, Matthew T. Haren, Sean A. Martin, Wayne D. Tilley, the Florey Adelaide Male Aging Study, Gary A. Wittert and Grant Buchanan Serum testosterone bioassay evaluation in a large male cohort. *Clinical Endocrinology* (Published Online: 28 Mar 2009).
119. Atlantis E, Lange K, Wittert GA. Chronic disease trends due to excess body weight in Australia *Obesity Reviews* Sept;10(5)543-553, 2009.
120. McLachlan R and Wittert GA. The obesity epidemic: Implications for recruitment and retention of defence force personnel. *Obesity Reviews* Nov;10(6):693-9, 2009.
121. Nelson AJ and Wittert GA. Medical Education: Revolution, Devolution and Evolution in Curriculum Philosophy and Design. *Medical Journal of Australia*;191(1)35-37, 2009.
122. Mah P-M and Wittert G.A. Obesity and Testicular Function. *Mol Cell Endocrinol*. (Published Online 18 June 2009).
123. Smith AE, Ridding MC, Higgins RD, Wittert GA & Pitcher JB. Age related changes in short latency motor cortex inhibition. *Experimental Brain Research*; 198 (4):489-500, 2009.
124. Atlantis E, Goldney R, Wittert G. Depression and Obesity (Invited Editorial). *BMJ*;339:b3868, 2009.
125. Wilson DH, Appleton SL, Taylor AW, Tucker G, Ruffin RE, Wittert G, Hugo G, Goldney RD, Findlay C, Adams RJ. Depression and obesity in adults with asthma: multiple comorbidities and management issues. *Medical Journal of Australia*. *Med J Aust*. 2010 Apr 5;192(7):381-3.
126. Zumin Shi, Anne Taylor, Gary Wittert, Robert Goldney, Tiffany Gill. Soft drink consumption and mental health problems among adults in Australia. *Public Health Nutrition Public Health Nutr*. 2010 Jan 15:1-7. [Epub ahead of print].
127. Carol A Holden, Robert I McLachlan, Marian Pitts, Robert Cumming, Gary Wittert, Johnathon P Ehsani, David M de Kretser and David J Handelsman. Determinants of male reproductive

- health disorders: The Men in Australia Telephone Survey (MATEs). BMC Public Health. 2010 Feb 24;10:96.
128. Janovska A, Hatzinikolas G, Mano M, Wittert GA. The effect of dietary fat content on phospholipid fatty acid profile is muscle fiber-type dependent. *Am J Physiol Endocrinol Metab*. 2010 Jan 19. [Epub ahead of print]
 129. Zumin Shi, Natalie D. Luscombe-Marsh, Gary A. Wittert, Baojun Yuan, Yue Dai, Xiaoqun Pan, and Anne W. Taylor. Monosodium glutamate is not associated with obesity or a greater prevalence of weight gain over 5 years: findings from the Jiangsu Nutrition Study of Chinese adults. *Br J Nutr*. 2010 Apr 7:1-7. [Epub ahead of print]
 130. Khoo J, Piantadosi C, Worthley S, Wittert GA. Effects of a modified low-calorie diet on sexual function and lower urinary tract symptoms in obese men. *Int J Obesity Int J Obes (Lond)*. 2010 Apr 20. [Epub ahead of print]
 131. Wong C, Abed H, Molaee P, Nelsom AJ, Brooks AG, Leong D, Lau DH, Roberts-Thompson KC, Wittert GA, Abhayaratna W, Worthley S, Sanders P. Pericardial fat is associated with atrial fibrillation severity and ablation outcome *JACC* (Accepted, September 2010)
 132. Zumin Shi, Anne W. Taylor, Robert Goldney, Helen Winefield, Tiffany K. Gill, Jane Tuckerman, Gary Wittert. The use of a surveillance system to measure changes in mental health in Australian adults during the global financial crisis. *International Journal of Public Health*. (Accepted 5/10/10).
 133. Sean A Martin, Matthew T Haren, Villis Marshall, Kylie Lange, Gary Wittert and Members of the Florey Adelaide Male Ageing Study. Prevalence and factors associated with uncomplicated storage and voiding lower urinary tract symptoms in community-dwelling Australian men. *World Journal of Urology* (Accepted 6/10/10).
 134. Evan Atlantis, Kylie Lange, Robert D Goldney, Sean Martin, Matthew T Haren, Anne Taylor, Peter D O' Loughlin, Villis Marshall, Wayne Tille, Gary A Wittert. Specific comorbidities associated with clinically significant depressive symptoms in men. *Soc Psychiatry Psychiatr Epidemiol*. 2010 Oct 26. [Epub ahead of print]
 135. Cortisol response to acute trauma and risk of posttraumatic stress disorder" *Psychoneuroendocrinology* (Accepted 15/10/10).
 136. Araujo A and Wittert G. Endocrinology of the Aging Male. *Best Practice & Research: Clinical Endocrinology & Metabolism* (Accepted)
 137. Smith AE, Sale MV, Higgins RD, Wittert GA, Pitcher JB. Male human motor cortex stimulus-response characteristics are not altered by ageing" *J Appl Physiol*. 2010 Nov 11. [Epub ahead of print]
 138. Perceptions of Obesity in Self and Others (Obesity Research and Clinical Practice)

139. Yan Y Lam, Alena Janovská, Andrew J McAinch, Damien P Belobrajdic, George Hatzinikolas, Philip Game, Gary A Wittert. An adipose tissue-skeletal muscle myotube co-culture system to study the effect of secretory factors from adipose tissue on insulin-stimulated glucose uptake in L6 myotubes: the roles of interleukin-6, nuclear factor kappa B and mammalian target of rapamycin pathways in visceral fat-induced insulin resistance (submitted).
140. Yan Y Lam, Alena Janovská, Andrew J McAinch, George Hatzinikolas, Philip Game, Gary A Wittert. Insulin-stimulated glucose uptake and pathways regulating energy metabolism in skeletal muscle cells: the effects of subcutaneous and visceral fat, and long-chain saturated, n-3 and n-6 polyunsaturated fatty acids (submitted)

CHAPTERS IN BOOKS:

1. Donald RA and Wittert GA. Stress and ACTH regulation. Kohler P.O. (ed). Current Opinion in Endocrinology and Diabetes, 1994;1:93-99.
2. Coates P and Wittert G. Miscellaneous Hormones. In: Mylers Side Effects of Drugs Annual (Dukes MNG ed), Elsevier Press, Amsterdam.
3. Wittert G.A., Fraser R.J., Morley J.E. The Endocrine System of the Gastrointestinal Tract. In: Endocrinology: Basic and Clinical Principles (M.Conn & S. Melmed eds) Humana Press Inc., Totowa, N.J. 1996, 321-345
4. Wittert GA, Morley JE. Effects of aging on the hormonal response to stress. In: Endocrinology of critical disease (K.P. Ober ed) Humana Press Inc., Totowa, N.J. 1997
5. Wittert GA. The response of the HPA axis to physical activity. The Endocrinology Of Exercise (M Warren ed) Humana Press Inc., Totowa, N.J. 2000.
6. Wittert GA. Morley JE. In: Aging and Fat Cell Metabolism. In: The Science of Geriatrics. (Morley, J.E., Armbrecht, H.J., Coe, R.M. & Vellas B. eds.) Serdi Publisher, Paris, 2000.
7. Coates P & Wittert GA. Osteoporosis in the Elderly. A Practical Guide to Geriatric Medicine. (Ratnaik ed) McGraw-Hill Book Company Australia Pty Ltd. In Press 2001.
8. Wittert G. A. Obesity and the Metabolic Syndrome. Ch 5 Nutritional Disorders. Merck Manual 18th Edition. 2003.
9. Wittert G.A. Obesity in the Elderly. Progress in Obesity Research: 9. Edited by Medeiros-Neto G., Halpern A., Bouchard C. John Libbey Eurotext Limited. 24-46 High St, Esher, Surrey, United Kingdom, KT10 9QY. 2003.
10. Morley JE, Perry HM, Wittert GA. Testosterone and Aging. In: Pathophysiology and Treatment of Male Sexual and Reproductive Dysfunction. Edited by Fouad Kandeel, M.D., Ph.D. Marcel Dekker, Inc. 270 Madison Avenue, New, York, New York 10016. In press 2004.

11. Morley JE and Wittert GA. Male hormones and systemic disease. In: Pathophysiology and Treatment of Male Sexual and Reproductive Dysfunction. Edited by Fouad Kandeel, M.D., Ph.D. Marcel Dekker, Inc. 270 Madison Avenue, New, York, New York 10016. In press 2004.
12. Warrick J Inder, Gary A Wittert. Exercise and the Hypothalamo-Pituitary-Adrenal Axis. In: The Endocrine System in Sports and Exercise (IOC Encyclopedia). Edited by William J Kraemer and Alan D Rogol. In press 2005.
13. Wittert G.A. Obesity in the elderly. In Principles and Practice of Geriatric Medicine 4th Edition. In Press 2005.
14. Wittert G. A. Obesity and the Metabolic Syndrome. Merck Manual Professional Edition. 2007
15. Wittert G.A. A 30 year old woman with amenorrhea. In Davidson's Clinical Cases. Edited by Mark W.J. Strachan, Surendra K. Sharma, John AA Hunter. Churchill Livingstone, Elsevier Ltd, 1600 JFK Boulevard, Philadelphia, PA, 19013, USA, Ch 49. 2008.
16. Wittert G.A. A. A Middle Aged Man with Muscle Cramps. In Davidson's Clinical Cases. Edited by Mark W.J. Strachan, Surendra K. Sharma, John AA Hunter. Churchill Livingstone, Elsevier Ltd, 1600 JFK Boulevard, Philadelphia, PA, 19013, USA, Ch 51. 2008.
17. Joan Khoo, Christopher K Rayner, Christine Feinle-Bisset, Gary Wittert. Role of the gastrointestinal tract in peptide hormone release and appetite.
18. Wittert G.A. and Nelson A. A Cost Effective Approach to Problem Based Learning.

Books

1. Wittert GA. A Practical Approach to Obesity Management. Roche Press. 2004
2. Haslam D and Wittert GA. Fast Facts:Obesity. Health Press Limited, Elizabeth House, Queen Street, bingdon, Oxford OX14 3LN, UK.

Expert Reports and Guidelines

1. Baur L, Bonfiglioli C, Caterson I, Colagiuri R, Cretikos M, Leeder S, Murray K, Pearson S, Sim K, Torode M, Wake M, Wittert G. (2007) *Recommendations of the 2007 Healthy Lifestyle Forum to Help Combat Childhood Obesity*. Sydney: Sydney University Nutrition Research Foundation.
2. Geoff Farrell Gary Wittert, , Graeme Macdonald, Jacob George, Martin Weltman, Michael Storman. Fatty Liver Disease. 1st Edition 2007 © Digestive Health Foundation 2007
3. Defence Health Services Division: Obesity, body Mass Index and Health Study, July 2007 Literature Review, 3 July 2007. Centre for Military and Veterans Health.

4. Defence Health Services Division: Obesity, Body Mass Index and Health Study. Standardised Screening and monitoring programmes. 7th August 2007. Centre for Military and Veterans Health.
5. The Role of Dietary Protein in Weight Control. Report of a workshop at the Institute of Obesity, Nutrition & Exercise University of Sydney December 9, 2008

MR HENRY CALLS 1
+GARY ALLEN WITTERT AFFIRMED 2
PROFESSOR OF MEDICINE AND ENDOCRINOLOGIST 3
+EXAMINATION BY MR MANOS 4
Q. Looking at MFI Exhibit Y produced, is the document 5
that's just now been proposed - shown to you, is that 6
the statement of evidence that you prepared relevant to 7
this matter. 8
A. Yes, it is. 9
Q. Including a number of annexures. 10
A. Yes, it is. 11
Q. Before we tender it, at para.27 you reference, 27D, you 12
reference a paper that document is the accepted process 13
of evaluation of a public health risk. But I think 14
that the attachment, No. 11, is in fact the wrong 15
document, is that correct. 16
A. Yeah, that's correct. That refers to the additional 17
attachment that was provided and the attachment that's 18
referred to is attachment 11 relating to landfall, it 19
relates to a subsequent statement indicating that other 20
environmental developments could provide similar 21
adverse effects and that is - 22
MR HENRY: Your Honour, have I provided to the court 23
a flurry of paperwork - I'm not quite sure, 1.20 'Risk 24
Assessment'? 25
HIS HONOUR: Yes. 26
MR HENRY: Could the spare copy of that be shown to 27
Professor Wittert. I'm not sure that's been tendered. 28
CONTINUED 29
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HIS HONOUR: No, it came to us as part of an email and to be I'm not sure. 1
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MR HENRY: A spare copy might not have been printed off. Perhaps I'll just invite the court to produce this to the witness. 3
4
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XN 6

Q. Is this the document that you had intended to reference in para.27(d). 7
8

A. Yes. The document that was there referenced relates to point 38.3 but no matter. 9
10

MR HENRY: So I tender that document. That's the risk assessment document. 11
12

HIS HONOUR: Now do you want that to be part of Exhibit Y or do you want it separate? 13
14

MR HENRY: Probably best to be a separate exhibit because attachment 11 in fact serves a legitimate but different purpose within the statement. 15
16
17

EXHIBIT #AA 1.20 RISK ASSESSMENT TENDERED BY MR HENRY. 18
19
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XN 21

Q. I wonder if you would take us briefly to those passages in that exhibit which you say demonstrates the accepted process of evaluation of a public health risk in particular. 22
23
24
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A. So the relevant material can be found on table which is labelled fig.2 and below table 3 and that's found on p.458 and there's a graphical representation of that process which precedes it which is fig.1 which is found on p.453. 26
27
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Q. Again briefly are you able to describe for us in summary form what that accepted process of evaluation of a public health risk is just in abbreviated form. 31
32
33

A. Sure. So the paper refers to toxicology but I don't think it matters what the environmental or chemical stimulus happens to be the process would be exactly the same. It would require identification of a hazard and then a plausible set of exposure assessments and risk 34
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characterisation including dose response assessments to 1
allow some opinion to be made about cause and effect 2
relationships. The detail of how that process may 3
proceed might include a number of independent studies 4
with consistent results as opposed to a single study. 5
It may include analyses across a single site of 6
different species or in the case of toxicology using 7
structural analogues and again you're looking for 8
consistency rather than inconsistency, multiple 9
observations of different sites, different species 10
within sectors and then severity and progression. So 11
this is dose response relationships. Root of 12
administration is not relevant here because it's 13
consistent. 14

Q. Are you saying that nothing of that nature has been 15
done to date in respect of the asserted health impacts 16
said to arise from wind farms. 17

A. The asserted impacts are as described both in my 18
statement and in Dr Laurie's evidence are not disagreed 19
on. That's an observation that I would dispute that 20
there's any clear evidence of cause and effect and that 21
there are no sufficient analyses that have provided any 22
form of assessment as to whether alternative causes 23
could account for those that allows an appropriate 24
conclusion to be made. In the case control study which 25
I don't have access to the details of and can't be 26
evaluated and has to be considered therefore suspicious 27
in terms of whether there are confounders or biases 28
both in terms of the selection of the subjects as you 29
alluded to in your cross-examination or in terms of the 30
way the assessments were made as to whether there are 31
any confounds. Prior psychological history may be one, 32
attitudes to life, marital status, marital stress, 33
financial difficulties, obesity and obstructive sleep 34
apnoea as we've heard may all be others. So that in a 35
case control study unless all of those factors are 36
carefully considered then it's quite possible to make 37
erroneous conclusions and indeed the literature is 38

littered with case control studies that have misled 1
public health in that context and it highlights the 2
rigour that when an observation is made and no-one is 3
doubting the nature of the symptoms experienced but I 4
would sincerely question whether the case has been made 5
that there are cause and effect relationships. Indeed 6
when I've been provided with objective data and one of 7
the ways that case control studies propose to overcome 8
this issue of confounding and bias is to find an 9
objective measure. Measurements of blood pressure are 10
not perfect but they're not a bad objective measure and 11
I was pleased to have received the work that Dr Laurie 12
provided and the effort that was put into it by the 13
individuals concerned of collecting their blood 14
pressures because that formed the level of objectivity 15
that demonstrated quite clearly to me just with a very 16
simple spreadsheet and analytical process that in fact 17
when the turbines were off the blood pressures were 18
just as high if not higher than when the turbines were 19
on. Now - 20

Q. We'll come to that in a moment in more detail. But for 21
present purposes as far as what you say in para.27(d) 22
is concerned you've taken us to the risk assessment 23
reference which is Exhibit AA. Effectively you're 24
telling us that the data that's been collected and the 25
work that's been done so far has not identified a risk 26
which calls for further investigation. 27

A. No, and there's no fundamental epidemiological signal. 28
In countries where there are dense concentrations of 29
wind farm like in the rest of Europe the prevalence of 30
hypertension if anything is falling according to the 31
most recent surveillance data which is very well kept 32
by the EU and World Health Organisation. So there's no 33
signal of an ecological effect. 34

Q. So that deals with 27(d). Can I ask you before I 35
tender your statement to turn to para.28 of your 36
statement. You deal there with certain aspects of 37
potential effects on domestic animals and livestock. 38

Now what aspect of your qualifications and experience 1
do you draw upon in presenting the information in 2
para.28. 3

A. There's two reasons for presenting information in 4
para.28. 5

HIS HONOUR: Before you continue, professor. Mr Henry, 6
I think this may be a bit difficult for you might it 7
not. I've already said that we don't propose to draw 8
any inference one way or another about this sort of 9
evidence. I don't know where this is going but having 10
said that yesterday and even though it's not objected 11
to - 12

MR HENRY: That's the reason for me asking these 13
questions prior to tendering the report is that it's 14
important for Professor Wittert to spell out the chain 15
of reasoning that he has adopted in respect to the 16
material that he's presented in para.28. 17

HIS HONOUR: Very well. 18

MR HENRY: It's best for him to give that evidence 19
rather than me summarise it I would respectfully 20
submit. 21

A. Thank you, your Honour, I'll deal with the second point 22
first. Considerable amount of the work that I do 23
relates to experimentation in animals like it or not 24
and that includes a range of physiological responses 25
from reproduction to food intake and a whole bunch of 26
complex behaviours in between. The species of animals 27
include sheep, rats, mice and small native marsupials 28
and therefore I believe that I have sufficient detailed 29
knowledge of animal physiology to at least use the 30
example to assess the literature for credible evidence 31
of animal effects which one might like to see if there 32
were the levels of infrasound being described and 33
indeed the level of health effects being described and 34
also to deal with this issue of anecdotal report where 35
it depends on who you ask and what you see. So the 36
notion of pulling something out of a blog says well one 37
person says and the other people say, so therefore 38

there's no credible evidence of an effect of animals
and I believe that I'm sufficiently qualified to
comment.

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Q. And as far as where the material in para.28 fits into your analysis, do you say that if wind farms were causing physiological impacts on human beings, you would expect also to find some evidence of physiological impact on animals.

A. Yes, I would. And that would include things that affected sensitive processes linked to reproduction and/or food intake. Therefore you would expect to see dairy production drop dramatically, or you would expect to see significant effects on animal reproduction. I've scoured the literature using just about every data base I can find, and I cannot find any information that primary production in Europe has been affected by the presence of wind farms - and I use Europe as the example because of the densest concentration of wind farms.

Q. Is this the case - your reasoning as far as para.28 is concerned is that there's an absence in the published data of any reference to adverse effects on animals -

A. Yes.

Q. - and that informs your reasoning about the likelihood of physiological effects on human beings.

A. Yes, it does.

MR HENRY: I tender the statement.

HIS HONOUR: Mr Manos?

MR MANOS: There are a number of documents which we received and are not particularly relevant - and your Honour's allowed the evidence in relation to the animals - I didn't object initially because I want to ask the witness some questions about it as well.

HIS HONOUR: I understood the reason it's only marked for identification is that you wanted to object to it? I'm not inviting you to do it, but -

MR MANOS: No, there was a document I had some objection to and I can't remember which one it is now, but I don't think we need to waste any more time on it.

EXHIBIT #Y MFI Y REPORT OF PROFESSOR WITTERT AND ATTACHMENTS 1
TENDERED BY MR HENRY. ADMITTED. 2

XN 3
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Q. Your CV appears at tab 1 and it's 28 pages long. Can I 5
ask you to briefly identify the aspects of your 6
qualifications and experience which are of particular 7
relevance to the subject matter of the material that 8
you've presented. 9

A. The first is - apart from being a registered medical 10
practitioner and a trained physician is that I've 11
worked in rural general practice, I did so in the rural 12
south island area of New Zealand - that's for 12 13
months. I understand rural communities and I 14
understand rural general practice. The second is, I 15
have expertise in endocrinology - the issue of 16
endocrinology and stress effects, with a subject of my 17
MD at the University of Otago - and subsequent post 18
doctoral work in the United States. And specifically 19
looking at the effects of various physiological 20
stresses and cortisol production and the mechanisms of 21
cortisol regulation. A considerable amount of work 22
that I do over the past several years relates to 23
epidemiology and investigation of large cohorts. This 24
includes an extensive analysis of biopsychosocial 25
factors and their effects on health. I have an 26
interest in and have published on the relationship 27
between depression and stress and health outcomes. I 28
have an ongoing interest, right from the early days of 29
my training, in hypertension - and have published 30
reasonably extensively on hypertension in various 31
contexts. And on an ongoing basis we have been 32
conducting home sleep studies for the purposes of 33
analysis of effects on health in the Florey Adelaide 34
Male Aging Study. 35

Q. You've heard Dr Laurie's evidence. 36

A. I have. 37

Q. I want to ask you some questions about paras.36 and 37 38

- of your statement. They deal with somatoform disorders and the nocebo effect. Before we come to what Dr Laurie said, can I just get you to amplify, as it were by way of explanation, what a somatoform disorder is.
- A. Somatoform disorder refers to a physical problem where the cause of that physical problem relates from some input into the psychological state of the central nervous system. So perception of how things are for you may lead to some disease states. Now there is no assertion in my evidence - at least I hope it's not interpreted that way, that these are not real physical problems - these are indeed, to the individuals who experience them, very real physical problems and often associated with objective measures of disorder. It simply says there's a mind/body connection and that one cannot separate what happens in the mind from what happens in the body. That's the basis for a somatoform disorder.
- Q. And the nocebo effect.
- A. The nocebo effect most simply is the opposite of a placebo effect. In studies, for example, of erectile dysfunction - which seems to be a rather definitive state for the people so effected, up to 30% of people given a placebo tablet will report an improvement in their erectile function. The nocebo effect is the opposite and it's interesting to hear Dr Laurie acknowledge the point that if you generate anxiety in people they become unwell, that's the nocebo effect.
- Q. And you heard her evidence, she asserted that she'd seen no evidence of a nocebo effect or indeed a somatoform disorder in the people she'd seen at Waubra. Are you able to make any comment about what she said there.
- A. I can't comment on the accuracy or otherwise, but I see no evidence that such possibility is considered.
- Q. In the data that she's provided or the -
- A. It's not possible to make an assessment of my own based

on the data that's provided as the extent to which this may or may not be a somatoform. What's interesting is having been told that some of these effects are durable in terms of extending beyond the terms that the turbine is on and then to see that when someone moves away from the personal diary within hours of driving out of Waubra they seem to be cured. It seems to be inconsistent with this durability of effect and makes one wonder about the mind/body connection for some of these things. So I don't doubt that if you don't like what you fancy you feel in a particular environment and you change environments you'll feel better - and that's not uncommon.

Q. Can I ask you to turn to p.8 of your statement. In para.33 you reference a publication by the National Health and Medical Research Council.

A. Yes.

Q. Can you explain for us the role and the function of that body.

A. The National Health and Medical Research Council is the peak body in Australia constituted by the Federal Government and reporting to the minister, that is charged with the conduct of health and medical research - as well as providing advice that would help form the basis of health policy and evidence based practice guidelines.

Q. And the document at attachment 14 is referred to as a rapid review. Can you tell us what term means in respect of the document.

A. Yes, it means that a review has been commissioned and the terms of reference require it to be completed within six months.

Q. As opposed to a lengthier period, which other references might call for.

A. Correct, and I believe this may have been done given the urgency that the NH&MRC felt in providing some advice.

- Q. Does the rapidity of the response call into question the quality of the response. 1
2
- A. I do not believe so. 3
- Q. At the end of the day then, is it the position that peak Federal body concerned with medical research has concluded that there is insufficient basis for further research into the questions that we are concerned with here. 4
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- A. Well, they have certainly concluded that there is insufficient evidence to be concerned about a significant health effect on wind farms, and I can't see that, based on the information that I have had access to, that a case can be made for any kind of research that can be done in a rapid form as Dr Laurie asserts. 9
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- Q. I might turn next then to the work you did - 16
- HIS HONOUR: Before you do, Mr Henry - 17
- HIS HONOUR 18
- Q. As I understood the criticism by Dr Laurie of that review, it was that there wasn't the personal input from those who complained of problems living next to or nearby to wind farms. Do you have any comment to make about that. 19
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- A. The way that an evidence-based review would be conducted is based on published literature, so the reliance would be almost entirely on that, as opposed to the inquiry that is currently being run by the Federal government, which would take submissions from members of the public that felt affected. So if someone had done a case control study or a epidemiological or ecological study of some sort and published it, then the NH&MRC would have considered that document, but not invited individuals or spoken to individuals. 24
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- Q. Well, I appreciate that, but that's Dr Laurie's criticism. Do you agree with that, that the absence of that sort of material detracts from the force of the conclusions or not. 35
36
37
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A. Well, I think it would confound the confusion, because 1
my contention is, and I believe the contention from the 2
NH&MRC, of that sort of evidence, is that it's 3
anecdotal and conclusions cannot be made, other than to 4
generate anxiety. 5

Q. So does it follow from that that were there to be a 6
significant epidemiological study, that would find its 7
way into, or in all likelihood, the review and would 8
have been considered as a - 9

A. That is correct. 10

Q. - as a study. 11

A. That is correct. 12

XN 13

Q. Now, I think you started to touch on this, but Exhibit 14
Z is a summary of some work that you did in analysing 15
the blood pressure data from three of the subjects that 16
Professor Laurie has referenced. I'll just get you to 17
turn to that, have you copy of it? 18

A. No. 19

Q. Now, looking now at Exhibit Z, the way in which this 20
material has been brought about, Exhibit A24 is the raw 21
data for your work in Exhibit Z, is that correct. 22

A. Yes. 23

Q. They are the journal entries for five subjects, AR, GW, 24
BMJ, RB and GB. 25

A. Correct. 26

Q. You have analysed three of them. 27

A. Correct. 28

Q. But not analysed the other two. 29

A. Correct. 30

Q. The reason why you haven't analysed the other two. 31

A. There's two reasons, the one is because it got very 32
late at night and I did it just after I got back from a 33
holiday, but I identified those two that I didn't 34
analyse as being normotensive. Therefore, the issue 35
was moot and I was interested in the three where there 36
was clear evidence of elevated blood pressure. 37

Q. Elevated blood pressure, for your purposes, is 38

something over 140/90. 1

A. I took systolic at 140 and a diastolic as 90 being 2
reflective of levels that I would generally consider 3
treatment. 4

Q. The two subjects that you didn't plot graphs for in 5
fact didn't have blood pressures over those trigger 6
points. 7

A. Correct. 8

Q. Is it the case that in the data that you have presented 9
graphically in Exhibit Z, you have simply taken the 10
data from Dr Laurie's journals. 11

A. I did. The process was since Dr Laurie's instruction 12
to the people who participated in the study did try to 13
find some evidence of approval by an ethics committee 14
but was unable to locate that, but assuming that 15
informed consent had been given, there was an 16
instruction to record blood pressure first thing in the 17
morning, on waking and before eating, and therefore, 18
what I did was tabulated into a spreadsheet separately 19
the systolic and diastolic blood pressure which was the 20
first morning pressure that I could find. 21
Concurrently, and I could only do all of the 22
information for AR, I recorded when there was symptoms 23
being experienced, I could do symptoms for everybody, I 24
could do audibility of the turbines for AR, and I also 25
recorded wind direction and where it was - the 26
information was available, I recorded wind intensity, 27
and I then created a column which I could only do from 28
the dates that information was available, which was 29
mostly, I guess, November, for the most part, record 30
the average nocturnal output from the wind turbines. 31

Q. You have taken that data, as I understand it, from the 32
material at tab 6 in Exhibit A24. 33

A. That is correct. 34

Q. So time being short, I'll just see if I can take you to 35
a handful of these graphic presentations on the - will 36
you go to the data for AR and then to graph 2.2 for me. 37

A. Yes. 38

Q. That deals with the waking systolic. 1

A. That's correct. 2

Q. And mean overnight turbine power. Is this correct, 3
where you have identified that overnight turbine power 4
was zero, you found four reported waking systolic 5
values. 6

A. Correct. 7

Q. You have plotted them against the zero overnight 8
turbine power. 9

A. Correct, so the initial plotting was of the blood 10
pressure, and then when I could find overnight turbine 11
powers, I have created a last column where that was 12
included, and also a column with comments. So the 13
information was consistently documented in the 14
spreadsheet as instructed for the participants to 15
record by Dr Laurie and then I took average turbine 16
power overnight. Now, where I have recorded zero, that 17
had to be zero for the entire night, so if there were 18
any portion of the night that was zero and other 19
portions of the night that there was turbine output, 20
then it was recorded as the average, not zero. 21

Q. So what we get is a scattering of waking systolic 22
values which are arranged by reference to overnight 23
turbine power. 24

A. Correct. 25

Q. The purpose of doing that. 26

A. The purpose of doing that is what is known as a 27
correlation analysis or a dot plot in the case of a 28
graph, is to look at the relationship between two 29
variables. Since it has been asserted that there is a 30
relationship between turbine output, whether that is 31
infrasound or noise or some other phenomenon from the 32
turbine with blood pressure, I was interested to see 33
without simply eyeballing the data but actually looking 34
at it properly graphically represented, what was 35
happening when the turbines were off as opposed to when 36
the turbines were on, and when the turbines were on at 37
various intensity, this goes to the issue of dose- 38

response relationships, and what I find is, if
anything, blood pressure tends to be a little bit
higher when the turbines are off. What is interesting
about this is the consistency of effect across the
individuals.

Q. Just looking at graph 2.2, were you able to find any
consistency in the relationship between turbine power
and waking systolic.

A. No, I was not. There were random effects other than
the fact that there was this tail up when the turbines
were off. The cynic would interpret this as being that
having turbines running is good for your blood pressure
as an alternative explanation. The interesting thing
with AR in the journal is that the highest blood
pressures were recorded on the last two days of
recording, which reached quite extraordinarily high
levels, and they resulted from an altercation at a
polling booth with a proponent from a wind farm,
indicating just how strongly just stress and
interpersonal interaction can affect blood pressure.

CONTINUED

Q. We'll deal quickly then with chart 2.3, that's the same as 2.2 but it deals with diastolic rather than systolic.

A. Correct. And that's essentially a horizontal line.

Q. You've included as part of that graph an R-squared linear of 0.003, what does that mean.

A. That means it's approximately a horizontal line. So the R-squared value will increase as the slope increases.

Q. Essentially do we see the same presentation of data for GW.

A. Yes.

Q. And BMJ/BJ.

A. Yes.

Q. In other words, no relationship between output and blood pressure.

A. No. And in fact, again the trend in fig.4.2, the systolic blood pressure for BMJ is the similar trend for the blood pressure to be higher when the turbines are off.

Q. Yes.

A. And lowest when the output is maximum; again, suggesting to the cynic that having turbines on may be good for your blood pressure.

Q. You draw no such conclusion though.

A. I draw no such conclusion. I would also add that in fig.2.4 that does not look at the relationship with mean turbine power but it looks at the relationship to audibility of the turbine. And because of the scale it's difficult to see but the little blips up on the line at the bottom, that's represented as a zero, one or two, two being when the turbines are said to be very loud, one is loud and zero when they're inaudible. So where you see those blips up it's turbine audibility and again there's no consistent relationship between turbine audibility and blood pressure. Or indeed, might I say, symptoms or anything else.

Q. The next issue, Exhibit A21 was tendered, that's a

document comprising an email from Dr Laurie to Mr Manos 1
with some particulars, a summary of process, I think, 2
and transcript taken by Dr Laurie; you've seen that. 3

A. I have. 4

Q. And my question is what do you say about the utility of 5
those case histories in forming opinions about cause 6
and effect. 7

A. So the - not all of the details requested were provided 8
and I guess that's probably because they could not all 9
be provided. Dr Laurie's acknowledged that they were 10
not full case histories, they were not complete 11
documents but I guess rapid assessment of phenomena 12
from individuals who were either contacting her 13
therefore specifically complaining of. So therefore 14
they're anecdotal evidence and it's hard to know, other 15
than the fact that these people quite obviously are 16
having significant problems which I acknowledge and 17
there's no question about the accuracy of the 18
information elicited, what's in question is cause and 19
effect relationships and it cannot be used to ascribe 20
any assertion that these are necessarily due to the 21
wind farm even if they abate when moving away. Because 22
if you're anxious about the wind farm or your 23
neighbour's been complaining about the wind farm and 24
generates your anxiety and so on, then it's hard to 25
know what that means. It's also hard to know what it 26
means in a context of other things going on in your 27
life as has been clearly demonstrated from those 28
studies looking at road traffic noise and other forms 29
of ecological effects. Much the same has been 30
documented with EMF or with mobile phone towers, with 31
landfill and so on you see exactly the same phenomena. 32

Q. Did you hear the evidence of Dr Laurie when she first 33
gave evidence about certain changes to the data in 34
Exhibit 21, perhaps the most significant of it was that 35
subject 20 seems to have elevated nocturnal blood 36
pressure but not elevated day time blood pressure. You 37
would have heard that for the first time I think when 38

Dr Laurie gave her evidence. 1

A. Yeah, I mean I assumed, reading the case report, that 2
blood pressure was elevated during the day because 3
there had been this clear indication with symptomatic 4
elevations of blood pressure during the day. It's not 5
entirely clear to me what is meant by hypertensive 6
crises or whether these acute hypertensive crises were 7
confirmed as such or simply marked elevations of blood 8
pressure in the context of some other symptom complex 9
but let's assume that they were just that. It seems 10
reasonable that there are a number of possibilities 11
that this sort of spiking elevation in blood pressure 12
can occur. So for example, one of the possibilities 13
has been looked at and the person's general 14
practitioner appropriately looked for pheochromocytoma 15
which is a tumour of the adrenal glands. So these are 16
small glands which sit above the kidneys, they produce 17
adrenalin and noradrenalin which are stress hormones 18
and surges of these stress hormones can produce a 19
symptom complex that produces this kind of picture with 20
headache, nausea, jitteriness, palpitations and so on 21
but so can acute stress, so can panic attacks and it 22
doesn't need to be any overt stimulus for a panic 23
attack to occur. The question about obstructive sleep 24
apnoea would have been one that was appropriately 25
raised. Obstructive sleep apnoea is extremely 26
prevalent in the male population in particular; we find 27
roughly 20% of men in our cohort have a very high 28
probability of having obstructive sleep apnoea so this 29
is the age group where you'd see an effect likely to 30
occur. Clearly an astute general practitioner who's 31
thinking about these various things and doing the 32
appropriate investigations, it's not clear whether this 33
was a home sleep study or an in-lab sleep study, what 34
the quality was, it's not clear whether weight has 35
changed up or down since these things were done. And 36
again, we're living in a - we're looking at an age 37
group where there's very likely to be a hypertension 38

occurring, we just don't know enough to say that it's
not hypertension during the day either on an
intermittent basis associated with anxiety or panic
attacks and I'm not even sure that I know enough about
the exclusion of the pheochromocytoma to be sure that
that's excluded or any other significant disease
process although I assume that the cardiologist has
been involved, this has been adequately looked at.

Q. Do you agree, in effect, with what Dr Laurie said about
subject 20, that there might be plausible medical
explanations for elevated nocturnal blood pressure but
not elevated day time blood pressure which have nothing
to do with the wind farm.

A. Correct.

ADJOURNED 1.03 P.M.

TRANSCRIPT CONTINUED BY REPORTER

RESUMING 2.18 P.M. 1

Q. I want to ask you some questions about Dr Nissenbaum's 2
study which we find in Exhibit A22, attachment A; do you 3
have that. 4

A. Yes, I do. 5

Q. As I understand it Dr Nissenbaum said this was the best 6
research available on the questions that we are 7
concerned with; you would have heard her say that. 8

A. Yes. 9

Q. And I think she said that, at least in part, because it 10
is a case control study. 11

A. Yes. 12

Q. Can you tell us, firstly, what a case control study is, 13
as distinguished from other forms of research. 14

A. So there are a number of types of observational studies 15
and one type of observational study is called a case 16
control study, and this is one where people with a 17
specific disease match people who do not have the 18
disease and who then determine controls. You match 19
people with a specific exposure and those who do not 20
have an exposure, but ordinarily it is done with or 21
without disease. I think it is relevant to say that it 22
was case controlled type methodology that first led 23
Pitot to very strongly make the association between 24
smoking and lung cancer. 25

HIS HONOUR 26

Q. Who was that. 27

A. Richard Pitot in the UK. So the origins of this as a 28
rigorous methodology are quite clear but that does not 29
mean it is without problems. What is critical is that 30
data are collected from the individuals of the groups in 31
order to allow you to control for all of the 32
characteristics except the exposure in question. So if 33
you were wanting to link, for example, smoking to a 34
disease process then you would want a control for 35
everything else except the smoking: toxicity potential, 36
asbestos, environments, where they worked, how they 37
lived etc., family histories. So that there are a 38

number of errors that may creep into a case control study. Bias is one of the big problems and this has been defined as any systematic error in the design, conduct or analysis of a study that results in a mistaken estimate of the exposure's effect on the risk of disease, and there are a number of sources of bias. So one type of bias is recall bias. So that is the propensity of diseased subjects, or cases, or individuals as they may be termed, depending on circumstances when interviewed to scrutinise their memory and report more accurately than a non-exposed and non-diseased group. So recall bias may be acuity bias, in other words you may highlight one set of symptoms more than another. So it's bias in reporting. Bias may also occur in the selection of cases and controls. So that how you select individuals to a particular group or case is appropriately selected, or are your controls appropriately selected or are they cases that volunteer themselves to you, and so on. And there are also issues where strong personal feelings may be involved may lead to a source of bias because of the specific nature of the questions that are used or the way they are framed. Confounding refers to an extraneous variable that satisfies both of two conditions. So it's risk factor for the disease being studied but it is associated with exposure being studied. So in the case we have been talking about anxiety may be a risk factor for stress related disease but it may also be a consequence of exposure to a wind farm for whatever reason. So it is not a consequence of the exposure but it's an effect, ameliorating effect within the study. And it's the major potential problem with any observational study where the factors are not fully described in the data in which case they cannot be accounted for in the analyses. And there are a variety of types of confounding that can be controlled for provided they are adequately identified. In addition in the case of control study it may be difficult to separate the chooser from the

choice. For example, studies of road accident victims find that those wearing seatbelts were 80% less likely to suffer serious injury or death in a collision, but data comparing rates for those collisions involving two front seat occupants of a vehicle, one belted and one unbelted, showed a measured efficacy of only around half that. That may be considered a form of ascertainment bias, I guess. A further problem is you have to depend on correct and honest reporting of the risk factor which may be many years in the past or, in the case of long-term prior exposure, as maybe asbestos, or the exposure may be seen as socially undesirable, epidemiological studies or observational studies of sexually transmitted diseases and certain behaviours. And case control studies can be by assessed if the risk factor is incorrectly reported for whatever reason, intentionally or unintentionally. For example, when we maintain diet diaries and appetite studies it is well known that obese people don't report their intake. That is part of the disease process whatever it happens to be, but it is a well-known and documented offence. You could conclude from that that obese people eat less and they have a different metabolic rate but that would be a wrong conclusion.

- Q. Are case controls studies therefore a useful tool.
- A. They are and that's why I began with the example of smoke and lung cancer. So providing all of these methodological difficulties are accounted for and this is where peer review comes in to ensure that that is the case and I would have to say that over the years the rigour with which case controlled studies are done and evaluated has increased significantly. And unless these things are adequately attended to most major journals will not accept them for publication.

HIS HONOUR

- Q. And is the numbers in the study important.
- A. The numbers in the study may or may not be important. So where the intensity of the exposure or the effect

size is large, then you would need fewer people to be 1
studied. So that is the concept of power, where you are 2
talking about a small effect size and large variances 3
then you may need many more people. A classic example 4
that has been in the media of a fluid case control 5
study, whatever the motivation may be for that, was the 6
MMR vaccination issue that has been in the media lately. 7
That is an example of the case controlled study fluid in 8
its design and execution, which for whatever reason 9
happened to motivate that process. 10

XN 11

Q. Bearing in mind what you have said about case control 12
studies so far. If we go to the material which is now 13
attributed to Dr Nissenbaum at tab 8 of Exhibit A22, you 14
will see there, firstly, an abstract, secondly a bio, 15
and then you will see a table, which we now know is 16
Dr Lawrie's work, and there is then a paper headed 'Wind 17
turbines ... and Value List'. And as I understand 18
Dr Lawrie's evidence it's that paper which she says 19
comprises the best evidence about health effects and 20
wind turbines. Do you have any comment to make about 21
the reliability of the paper and the rigour with which 22
the research was undertaken. 23

A. It's almost impossible to evaluate the data for accuracy 24
because the methodology is not sufficiently - not 25
presented with any clarity or at all for that matter. 26
The most clarity you can get out of the this was 22 of 27
about 30 adults. I have never seen any kind of 28
scientific documentation that would document 'about', 29
it's either a certain number of subjects or it isn't. 30
Why is it 22? How are your cases and control selected 31
etc. etc. other than, say, similar age and occupation 32
and living about three miles away and then defined as 33
not exposed? What we don't know is intensity of 34
exposure. There is no corroboration of the various 35
issues; there are a lot of suppositions, there is a lot 36
of reference back to a paper that will soon be completed 37
and the fact that this is a preliminary study. I think 38

this is unassessable and unless you ring up your mates 1
and ask them to review it as peer review you will not 2
pass muster in a journal. I edited the Journal of 3
Obesity Research and Clinical Practice, we receive a 4
large number of papers each week and I would have to say 5
that I wouldn't even send a paper of this sort out for 6
review, it isn't sufficient information. 7

Q. Do you believe then that the material which is 8
attributed to Dr Nissenbaum at tab 8 is a basis for a 9
moratorium on further wind farm developments pending 10
further research. 11

A. The issue as I'm hearing it put says, we need more 12
research. In order to justify research you need a 13
rationale that is of sufficiently convincing magnitude 14
to argue with funding agencies that they should part 15
with dollars that someone else thinks are more important 16
to have. I can't see and, as stated in my witness 17
statement a rationale in the evidence that I have 18
available to me for further study to be done. Now that 19
doesn't mean there isn't an effect, it simply means that 20
I can't see, based on the data, that there is sufficient 21
evidence to attribute cause and effect. 22

Q. And to justify the allocation of funding to further 23
research. 24

A. Funding is always good for research, I'm always a fan of 25
research, and I would be delighted personally to get 26
more funding for research but I would have a hard time 27
writing a business plan if you like, which is what a 28
grant application is, and saying that this is the basis 29
for wanting to do further study, I don't think I would 30
get the money to do so. 31

Q. The next issue I want you to comment on very quickly. 32
Dr Lawrie yesterday made comment about one of the 33
subjects had elevated cortisol levels. I may have 34
pronounced that incorrectly. 35

A. That's correct. 36

Q. But is that an issue which falls within one of your 37
specialised fields. 38

- A. Yes, cortisol is produced by the adrenal glands, which I referred to previously as producing the hormones adrenaline and noradrenaline, which are the fight and flight hormones. Cortisol is very important in linking circadian rhythm to intermediary metabolism, which is the way that cells in the body use energy and regulate themselves. It is also important in regulating body composition and dispersing of fats and body mass. It is secreted in the cortisol itself in a pulsator manner. The pulsatility is increased in its amplitude, beginning in the early hours of the morning, and it trains itself to the normal circadian rhythm and then later in the day the pulses are smaller and the mean levels are lower, so you get this peak in the early hours of the morning which drop off late in the day. And that normal rhythm in the morning, the rhythmicity of activity is important for health. There are many things that can disrupt that: stress, sleep disturbance, obstructive sleep apnea or if you put a broad package around disorders of sleep and sleep disorder breathing is just one of those but there are other factors. certain medications, excess alcohol consumption and many other things can affect cortisol but it is difficult to use single cortisol measures to make any kind of assessment of what is going on with a stress axis.
- Q. Is there anything in what Dr Lawrie said yesterday about cortisol that would lead you to review the conclusion or the opinions or your process of reasoning as disclosed in your statement.
- A. I haven't seen any data that would lead me to form any conclusion whatsoever about cortisol. I am not sure why it is mentioned.
- Q. The next point, which is a brief one, I think Dr Lawrie suggested that you'd never spoken to anyone - perhaps it might not have been Dr Lawrie it might have been Mr Manos - suggesting that you'd never spoken to anyone living in the vicinity of a wind farm. Is that in fact correct.

- A. No, it's not correct. I have spoken to people living and working in the vicinity of a wind farm, admittedly not huge numbers, small numbers. I have also visited a wind farm, I toured, in fact, the Waubra wind farm quite extensively, was taken wherever I chose to go on the map and speak to whoever I wished to speak to. I have not presented any of this in evidence because I don't think, on the one hand, you can criticise anecdotes and, on the other hand, use them, but I will offer the court anecdotes seeing an anecdotes are being sprinkled around deliberately. That is that I was told - hearsay but unfortunately this is what occurred - that someone working very close in the vicinity of a wind farm and whose property was very close to turbines, had a friend who had a bipolar disorder who liked to come up and stay when she was getting out of control because she found that her psychiatric state improved when she was at the wind farm. Hearsay and anecdotal.
- Q. And not something on which you would place any or much reliance.
- A. None whatsoever.
- Q. Is it essentially for that reason that you haven't documented your personal experiences in the vicinity of the Waubra wind farm.
- A. Only to say that I have visited, correct.
- Q. The final topic is this. Dr Lawrie suggested that of the symptoms that she has documented in para.25 of her statement, there was then an additional symptom which she said is not to be found elsewhere or is not caused by any other known agent, and she made reference to I think vibration of the lips and the chest and stomach I think she might have mentioned as well. Did you hear her evidence about that.
- A. Yes, I did.
- Q. What do you say about those sorts of symptoms and whether they are associated with illness in the community.
- A. If I heard Dr Lawrie correctly, and I'm happy to be

corrected if I did not, I also heard a qualifying 1
statement that the description of this vibrating feeling 2
was sort of like pins and needles. 3

HIS HONOUR 4

Q. Tingling. 5

A. Tingling, thank you. That sensation is what we would 6
call perioral paraesthesia, and it's commonly seen in 7
people who are hyperventilating or anxious. The extent 8
to which that is the same as the sensation of the lip 9
vibration is difficult to say without having talked to 10
the individuals myself, but having heard Dr Lawrie's 11
qualification of what may be meant by lip vibration I 12
would suggest that both nausea and lip vibration may be 13
symptoms of anxiety and may be compatible with an 14
anxious state as maybe acute elevations of blood 15
pressure consistent with a panic attack which may look 16
just like a mycetoma. 17

Q. So do you accept the proposition that there are symptoms 18
being manifested in and around the Waubra wind farm 19
which are not found anywhere else or caused by any known 20
medical condition. 21

A. No, I do not accept that proposition. 22

+NO CROSS EXAMINATION BY MR PSALTIS 23

+CROSS-EXAMINATION BY MR MANOS. 24

Q. Would I understand your evidence to this effect: if one 25
person visits a wind farm and reports an adverse effect, 26
that would not cause you any concern. 27

A. I visited the wind farm and about halfway into my visit 28
was sneezing uncontrollably and spent the next day in 29
bed. I would not ascribe either my hayfever attack or 30
my cold directly to being caused by the turbines. 31

Q. I have provided your instructing solicitor with a copy 32
of a written statement of Patricia Godfrey which I ask 33
you to read, did you read that. 34

A. I unfortunately have not had time to read that, I 35
apologise. Happy to look at it now. 36

Q. I will just read to you a paragraph. This is from 37
Patricia Godfrey, who will give evidence next week. 38

- Q. 'Shortly after I could hear the noise from the turbines I started suffering from disrupted sleep patterns. As I suffered from periods of broken sleep I found that the noise from the turbines seemed to affect me more. It was incessant. To drown out the turbine noise I tried sleeping with headphones on and listening to tapes but that didn't work. The nearest turbines were about 750 m away from our dwelling.' And then she comes to 'I also started to experience head pain. The pain is extremely hard to describe, it is like having a hat on and it's too tight. The pain started in the back of my head and radiated over the top. At times it would throb and the throbbing seemed to coincide with my heartbeat. At times I could feel every heartbeat pulsating in my head'. Accept that that is - again this will come from Mrs Godfrey next week - and she says elsewhere that the only change is that wind turbines were turned on. So if that is reported to you would say 'Thank you for that, next, please'.
- A. In my statement, item 14, I have commented on the issue of sleep disturbance and just to remind you of what I have said 'The issue of sleep disturbance is complex since it may be a consequence of stress and anxiety and of itself and/or noise perception'. So the notion that there are some people and Mrs Godfrey quite clearly is one of them, that may be inconvenienced, distressed by noise that disrupts sleep is indisputable and at no time have I attempted to dispute that and have indeed addressed it directly within my evidence. It is also addressed directly by the papers to which I have referred as indicating that there are a certain percentage of people who will be annoyed by the noise and I think that is without doubt true. That does not stray into many of the other issues that we have studied.

- Q. Perhaps I'll be more specific. Mrs Godfrey presents to you and describes those symptoms. You say 'Thank you for that'; you'll store that information in the back of your mind but you're not going to immediately ring up the NHMRC and say 'We need to do some research on this'. Would that be a fair comment.
- A. If Mrs Godfrey presented to me with sleep disturbance I would want a very thorough evaluation of Mrs Godfrey and I always ask the question 'What kind of disease does this person have or complaint does this person have and what kind of person has this complaint?'. So my initial approach would be to find out firstly about Ms Godfrey, evaluate her health status in the whole as well as the environmental exposures to which she may be exposed and I would then deal with the matter as I felt appropriate. I have, as needed in the past, rung regulatory agencies about issues I felt relevant to patients. I cannot tell you how I may respond in the clinical situation with someone whom I have not had the opportunity to talk to. Would I dismiss it as trivial? I would not.
- Q. I wasn't suggesting you would dismiss it as trivial I was suggesting that would be insufficient to you to initiate some research.
- A. It would be insufficient for me to initiate research, it would be sufficient for me to acknowledge that she presents with a significant concern and that it may indeed relate to wind, correct.
- Q. What if a second person presents similar symptoms or identical symptoms to that; that they didn't suffer - the symptoms that suddenly present after a wind farm has been turned on.
- A. If there was consistency of effect and that consistency of effect was commensurate with an appropriate response and with exposures that were asserted to have occurred and history had been taken and the information had been collected with sufficient scepticism and documented in an appropriate way then yes, I would be very interested in pursuing it further but it would depend on the rigor

with which the information is collected and presented 1
and I would wonder very much whether the deaf ears that 2
the issue is falling on apparently worldwide relates to 3
similar perceptions that I have about the quality of 4
evidence. 5

Q. Just on that, you've read Dr Laurie's reports and you 6
are aware of the Federal Government's inquiry. 7

A. Yes. 8

Q. Are you aware the Victorian government is also 9
conducting an inquiry. 10

A. I was aware they were planning an inquiry, I'm not aware 11
they are going ahead. 12

Q. Have you heard other Governments around the world are 13
pursuing the matter at the moment. 14

A. New South Wales Government has already held an inquiry 15
and reported and I'm aware there are various activities 16
taking place in various countries and that is a 17
perfectly reasonable approach from politicians and 18
government agencies charged with population health, is 19
to address the concerns that are brought to them and to 20
determine whether the basis for those assertions are 21
reasonable to make a recommendation. That's the public 22
health process at work and pleased for it. 23

Q. Isn't that exactly what Dr Laurie is simply advocating; 24
that there's some information that's available, as a 25
result of that information she's formed the opinion that 26
we need to research and she kept on repeating that, 'We 27
need the further research'. Don't we add all the 28
information together, the 40-odd people that transcripts 29
we've seen - did you read the affidavits that were filed 30
in relation to the other matter before the court in the 31
Quinn matter. 32

A. Yes, I did. 33

Q. There's a dozen or so there, and you've heard the 34
evidence of Dr Laurie speaking to some additional people 35
out at Waubra and in Canada, we've got three or four 36
governments making these inquiries, isn't that a fair 37
basis to say we need some further research. 38

A. It relates to the quality of the evidence presented and at the risk of being flippant, and only because I've written it in my statement, I think there are more than 60 people that would describe consistent stories of alien abduction and indeed there are some governments that have held inquiries about the matter but I don't think we would for one minute believe in aliens on the basis of that. I'm not wishing to trivialise the issue, I'm simply wanting to highlight the problem with the anecdotes and hearsay as opposed to the way evidence should and could be documented, and reports and investigators like Dr Nissenbaum do the case no favour. Where there are assertions about turbines and blood pressure and dare I say, considerable reports in the media warning residents that they should be monitoring their blood pressure, creating what I consider to be significant anxiety among the public, only to find that when you put a careful and considered and objective evaluation to the data collected you find quite the opposite, if anything, but certainly nothing, then one has to be very sceptical about the quality of the remainder of the data.

Q. Just on the blood pressure information, Dr Laurie didn't assert there was correlation between the wind farm and the blood pressure numbers, did she.

A. I must have misunderstood; that was my impression. Perhaps I've misunderstood but that was the impression I came away with.

Q. It would be fair to say the information was presented, you inferred that there must be a relationship between the blood pressure and the output, that's why the information was put forward.

A. There was a large amount of information about wind farms causing hypertension. The postulate that appeared to be most favoured, if I recall the testimony correctly, related variably to infrasound, variably to an association with symptoms and variably to sleep disturbance. I've looked at Dr Laurie's data very

carefully and since I tabulated everything for AR, I believe was the first of the subjects who kept the most thorough and complete diaries, I can find no relevant associations between any of those things.

Q. My question is, is there any piece of information you can point to where it was asserted there was a relationship between the two.

A. I have to say that my recollection of the testimony is exactly that.

Q. Coming back to this issue, you're concerned about the quality of the research - I use that term loosely - that's insufficient basis for which funding should be available to carry out proper research. It's the chicken and the egg situation, isn't it; where do we start? You gather some information, some anecdotal evidence has been collected, to use your phrase; doesn't that prick the ears up so further investigation is warranted, isn't that the approach Dr Laurie has taken.

A. Are we suggesting the entire scientific community, take me out of the picture for a minute, because just a drop in the bucket of what's going on internationally, are we suggesting the entire world of academics is blind to the evidence, to the state that they will not or cannot embark on appropriate investigations? This is like the EMF story all over again as far as I can see.

Q. But there are symposiums being held around the world, more than one, dealing with this issue of wind turbine syndrome.

A. Symposia - no, if I may indulge the court just for a minute to take a slight left step, I work in an industry that's severely criticised for its relationship with the pharmaceutical industry who have been variably accused of many things; disease lobbying, to the effect industry-sponsored conferences are being highly regulated and support of activity by lobby groups who are active, or activists in any specific context, is viewed with some degree of scepticism. I don't say that's true for any particular lobby group, but I'm

saying lobby groups exist for a particular purpose and will hold conferences and get-togethers for a particular purpose. If the quality of the evidence that comes out of that is robust and if the debate is open and even-handed, great, but I've just spent some time reviewing Dr Nissenbaum's evidence with Mr Henry and consistent with my initial impression I've come away rather concerned with what I see and if that's the basis for which we should pursue legitimate scientific investigation using public money I'm again concerned with that assertion.

Q. What benefit is going to flow as a result of an increase in setback of wind turbines from populated areas.

A. I'm not sure that I'm on top of the reason for the question.

Q. The question was put poorly. Let me put it to you again. You used the example of pharmaceutical companies. There's a benefit that could flow if their drugs were prescribed by medical practitioners to patients. Those people who are involved in the Society For Wind Vigilance will not benefit if there is an increase in the setback distance of a wind farm from a populated area, will they.

A. That's true in the sense, if they could come up with some consensus about setback. What I've heard is 'We did our investigation at - ' was it Dr Nissenbaum did it I think at a distance which we've heard is around 5 km and that was deemed to be associated with a very low incidence of effect, assuming his case control study is accurate, and that's in question. Then I'm presented with evidence that suggests that 10 km is proposed to be reasonable and now I'm hearing that it's an open-ended question. I'm not sure that it's a case of, notwithstanding Dr Laurie's assertions, and I find Dr Laurie to have incredible passion and integrity without doubt, but the question of 'We don't actually know how far we want it back', leads to me to question do we want this at all. That may not be Dr Laurie's

view but I suspect it's very much the view of many other people. 1
2

Q. But would you agree that those who, from what your basic understanding of it is, those involved in this society or the Waubra Foundation, all they want to do is make sure there's a safe setback distance so human health is not affected; isn't that the overriding objective of those groups. 3
4
5
6
7
8

A. I don't know what the overriding objective is, I've not been briefed by the foundation on their objectives. 9
10

Q. Is there any other benefit that could flow from what you have learned today to members of the society who are advocating an increased setback in populated areas. 11
12
13

A. I understand your question and I'm not sure that's what I'm here to answer is the answer to your question. 14
15

HIS HONOUR: I agree with the witness, I'm not sure that his speculation on the motives for these groups will assist us. 16
17
18

MR MANOS: The witness introduced the pharmaceutical benefit example where there's obviously, clearly, as we understand it, connection between sponsorship and drugs being prescribed. It must be fair for me to test that view in relation to this society. There's no suggestion other than a question by Mr Henry, that some of these people may get some research, that there's going to be a benefit. The objective must be public health. This is a witness who is put forward as a public health expert. 19
20
21
22
23
24
25
26
27

HIS HONOUR: You talk about, in somewhat amorphous terms 'these groups'. In order for the witness to be able to give a meaningful response he would have to know about the aims and objectives of these groups. He can only speculate and his speculation is not going to assist us. 28
29
30
31
32
33

MR MANOS: He heard about the aims from Dr Laurie's evidence. 34
35

HIS HONOUR: One group. 36

MR MANOS: And the Waubra Foundation. 37

HIS HONOUR: He's spoken of those objectives but it's 38

an open-ended inquiry you are putting to him and he
doesn't know.

MR MANOS: I'll move on.

XXN

Q. How do we get funding then for the research that
Dr Laurie speaks about if you can't get to the case
control study level that you're seeking. You've got to
start somewhere.

A. Perhaps I need a point of clarification. I heard on
many occasions an impassioned plea for research and I
heard on many occasions, as we all did, a plea for
independent research, but I also heard an extensive
discussion about our research and my collaborators and
our funding. I was left a little confused about the
objective of a foundation that purports to lobby and
gather funds for independent research but persists in
activity that does not generate what I've seen of a good
research and at various times it's called research and
at various times it's called not research, and at
various times it's asserted I'm a researcher, at various
times it's asserted that I'm not, at other times I'm
just gathering some evidence for preliminary
investigation to determine what kind of research we
need. Without any clarity being brought to that
question I was informed yesterday by the testimony that
this could be done simply and quickly but was not clear
on what simply and quickly meant and anything that I've
seen so far that's been done simply and quickly has been
highly questionable.

Q. You criticised Dr Nissenbaum's report.

A. I did.

Q. Do you have Exhibit A22 in front of you, at Tab 8.

A. Yes, I do.

Q. You've studied the chart on the second page of that
document.

A. I believe this is the one you're referring to
(INDICATES).

Q. Yes.

A. Yes. 1

Q. Do you say that accurately reflects the text that 2
appears at the foot of the following page, save for the 3
use of maybe a different word here or there. 4

A. Yes, that's assuming without actually going through it 5
word-by-word that it's close enough. 6

Q. Looking at the first page of the report in the middle of 7
the page 'In my investigation of Mars Hill, Maine 22 out 8
of 30 adults exposed live within about 3,500 feet' 9
you're critical of that statement in terms of it being a 10
case control study. 11

A. I'm critical of any scientific investigation that uses 12
the word 'about'. 13

Q. It matters whether it's 31 people or 29 people. 22 14
people I would respectfully suggest have been prepared 15
to participate in this study, that's what it says, 16
that's what it says, '22 out of about 30 people have 17
agreed to participate'. You can't read any more into 18
that statement can you. 19

A. '22 out of about 30 adults exposed who lived, were 20
evaluated'. It didn't say 'were prepared to 21
participate'. I have to say I'm a little surprised that 22
someone who is so precise with language should choose to 23
nitpick with me over the wording that's clearly stated 24
here when the issue at hand is scientific integrity. 25

Q. Is your understanding that with these case control 26
studies you need people to voluntarily participate, you 27
cannot compulsorily force them to do something. 28

A. Participation is always voluntary. 29

Q. So my question is a fair question, isn't it; that the 30
only way to interpret this statement is that 22 out of 31
about 30 people agreed to participate, or if you want to 32
use the term used, to be evaluated, that's all that that 33
statement says, isn't it. 34

A. Well it says 'were evaluated'. The interpretation that 35
they agreed to be evaluated or the basis by which they 36
were selected and invited to be evaluated is an 37
inference that you are making that I'm not prepared to 38

make because the methodology of the study is not
declared. I don't know whether the study was referred
to and evaluated by an ethics committee who would have
insisted that the recruitment of the subjects were done
by those sorts of principles -

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There is no information here that allows me to infer 1
what you're wishing me to infer from this data. 2

Q. What about the use of the words 'were evaluated to 3
date'. Does that mean anything to you. 4

A. 'To date' says this is something I'm continuing to do. 5

Q. Or it means only 22 out of the 30 people have agreed to 6
be evaluated at this point in time. 7

A. That's open to interpretation. When one does science 8
one requires a level of precision that does not leave 9
things open to interpretation. 10

Q. So you say, 'Well, there is insufficient information 11
presented at the moment for me to make a proper analysis 12
or to rely on this report'. 13

A. Correct. 14

Q. Assume for the moment, for the present purposes if you 15
can, there were about 30 people in Maine, 22 of those 16
people agreed to participate in a case controlled study. 17
They lived within 3,500 feet of a wind farm. They were 18
asked a series of questions and the same series of 19
questions were then asked of another group of people who 20
lived about 3 miles away. Make those assumptions. 21
Those people then respond in a tabulated form that 22
appears on the previous page. You say, when you read 23
that information, making those assumptions, that that is 24
not any basis to be alarmed that exposure to a wind farm 25
could have an effect on a person's sleep habits or their 26
stress or headaches. Is that what you say. 27

A. Mr Manos I refer you back to my - let me answer the 28
question directly first. The answer is I don't know 29
because I can't evaluate the evidence. Let me refer you 30
back to the statement I made about the very recently 31
discredited mumps, measles, Rubella study. There were a 32
number of people who stopped vaccinating their children 33
on the basis of that study. I am unwilling to be 34
concerned - or let me say to be very concerned - about 35
anything where I can not evaluate the evidence. I would 36
want to see properly collected data. This is not 37
properly collected data. 38

Q. You don't know that. 1

A. Well, it's not stated to me that it's properly collected 2
data, therefore I cannot know that because it's not been 3
declared. 4

Q. It could possibly be properly collected data using your 5
test. 6

A. It could be but it's not declared and it would seem very 7
odd not to declare the methodology in a scientific 8
presentation. 9

Q. Let's assume the data was collected to your 10
satisfaction - 11

A. If this were done to my satisfaction, yes. 12

HIS HONOUR 13

Q. Would that include knowing the nature of the questions 14
that were asked. 15

A. I would have to know the nature of the questions asked. 16
I would have to know by ascertainment - all of the 17
issues that I raised during my preliminary comments on 18
case controlled studies would need to have been 19
sufficient in order to be able to comment on that data 20
as a source of concern. 21

XXN 22

Q. I moved on to this topic because you were commenting on 23
Dr Laurie's evidence about doing some research quite 24
quickly. If you have a group of people who live within 25
a certain distance of a wind farm and a group of people 26
living outside, say 10 kilometres or 20 kilometres away 27
from a wind farm, you could quite quickly undertake a 28
case control study of those two groups, couldn't you. 29

A. Could I? What are you asking me? 30

Q. You or an appropriate qualified researcher, someone 31
else. That can be done quite rapidly. 32

A. What are you suggesting could be done quite rapidly? 33

Q. The survey that would need to be done. Obviously you 34
would need to spend some time identifying the people and 35
matching them but, if you're dealing with a series of 36
questions, that can be a research test that can be done 37
fairly quickly. 38

A. Can I refer to my statement. 1

Q. Yes, but that is a fairly simple question. 2

A. It is a simple question, and I would like to answer 3
precisely being an advocate of precise language. Point 4
41, which is p.9 of my evidence statement, I would 5
suggest that for any research to be made as to an 6
adverse health effect from sounds that arise from wind 7
turbines, a direct measurement of actual sound exposure 8
as well as perceived sound exposure over a reasonable 9
period of time, together with an objective evaluation of 10
potential confounders and an objective assessment of the 11
health effects is required, in accordance with the 12
standards of public health risk assessment. I cannot 13
see a compelling reason to recommend that this be done 14
on the basis of the available data. 15

Q. Yes, my question to you is can that research be done 16
reasonably quickly. 17

A. It would depend on the resources that were available to 18
do it. It would be dependent upon adequacy of design 19
and the appropriate power calculations to determine the 20
number of people that were required to participate. 21
There would be a process of protocol development, 22
protocols then need to be peer reviewed. The peer 23
review process would then also require that there was 24
reference to an appropriate ethics committee, 25
irrespective of the nature of the survey and how 26
invasive or uninvasive we may perceive it to be. Could 27
that be done reasonably quickly? I believe it could but 28
that is a matter of definition; what is the definition 29
of 'reasonably quickly'? Are we talking weeks, months, 30
years, half a decade? What's your definition of 31
'reasonably quickly' Mr Manos. 32

Q. I would suggest to you a period of months. 33

A. No, I don't believe it could be done in a period of 34
months. 35

Q. All those steps are necessary in your opinion to have a 36
proper case control study. 37

A. Yes, I do. 38

Q. Even if you're not seeking to peer review it. 1

A. Yes, I do. If you're not seeking peer review then, you 2
know, one would have to question the purpose of doing it 3
because you just get back into the cyclical argument 4
we've been having all day. 5

Q. Let me put to you this proposition. Let's say you live 6
near a wind farm with your family and, after the wind 7
farm started operating, you and the other members of 8
your family started to suffer from headaches, and 9
previously hadn't suffered that. Given your background 10
and experience, do you believe that you could quickly 11
prepare a research approach which has characteristics of 12
the case control study that you've just mentioned, and 13
get that out in the community in a very short period of 14
time. 15

HIS HONOUR: What does 'a very short period of time' 16
mean? It's not going to assist us because you've put to 17
the witness this can be done in months and he's 18
disagreed with that. 19

MR MANOS: That was on his formal case control 20
study. I'm asking if he found himself in this 21
situation, on that assumption, could he be do it. 22

XXN 23

Q. You could do that within a couple of weeks to a month, 24
couldn't you. 25

A. You're asking me to speculate on a set of personal 26
circumstances where emotional context would override 27
objective judgment. Is that what you're asking me to 28
do? Or are you asking me as a witness on scientific - 29

Q. I'm suggesting you and your family are exposed to 30
headaches that you previously hadn't been exposed to. 31
You would say in that situation you would lose your 32
objectivity in carrying out proper research. 33

A. When my family are sick I take them to a medical 34
practitioner other than myself. I seek outside opinion. 35
I can have no objective opinion at all when it comes to 36
my family. I reserve the right to veto but that's a 37
different matter. 38

Q. I'm not asking you to treat these people. I'm simply 1
saying myself and my family have suffered headaches, I'm 2
suggesting you could rapidly prepare a series of 3
questions and identify a group of people who might be 4
asked those questions to do a bit of a case control 5
study. 6

A. If I did, what validity would it have? 7

HIS HONOUR: You might get further if you asked him 8
whether he was retained to conduct research because you 9
are going to continually founder on this question of his 10
personal - 11

MR MANOS: The problem with that is he has indicated 12
that, if that were the case, he would have to go through 13
the processes he's described, which is a lengthier 14
process. I'm seeking to ascertain if there could be a 15
more rapid response if the Professor was personally 16
involved. 17

A. I'm delighted to debate this with Mr Manos but I think 18
this debate would waste the court's time. 19

HIS HONOUR 20

Q. Let the court deal with that. 21

HIS HONOUR: I don't know that you're going to get 22
anywhere because you're going to continually founder on 23
the rocks with his personal involvement - 24

MR MANOS: I don't know whether he has answered my 25
question about losing personal objectivity - 26

HIS HONOUR: He may not have said in so many words but 27
everything is indicated to suggest to me that he 28
couldn't approach it objectively because he's 29
subjectively involved. I don't believe this line of 30
inquiry is going to assist. 31

MR MANOS: The witness has criticised Dr Laurie 32
saying they could get a fairly rapid response. 33

HIS HONOUR: There are many ways of testing that. I 34
don't know whether the way you're doing it at the moment 35
is going to assist. 36

XXN 37

Q. In the material you've presented to the court there are 38

some documents and reports about infrasound. 1

A. Yes. 2

Q. And prior to being involved in this matter, did you have 3
any real understanding or knowledge of infrasound. 4

A. I did not. 5

Q. Have you learnt something about that since being engaged 6
in this matter. 7

A. I've learnt a great deal. Does it mean that I know 8
anything? Probably not. 9

Q. It's all relative. But you acknowledge that infrasound, 10
according to one of the papers you've presented, can 11
have an impact on human health, on human activity. 12

A. I saw lots of information in those papers and there was 13
no information that led me to the conclusion that 14
infrasound of the levels that were being monitored in 15
Dr Laurie's own witness statement would have an effect 16
on human health. What I was interested in is some 17
information I came across suggesting that infrasound, if 18
you live near the beach, is of the order of 75 decibels. 19
That would suggest that sleeping on the cliffs with the 20
waves crashing below you would be devastating for your 21
health. Anecdotally - and I can't confirm this - it's 22
rather good for you. 23

Q. Do you know what frequencies that 75 decibel measurement 24
is. 25

A. Under 20 hertz I gather. I can't be more precise than 26
that but it's infrasound. 27

Q. To come back to my question: one of the arguments that 28
you have attached to your statement sets out reports, 29
does it not, of infrasound having an effect on human 30
health. 31

A. I evaluated wavelengths I could find that was collected 32
with as much objectivity as I believe the authors of 33
those reports could generate them with, and commented on 34
that only in the context of an evaluation of human 35
health, not as an expert in infrasound. 36

Q. With respect you didn't answer my question. 37

A. I didn't answer your question because the information 38

that I presented in the report, which as I started off 1
answering your question saying, was that based on the 2
information that I was provided with on the measurements 3
of infrasound, and based on the information in those 4
reports, I could only conclude that there was no risk of 5
infrasound to human health in the development of 6
Waubra - or the proposed development. 7

Q. I'll ask the question again: one of the articles that 8
you produced that you attached to your statement deals 9
with infrasound. Do you agree that article provides 10
some information to say that infrasound has an effect on 11
human health. 12

HIS HONOUR: There are lots of arguments - 13

MR MANOS: We could be here until the cows come 14
home - 15

HIS HONOUR: It would be a lot easier if you put 16
specific articles - 17

MR MANOS: Well, I can but I would have thought the 18
professor could answer that particular question. If we 19
want to finish the witness, the witness could answer my 20
question - 21

HIS HONOUR: If you are precise with your questions I 22
think - 23

MR MANOS: How more precise can I be to say 'with 24
respect to the article -' 25

HIS HONOUR: Get the article and put it to him. 26

MR MANOS: I would have thought he knew the answer. 27

XXN 28

Q. Do you have your Exhibit Y in front of you. 29

A. Yes I have. 30

Q. Have you considered the reference of the various 31
articles on p.11 of that report, starting with the 32
heading 'General Toxicology', starting at p.11 of that 33
article. 34

A. Is this the infrasound report dated November 2001? 35

Q. Yes. 36

A. So that's exhibit 8. 37

Q. 7. 38

A. So there is two - this is tab 7 is the Colby paper which is 'Wind Turbine Sound and Health Effects'. Tab 8 is 'Infrasound'. Which one am I directed to?

Q. I am looking at tab 7.

MR HENRY: Behind tab 7.

A. Okay, behind tab 7.

XXN

Q. Looking at the document entitled 'Infrasound - Brief Review of Toxicological Literature', with the heading 'General Toxicology', there are a hole lot of articles commented on and a brief summary in some instances provided - a brief summary is then provided under the heading of the paper.

A. Yes.

Q. Do you agree that some of those articles summarise that there is an effect on human health caused by infrasound; for example - this is qualified - but on p.12, for example, under the heading of 'Radneva'.

A. What page are we on?

Q. P.12.

A. Yes.

Q. On p.14 under the name 'Karpova'; read that summary.

A. Yes.

Q. And at the foot of p.15, for example, under the author's name 'Slarve'.

A. Yes. The commonality of those studies, if I might comment at this point, was the intensity of the infrasound and -

Q. I understand the qualification.

HIS HONOUR: Let the witness finish the answer.

A. The intensity of the infrasound on each of those occasions is above the levels that I've been indicated occurred in Waubra and are therefore unlikely to occur at Allendale. I did hear Dr Laurie's testimony that there may be infrasound levels at a higher intensity. If levels are present, indeed, at a higher intensity, the evidence has to be looked at differently, but my statement was prepared with the evidence that I was

presented with. 1

XXN 2

Q. I understand that. Can I take you to p.23, heading of 3
'Studies in Monkeys', and the author 'Swanson'. 4

A. Yes. 5

Q. Did you read that very short summary. 6

A. Indeed, a very short summary. 7

Q. Had you read that prior to - 8

A. I hadn't read the paper, no. 9

Q. Had you read the summary. 10

A. I had read the summary. 11

Q. You say that, in your workings, you do work with animals 12
for experimentation purposes. 13

A. Yes, I do. 14

Q. And monkeys are known to be used or have been used in 15
the past for the purpose of assisting with human health. 16

A. Not by me, but I know some. 17

Q. Taking you back to p.15, you heard the evidence about 18
the vibrations and the tingling. There is, in a sense, 19
a reference to that issue there at the foot of p.15, 20
isn't there, that some people experience body vibration. 21

A. Yes. 22

Q. Do you accept that at certain infrasound levels that 23
human health can be affected. 24

A. Yes, I accept that at certain sound levels there are 25
physiological effects that have been well documented and 26
are documented in this discussion. 27

Q. If Mr James who we've spoken of has measured 90 decibels 28
of infrasound at 1500 feet which is about 450 m, could 29
that level possibly, from what you understand, affect 30
the human body. 31

A. The passage that you've just directed me to says '120 to 32
144'. 33

Q. I understand that but I'm not just asking about that 34
particular article. I don't know how many there are. 35
There are 20 or 30 articles summarised in this paper. 36
What I'm putting to you is, from what you learnt in 37
relation to infrasound in this paper and other papers, 38

if you had a level of 90 decibels measured at 450 m from
a wind turbine, do you believe that that could have an
effect on the human body.

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A. Based on the data that exists, if people were consistently exposed to 90 decibels of infrasound then yes, it is quite possible there would be a physiological effect. 1
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Q. You have quoted in your report Exhibit Y, from the New South Wales Legislative Council written by Dr Diesendorf. Do you know him at all. 5
6
7

A. I do not. 8

Q. Do you know if he's a medical practitioner. 9

A. I do not. 10

Q. In your report you have provided extracts of that order. This is at tab 5, behind tab 5 in your statement. 11
12

A. Yes, which page are you referring to? 13

Q. That document you will see from your extracts goes up to at least p.123. Do you recall the document is in excess of 200 pages. 14
15
16

A. Yes, it's a long document. What is here is the decision primarily. It's the executive summary, which starts and summarises from chapter 4 onwards, talking about various aspects, but includes the environment and economical impacts etc. The relevant statement I think you are referring to appears on p.160. 17
18
19
20
21
22

Q. Yes, that is the one that you have quoted from. 23

A. Yes. That is 7.30. 24

Q. I would like to produce to you the entire chapter 7. 25

A. Thank you. 26

Q. Do you recognise that document. 27

A. Yes, I do. 28

Q. So, p.116, at 7.28. 29

A. Yes. 30

Q. 7.28, 7.29 and 730, until we get to this issue. 31

A. Yes. 32

Q. Dr Diesendorf is then quoted in para.7.30. 33

A. Correct. 34

Q. I take you back to p.114 para.7.17. 35

A. Yes. 36

Q. You are in a situation in a sense, where you were a visitor to the Waubra wind farm. Did you notice any 37
38

impacts on yourself at the time that you went there, 1
apart from the hayfever. 2

A. Hay fever and a cold, yes. No. 3

Q. And you commented that you didn't find the farm or the 4
turbines particularly audible. 5

A. No, they were audible, I videoed them extensively from 6
multiple locations. I wore a hardhat because I was 7
required to do so. The wind through my hardhat and my 8
cap on subsequent occasions made a little more noise 9
than the turbine, except in one location, where I could 10
clearly hear the turbine. 11

Q. Para.7.21 'Further research by Vandenburg. 12

A. Can I clarify something please? Have we moved from 13
infrasound to noise. We are still on infrasound because 14
these paragraphs refer to audible noise. So 15
Dr Diesendorf's statement at 7.7.30 on p.116 refers to 16
infrasound. We appear now to be talking about audible 17
sound. 18

Q. Dealing with sound, I agree this is dealing with sound 19
generally, then there is a section more specifically 20
about infrasound. 21

A. Yes. 22

Q. But you didn't put forward all of the document. 23

A. No, I put forward the section of the document that dealt 24
with infrasound, because I, as you say, was needing to 25
find data related to infrasound and tried to view as 26
much evidence as I could possibly find relating to 27
infrasound. So while I could find considerable 28
information relating to sound, might I say it's not in 29
dispute by myself or anyone else, that wind turbines can 30
be audible, that is not in dispute. What is unclear is 31
the health effect from something that can't be heard. 32
Then I had to rely on as much evidence as I could find 33
to form an opinion. 34

Q. I am conscious of the time. Can I take you to p.117. 35
You have set out in your report at p.116 and the next 36
page to 119, p.117 is 'Committee comment'. 37

A. Yes. 38

- Q. I take it you don't claim to be an acoustician. You see 1
in 7.37 'The committee acknowledge the evidence that 2
demonstrates that atmospheric conditions impact on noise 3
levels'. They are just talking about noise levels 4
there, not a particular type of noise. Then there is a 5
recommendation at p.117. Is there any reason why you 6
excluded that page from your paper. 7
- A. Which is the recommendation? Recommendation 17 at the 8
foot of p.117. Because the question I was asked was to 9
comment on the health effects and that statement had 10
nothing to do with the health effects. 11
- Q. Didn't some of Dr Laurie's material suggest this - some 12
people were having their sleep affected. 13
- A. I haven't disputed the fact that some people have their 14
sleep affected. It's in my statement. 15
- Q. Is it not relevant that this committee is dealing with 16
the issue or has made certain recommendations about 17
noise modelling, needs to be undertaken at night-time as 18
well. 19
- A. Are you wanting me to be an acoustician? 20
- Q. No, we can reasonably assume most people sleep at night. 21
That is a fair assumption, is it not. 22
- A. That is a fair assumption, a small part of the 23
community, shift-workers, but the general population 24
will sleep at night. This committee suggests further 25
modelling needs to take place for nighttime activity. I 26
don't think we are in any disagreement with this court 27
that turbines can be heard and that they are heard more 28
by some people than others. This information is in my 29
statement. I am not entirely sure what I am being asked 30
to comment on. Are you asking me to specifically 31
indicate why that statement was omitted from my 32
testimony? 33
- Q. In effect, I am asking why you didn't put forward that 34
page. You put forward the preceding page and a couple 35
of pages thereafter. 36
- A. I was dealing with health effects, and the issue of 37
noise was not in contention, since I had already 38

acknowledged that some people may have disturbed sleep 1
than others. I see no additional benefit when I have 2
acknowledged something, in mulling over the point. I am 3
at a loss to understand the point you are making. 4

HIS HONOUR: That recommendation 17 is included in the 5
summary of recommendations. 6

XXN 7

Q. P.118 'Vibroacoustic Disease'. See that heading. 8

A. Yes, I do. 9

Q. Again that page has not been included in your paper. 10

A. Yes, because I am not clear what vibroacoustic disease 11
is or what the relevance of vibroacoustic disease is to 12
wind farms. 13

Q. Even though this council committee is considering wind 14
farms specifically. 15

A. The statement, if I can refer you to .7.43. 16
Vibroacoustics is used, something that appears with very 17
high vibration for people who were working with special 18
machinery, like really heavy industrial machinery and 19
the vibrations will be so heavy their cells will be 20
disturbed. There is no way this could be the case with 21
wind turbines, so I did not know why this is bought up 22
as an issue. It does not have anything to do with wind 23
turbines, that is 7.43 and it's reference is 497. 24

Q. You have included in your statement at p.123 'Committee 25
Comment' 7.67. 26

A. Committee comments. Yes. 27

Q. You are not disputing the committee's comment that there 28
is unique sound characteristic from wind farm noise. 29

A. No, I have made that statement on a number of occasions. 30

Q. The next part of it, that there are difference 31
influences on the perception of this noise. 32

A. Correct and I have made that statement. 33

Q. Do you also acknowledge the first part of the next 34
sentence. 'The committee further notes noise annoyance 35
is an adverse health effect that can result from wind 36
farms'. 37

A. Correct. 38

- Q. You say that in itself is not enough basis for you to be 1
alarmed in conjunction with the other material that has 2
been presented and considered by you. 3
- A. We are hearing different bits of information, so let's 4
keep some things separate. Let's talk about noise very 5
separately from the issue of infrasound, because if you 6
blur them, then it becomes very difficult to provide a 7
concise and cogent answer to your question. What I have 8
stated in my testimony very clearly is an 9
acknowledgement that under certain circumstances, there 10
will be a perception of noise by people, and that may 11
lead to sleep disturbance, and that with or without the 12
presence of anxiety, may lead to an adverse health 13
effect. Whether that is annoying, doesn't matter how 14
you operationalise that. That is true, what the data 15
says that is true for a small percentage of people. How 16
you link that to the sort of data I have been provided 17
and the assertions that have been made, is to me 18
completely unclear, because if you accept that there are 19
certain percentage of people who will have sleep 20
disturbances, you already have information of the health 21
effects. You know that information has been available 22
before the Peterson paper and has never been in any 23
dispute. So I am not entirely clear what you are asking 24
me because I have acknowledged where I believe there is 25
an issue, and I have questioned where I believe the 26
evidence is unclear and I believe I have been quite 27
consistent with that. 28
- Q. Well you have been. What I am putting to you is when 29
you read that committee comment in conjunction with the 30
other information that has been presented to you, that 31
that doesn't cause you to form an opinion that we need 32
to further research this issue and try to work out what 33
is causing - 34
- A. The issue is clear, the statement is clear, the issue is 35
clear, it has been stated by others, it has been 36
asserted in my testimony, it's not something I am going 37
to state in any other way, sir. 38

Q. Perhaps I am not clear. When you say 'the issue is clear', what do you mean by that. 1
2
A. I am saying and I will refer back to my testimony if I may. 3
4
COMSR MOSEL: 24 and 25? 5
A. No, it was a statement around health effects and sleep which I had before and now I can't find it. I apologise. 6
7
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HIS HONOUR: Para.14. 9
A. Thank you. 'The issue of sleep disturbance is complex since it may be a consequence of stress and anxiety in and of itself and/or noise perception'. At that point it's perhaps relevant for me to comment that I have no testimony today, I can't recall if it's something you read out or something I heard from Dr Laurie. I believe it was the statement from Mrs Godfrey that you read out or alluded to indicating the sleep disturbance got progressively worse. So this may well be, this interplay between sleep and anxiety, is just speculating on that. A similar circumstances may be seen in other circumstances etc. If you then refer to the paper I presented on road traffic noise, which is the attachment at the back of 10, no sleep and poor health might end the relationship between road traffic noise and cardiovascular problems, and in that analysis, which I included partly to highlight the issue, but also because I consider it to be an extremely well done study and wanted to illustrate to the court what I consider to be good science, the conclusion was that the analysis showed no relationship between noise exposure nor response to noise and cardiovascular problems. Now it's acknowledged some people would hear noise, it's acknowledged that on some occasions the noise will disrupt sleep, it's unclear to me for any one individual to be consistent, the noise is at a particular location, whether it's like a car that goes past or whether it's any different to if you sleep close to a busy motorway and there are constantly cars going past, which is often 10
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the case obviously, there is a change of amenity which
may be a consideration as far as I can see from at least
the journal from AR, the comments about noise being
audible in the minority at the time, so if it's noise
disrupting sleep it only occurred occasionally on that
case.

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The extent to which sleep may be disrupted because of noise for any one individual on a persistent basis is unclear to me. So, on the one hand I am acknowledging this issue, on the other hand I am indicating that careful studies of the relationship between these various factors have been done in the context of audible sound, and what we haven't got clear is this murky business of infrasound, because there now seems to be some dispute about the measured level of infrasound.

Q. But there is a difference between road traffic noise or aircraft noise or -

A. Aircraft noise is much louder.

Q. But one of the other studies talks about aircraft, road transport and rail noise.

A. Aircraft noise is very loud.

Q. But it's not continuous 24/7, is it.

A. Well, I'm not sure there is an assertion that necessarily for all people turbine noise is continuous 24/7.

Q. But you understand that if the wind is blowing, a turbine might operate 24/7.

A. It might be, and I've also heard testimony that it depends on the direction.

Q. But let's assume it's operating 24/7. You've heard the sound, you hear a whoosh every less than a second. You've experienced it yourself, haven't you.

A. Yes. I find it quite relaxing.

Q. That wasn't my question. You've experienced it.

A. I've experienced it.

Q. So it is a continuous cycle, potentially 24/7.

A. Again, I can't answer the question, because I'm not an acoustician, about where you can hear it, but I will make the point that, for the most part, I couldn't hear it, other than standing under the turbine in one other location.

Q. But the committee here, on p.123, acknowledges that noise annoyance is an adverse health effect that can result from wind farms. You acknowledge that as well.

A. Yes. 1

Q. That can lead to sleep disturbance and sleep disturbance
can have an adverse effect on one's wellbeing. 2 3

A. That's correct, although it is interesting to see the
evidence tendered to the court about the relationship
between adverse effects on blood pressure and turbine
output and I've found none. 4 5 6 7

Q. For three people. 8

A. Well, I didn't produce the data. I was given the data,
with an assertion that this was demonstrable evidence of
how terrible this is. 9 10 11

Q. With respect, there was never such an assertion. You, I
suggest, have read that into the information. 12 13

A. I did read it into the information from about three or
four different news reports, including on ABC. I found
it hard to escape that information. 14 15 16

Q. But your position is that you've read the affidavits in
the Quinn matter, you've read the transcripts Dr Laurie
has provided, let's say 50 to 60-odd people. You are
not prepared to rely on those but you are prepared to
rely on three blood pressure analyses to say positively
that there is no correlation between wind turbine output
and blood pressure. 17 18 19 20 21 22 23

A. Well, you are asking me to comment on the objectivity of
one set of data and not the other. 24 25

Q. I'm just asking you, in bare numbers, it seems odd that
you are seeking to rely on three numbers, but when
there's 50 samples provided, you don't want to rely on
those. 26 27 28 29

A. I was provided with data that I could objectively
evaluate. I objectively evaluated the data I was
provided. 30 31 32

Q. Turning to the last page of the document that I provided
to you, p.125, you see a heading 'Committee Comment',
para.7.79. In your statement you've touched on the
issue of emotional effects. Have you read that
paragraph 7.79 prior to today. 33 34 35 36 37

A. Yes. 38

- Q. You didn't think it was important to include that in your attachment. 1 2
- A. I have already included that in my attachment. I have indicated at point 12 'The anecdotal evidence that some people living in the vicinity of wind farms', etc., that is quite clearly stated. I've talked again about the issue in point 14 which addresses it. I'm not sure how more explicit you would wish me to be. 3 4 5 6 7 8
- Q. You would agree that if someone suffers depression from whatever cause, as a result of living near or adjacent to a wind farm, that that is an issue that needs to be addressed. 9 10 11 12
- A. If you're attributing cause and effect and you're saying that the depression is due to loss of amenity, or are you saying that the depression is due to infrasound, or are you saying the depression is due to audible sound? You know, there are many, many issues that colour this, and I think we've been through all of that with the evidence from the paper from Dr Peterson, which is not in dispute, with the evidence relating to other developments of a similar type that have environmental impact, that's not in dispute. These are phenomenon that are broadly associated with many different things. I'm not sure they can be directly ascribed in a cause and effect basis to sound from a wind turbine. So there are some things that, although I wish I could comment on with better clarity, I can't, because the information that I have been provided with is vague, in the sense that there is no sufficient dissection of cause and effect relationships. Does that constitute a need for additional research? I don't think so, because I think there is sufficient clarity around what already exists, and the issue then comes down to public health risk assessment, and that's a matter for the court to decide in the planning context. 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
- Q. What I am putting to you at the moment in relation to this passage is that the emotional response is a factor that needs to be considered and, if that leads to 36 37 38

depression, that is an adverse health effect. 1

A. The emotional response to anything needs to be 2
considered and is always in the context of many other 3
factors that occur in people's lives. 4

Q. You touched on the nocebo effect in your statement. In 5
your discussions with people in Waubra, did you form any 6
opinion that anyone was suffering from that effect. 7

A. I did not. 8

Q. How many people did you speak to in Waubra. 9

A. Probably half a dozen. 10

Q. Who live near or adjacent to the wind farm. 11

A. Yes. 12

Q. Did any of them report any adverse effects to you. 13

A. No. 14

Q. Any adverse health effects. 15

A. No. The only anecdote that was reported to me was of 16
someone's relative, or friend, I should correct myself, 17
who had bipolar disorder and, when feeling particularly 18
fragile, found that being on the wind farm improved that 19
situation. 20

Q. What if 10 people reported that to you. 21

A. That they felt better? 22

Q. Yes, if they had bipolar and they went near a wind farm. 23

A. To be honest, it is an anecdote, and I wouldn't know 24
whether it is the country air, the removal of 25
city-related stress, seeing a friend. It is an anecdote 26
and it doesn't appear in my testimony because it is an 27
anecdote and I highlight it only to say I am not willing 28
to rely on anecdotes. 29

Q. My question is: say you had reports of 10 people who 30
experienced those phenomenon, undertook that 31
self-treatment, that when they are on the edge of their 32
psychological condition, they go to the wind farm for 33
self-treatment, would you report that back to your 34
colleagues in that relevant area. 35

A. I would be very sceptical and let me tell you why. When 36
I worked in general practice in New Zealand, my 37
colleague was doing chelation therapy. It is a 38

discredited form of treatment for cardiovascular 1
disease. It is based on running a chemical called EDTA 2
through a drip into the veins and it's meant to leach 3
out all the plaque and cholesterol, and of course it 4
leaches out a whole lot of other stuff, so they run that 5
in through another drip. There was this very firm 6
belief, because he had seen two or three people improve, 7
that this must be a good treatment, but subjected to 8
proper study, it is not a good treatment and, in fact, 9
it is associated with significant harm in a number of 10
circumstances. The point is that you can believe your 11
own publicity if you're not maintaining a high level of 12
scepticism and objectivity in your evaluation of data. 13

EXHIBIT #A25 CHAPTER 7 OF THE GENERAL PURPOSE STANDING 14
COMMITTEE NO.5 TENDERED BY MR MANOS. ADMITTED. 15

Q. As I understood your evidence-in-chief, you have an 17
interest and expertise in relation to sleep disturbance. 18

A. We are conducting a study at present which involves home 19
sleep studies. 20

Q. Without breaching your client confidentiality, do you 21
have any patients who are exposed to noise 24/7, if I 22
can use that term again. 23

A. Yes. The interesting question, to which I don't know 24
the answer as yet: in the study, we have a series of 25
questionnaires that deal with the issue of noise. We 26
also have the capacity in the agreement to do 27
geographical mapping, which would give us an idea of 28
traffic density at any particular locality. We also ask 29
people about shiftwork, which of course is important in 30
circadian rhythm, day/night shifts. The sort of issues 31
are: what time do people go to bed at night; what time 32
do they wake up in the morning; how much coffee do they 33
drink before they go to sleep; how much alcohol do they 34
drink; have they had a fight with their wife or partner 35
or kids or neighbour or so on. They will all have an 36
effect. A bad day at work, and the many other 37
vicissitudes of life will affect sleep, including 38

medication use and a multitude of factors. We try and ask about all of these, including, as I say, the issue of shiftwork, and in the most recent version we are trying to incorporate some issues of noise exposure, although it's very difficult, unless you've got an objective measure of noise, as well as a perceived measure of noise - and this is a debate that now goes backwards and forwards - but in as much as we can objectify by GIS mapping, we will have that data. I don't know that I can tell you any more than that yet.

Q. But your report at least is considering road traffic noise, and that, I would suggest, is unlikely to be operating 24/7.

A. Well, I can't tell you which of these people have airconditioners running in their house at night, who can hear the refrigerator, the neighbour's airconditioning unit running, I can't tell you who's got ceiling fans going, I can't tell you who's got those fancy rotary watering thingies going out in a paddock that can make a noise. I can't tell you all of the sources. There are many sources of noise, like dogs bark, birds, crickets. Some of these noises are appealing, some of them are unappealing, and I guess the definition of noise is 'I don't like what I hear'.

Q. You mentioned airconditioning. Do you recall that in the affidavits in the Quinn matter, a number of people said they turned on their airconditioners to drown out the sound of the wind turbines.

A. I can't give you a number.

Q. But you recall reading that some people said that.

A. Yes.

Q. Did you read into that that they were seeking to get a continuous sound, rather than hearing the whoosh every one or two seconds.

A. I interpreted that as people who are very annoyed with the sound of the wind turbine and preferred one form of noise over another. I sometimes prefer listening to music to hearing the dog bark.

Q. Do you say that's a good analogy, do you. 1

A. It's not a good analogy. It's an analogy. I don't 2
comment on the quality of it. 3

Q. Do you agree, from your knowledge and understanding of 4
sleep disturbance, that continuous noise may have less 5
impact and disturbance than a noise which is cyclical, 6
like the whoosh of a wind turbine. 7

A. I think that that is an interesting question, and the 8
question to which people may or may not accommodate to a 9
specific type of noise - and I've raised that issue in 10
my statement - which is about sensory integration, is an 11
open question, and I've acknowledged and mentioned that 12
sensory integration may be one of the mechanisms. So 13
I've not ignored that at all. 14

Q. You haven't ignored it, but you haven't also answered my 15
question. 16

A. Perhaps because I didn't follow it clearly enough. 17
Maybe I should have asked again. 18

Q. What I was putting to you was that, with your experience 19
and background and understanding of sleep disturbance, 20
continuous noise may have less interruption on your 21
sleep patterns than a cyclical noise of a whoosh of a 22
wind turbine every second or whatever period of time it 23
takes. 24

A. And what I answered was that the notion that that may be 25
the case was presented in my evidence, that the 26
inability to accommodate the intermittent noise may be 27
more difficult than continuous noise, that's the sensory 28
integration. That was in my statement, Mr Manos. I'm 29
pleased for the opportunity to clarify that for you. 30

Q. You've also attached behind tag 4 a report from the 31
English Wind Energy Association, and the first page of 32
that is a chart, which I think is prepared by others, 33
and that just gives some indicative noise levels. Would 34
you agree that generally the noises that have been 35
generated by the types of activities are likely to be 36
intermittent noises, not 24/7 noises. 37

A. I think that would probably be true for everything 38

- there. 1
- Q. A busy general office, I mean, people don't work 24 2
hours a day, but that could be a continuous noise. 3
- A. I'll make the statement again: I think that would be 4
true for everything on the list. 5
- Q. It's not really fair to therefore compare the wind 6
turbine noise which might operate 24/7 with those sorts 7
of activity/noise sources. 8
- A. I believe I'm hearing an assertion that I haven't been 9
able to verify in the diaries, for example, that I was 10
given that the wind is audible 24/7, and also I was 11
under the impression that, depending on the wind 12
direction - I heard this from Dr Laurie - that there was 13
some intermittency and some remission from the sound of 14
the turbines depending on environmental circumstances. 15
So I believe that intermittency, as in periodic let's 16
say, may well be a characteristic of all of these. 17
- Q. Say you're at home for an entire week, you live on your 18
farm, and the wind farm adjacent, 500 m away or 800 m 19
away, is operating 24/7 for that entire week. The 20
circumstances of that are going to be different to the 21
examples that are set out of the various noise levels at 22
tab 4. Would you agree with that. 23
- A. What is the assumption I am to be making: that I can 24
hear it; that at a distance I can hear it; that I am not 25
at work during the day? I am not sure what you are 26
asking me to assume. 27

CONTINUED 28

Q. I said you are there 7 days, the entire time you work on the farm. 1
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A. Okay. 3
Q. And you can hear the wind farm. 4
A. Okay. Look, I know what you are getting at and it's a contributory negligence question. I don't know the answer to the question because when you work on the farm there are many other sources of noise, including the things that go touk, touk, touk round and round watering, which to my mind makes as much noise and as a irritating as a turbine. The extent to which someone might be irritated and annoyed and therefore upset and affected by the noise of the turbines as opposed to the myriad of other noises you get on the farm, the harvester, the tractor, the birds the crickets, the wind, I am sorry I can't answer that question. 10
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Q. But none of those other noises, again, are ever going to be intermittent, they are not there 24/7 and whoosh every one second. 17
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A. I believe I have indicated - I am also uncertain that your assertion that the turbine noise is there 24/7 is capable of being substantiated because that is not what I have taken away from the evidence to date. 20
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Q. How long did you spend near or adjacent to the Waubra wind farm. 24
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A. I was there for a day. 26
Q. I don't assume you were there for 24 hours. 27
A. I'm talking about the evidence in court, not my experiences at Waubra. The assertion has been made that it will depend on environmental conditions and quite clearly in many of the statements it says the wind, the noise is not always present. So, you know, on the one hand I'm perfectly willing to acknowledge all of the issues you raise but you are trying to push me into a corner to acknowledge something here which I think is not consistent with the evidence I have heard to date and I am finding this distinctly uncomfortable. 28
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Q. During the time that you were at Waubra do you 38

understand that the wind turbines were turning. 1

A. The wind turbines were turning, I could see it. 2

Q. Looking at Exhibit A24, which is the document which is 3
the personal journals of Dr Lawrie, behind the last tab 4
of the power outputs. Just turn to 13 November 2010. 5
Do you read that graph to indicate that the wind 6
turbines were operating 24/7 or, I should say, 24 hours. 7

A. On that particular date? 8

Q. Yes. 9

A. Yes. 10

Q. If we go to 24 November, they are obviously off for a 11
substantial period of the day. 12

A. Yes, may I ask you a question? 13

Q. No. With his Honour's permission you might. 14

A. May I ask a question? 15

HIS HONOUR 16

Q. If you are not sure of what he is getting at that's fine 17
but if you don't understand the question - 18

A. I'm not sure what he is getting at in the context of the 19
relationship between the graph which demonstrates power 20
output and audibility, which is what the question 21
relates to, and therefore I'm unsure as to what I'm 22
answering. 23

Q. I think you can say you are unsure as to what you are 24
answering and if Mr Manos wants to pursue it he can 25
pursue it. 26

XXN 27

Q. Do you understand that an operating wind turbine 28
generates noise. 29

A. I understand that an operating wind turbine generates 30
noise, I also understand that the noise and the 31
intensity of the noise varies according to climatic and 32
environmental conditions and also the position in which 33
the noise is measured. 34

Q. On 13 November 2010 the turbines seem to have been 35
turning the entire 24 hours. 36

A. Yes. 37

Q. I suggest to you there is every possibility that at 38

- least one property would have been exposed to continuous noise during that period of time, and that property would have heard the noise and would have heard the whoosh every second or so.
- A. On 13 November there is no record of individual AR in diary having heard the noise. Which individual are you referring to?
- HIS HONOUR
- Q. Maybe we can short-circuit this. If you were invited to arrive at an assumption contrary to your understanding of the evidence, that assumption being that unlike road traffic noise, unlike some of the other noises, the wind turbine noise was constant for every hour of every day over lengthy periods of time, would that situation, if you were asked to assume that, and the quality of the wind turbine noise cause you to see that that noise would be different from road traffic noise and other noises in terms of its annoyance.
- A. The short answer is I can only speculate on that, I can't give you an answer with any degree of certainty or knowledge, but I can say that if you had to think it through from first principles, a noise that was constant that didn't have any intermittency about it that was highly predictable in its constancy may well cognate to better than if the noise came and went. So one can speculate on these things in different directions, it is quite clear that the presence of the noise, and the acceptability of the noise are going to be variables which will impact on any individual's experience and if that individual's experience is adverse then it is adverse for them, there is no debating that.
- XXN
- Q. And we at least in relation to some of the people in the Howard area that that noise impact is averse and hence they turn on their air-conditioner.
- A. That is clearly stated in some of the testimonials, that is correct.
- Q. And what I'm putting to you and his Honour's question,

what that all means is, that can really impact on sleep 1
patterns and result in sleep disturbance. Sleep 2
disturbance can have a negative health impact on a 3
human. 4

A. That's correct and this is what I've acknowledged. So 5
that I will refer you back to statement 14. 6

Q. I understand that. If, in addition to the audible noise 7
from the turbines that are operating 24 hours, in the 8
example you used and the assumption you are making, 9
there is also infrasound, say at 90 decibels, would you 10
agree that that also could potentially affect one's 11
sleep. 12

A. You are asking me to speculate on the conformance of 13
infrasound and audible sound. I can speculate on 14
infrasound at 75 decibels when it comes from the 15
intermittent crash of waves on the beach doesn't appear 16
to have an adverse effect, if we talk about a variance 17
of 15 decibels of infrasound I honestly do not know. I 18
can't even begin to speculate on that matter. 19

Q. But you acknowledged earlier that at 90 decibels 20
infrasound could have an adverse effect on the human 21
body. 22

A. Yes, and the question did not relate to sleep. The 23
question related to the adverse effects that were among 24
those listed and the statement I believe at the time 25
were physiological effects or effects on physiology, and 26
it's an open question as to what those are. 27

Q. So you can't assist the court as to whether or not if we 28
got audible sound in addition to, say, infrasound at 90, 29
that that may also be another factor that affects one's 30
sleep pattern. 31

A. If you have audible sound and infrasound at 75, which is 32
the intermittent crashing of waves, which is the closest 33
I can get to this, it appears not to have any adverse 34
effect. Now that's the only way I can conceptualise 35
this because that's the only term of reference I have. 36

Q. In your experience with waves do they come in as 37
frequently as the whoosh say - I'm talking about 38

different concepts here - with a wave is the audible 1
part, you hear the crashing of the wave every few 2
seconds, whatever, it is not as frequent - 3

A. It depends a bit on the rides and the weather, I 4
suppose. 5

Q. But have you ever experienced waves that come in every 6
one second. 7

A. I think I have certainly been at the beach where the 8
waves have come in quite frequently. 9

Q. Not every second. 10

A. I can't tell you because usually I'm asleep. 11

Q. Early in your evidence - I didn't fully understand it 12
and that's a failing of myself - you made some comments 13
about a person who is coming and going, that the 14
symptoms seem to go when they leave. You recall that 15
evidence. 16

A. Yes, it's based on the information in the journal which 17
Dr Lawrie has referred to. 18

Q. AR, for example, was at Philip Island and there was some 19
changes in the cognition. But you have heard it 20
reported that people who are affected by wind turbines 21
their symptoms can dissipate or disappear if they move 22
away from the wind turbines. You understand that that 23
is what people are reporting. 24

A. People are moving away from their lives there, whether 25
it's specifically - I mean we get back to cause and 26
effect relationships. You know, you are wanting me to 27
speculate that - implying that it is cause and effect 28
from the turbines, insofar as the turbines are the 29
source of their distress and whether that's because they 30
are there and everything that's associated with their 31
lives there and the conflict and the entire issue. 32
Frankly, when I get away from work and everywhere my 33
blood pressure goes down quite significantly, I'm sure 34
yours is much lower at the cricket other than when 35
Australia is losing and I'm sorry about that, but I 36
think that there are many, many, many factors that 37
affect blood pressure and to assert that when you move 38

environment that it can be directly attributed to the turbine is a bit of a stretch. Now that's not to say it is or it's not to say it isn't, it's just to say one can't be sure.

Q. If you have an adverse reaction to something, moving away from the source can benefit you can't it. I give you a simple example, there is a putrid smell, if you are nauseous your response is to move away and hopefully that nausea will pass quickly. Why is that different to, let's say, let's assume that some people suffer headache when turbines are operating, when they move away from the vicinity of the wind turbines their headaches disappear, why is that different.

A. So the issue is cause and effect relationship. So do I have a headache because I'm stressed by the turbine or do I have a headache because I've got sleep disturbance from the turbine?

Q. Or the turbine, for whatever reason, has caused the headache.

A. You know, if it's 'for whatever reason' then you get into the murky territory of is it because of the sound, is it because of the infrasound, or is it because I don't like what I see and hear? Other than that is it because I've been involved in some community action order or are there other aspects of my life that are made difficult by this, because of this or in association with this? I think if the evidence was bringing out the consistency of the issues and they were dissected through in that manner, I think you would find people around the world would be far more convinced about the matter than what I have presented in my testimony, which is to say that I find the anecdotal reports to be difficult to hang my hat on as meaning anything specific other than the fact that there are a group of people who feel unwell, but I cannot ascribe cause and effect to that with any degree of certainty.

Q. If, say, a person was suffering vibrations when wind turbines were operating, they move away and the

vibrations go; do you imagine vibrations can be, for
want of a better word, started by the human mind.

A. Yes, I do. In fact just recently in one of the medical
journals, and I can't remember which one but it was one
of the kind of premier ones in the top tier, reported a
syndrome which is phantom vibrator syndrome where you
artificially feel your telephone or your pager vibrating
in your pocket. Now I get that.

Q. I get that too, what does that mean.

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A. You tell me. 1

Q. You read the article. 2

A. It means that there's this mind/body connection and you 3
can fantasise things that aren't really there; you get 4
that, I get that. Does it mean the vibrator was in the 5
pocket at the time? 6

Q. You're saying that you think there is a possibility that 7
the human mind can cause one's lips to vibrate. 8

A. Absolutely. 9

Q. And chest vibrations. 10

A. Absolutely. When I get anxious before exams I get 11
twitching of my eyelid. 12

Q. But if these symptoms are only occurring when the wind 13
turbines are operating is there any cause and effect 14
relationship there. 15

A. We don't know. We've just been through an agonising 16
analysis of the blood pressure trying to point out 17
whether the turbines are on or off the blood pressure 18
can be equally high. 19

Q. That's a different issue. 20

A. Why is it a different issue? 21

Q. You have pointed to an article about road traffic noise 22
not having any impact on the cardiovascular system in 23
general terms is the summary. 24

A. The point is the same, the point is there is a mind/body 25
connection and when you account for that you don't find 26
the effect of the road traffic noise. 27

Q. And there's anecdotal evidence to say when wind turbines 28
are operating people suffer headaches or vibrations or 29
chest tightness. 30

A. I don't think the anecdotal evidence that's the case has 31
been presented with sufficient clarity or rigor that 32
satisfies at least my analysis of it that that's the 33
case. 34

Q. Could it be that the infrasound is the root cause of 35
these problems. 36

A. You're asking me to speculate on infrasound. 37

HIS HONOUR: The professor has been at pains to tell 38

us he's not an expert in intra sound. 1

MR MANOS: He's learned a lot but learned nothing I 2
think he said. 3

HIS HONOUR: I'm not sure that asking him to speculate 4
that infrasound can be the root of the cause is really 5
going to help us. 6

MR MANOS: Let me ask a different question. 7

XXN 8

Q. The ear picks up audible sounds, sounds are vibrations 9
are they not. 10

A. Sounds are vibrations, yes. 11

Q. And the infrasound is at frequencies from 0-20 Hz which 12
the ear doesn't detect as an audible sound. 13

A. Correct. 14

Q. When I say 'the ear', the brain doesn't pick up the 15
audibility of that sound. 16

A. Correct. 17

Q. But any noise that has been generated results in a 18
vibration which is then picked up by the ear. Could it 19
be that infrasound, being present the whole time, is 20
causing a continuous vibration which then can affect - 21
creates a vibration in the head which then causes the 22
brain to vibrate giving rise to the headaches. 23

OBJECTION: MR HENRY OBJECTS 24

MR HENRY: That's just an invitation for speculation 25
and it doesn't seem to be - 26

OBJECTION UPHELD 27

MR MANOS: Because it's beyond the witness's 28
expertise? 29

HIS HONOUR: For the very reasons that I said in the 30
previous interchange; that this witness has taken us as 31
far as he can with respect to his knowledge of 32
infrasound and asking him to speculate, from a medical 33
point of view, based upon what infrasound may or may not 34
do is not going to help us. 35

MR MANOS: I would have thought it might be a key to 36
the whole matter. 37

HIS HONOUR: I've ruled on the question and it's not 38

going to assist your case for you to debate it any further. 1
2
XXN 3
Q. In your workings more as an academic have you had cause 4
to adopt the precautionary principle that you've seen 5
some information, if you like, research, which is 6
setting alarm bells ringing and you then implemented a 7
process where steps should be taken fairly quickly to 8
deal with that issue. 9
A. I do not believe so. 10
NO RE-EXAMINATION 11
NO FURTHER QUESTIONS 12
WITNESS RELEASED 13
+THE WITNESS WITHDREW 14
HIS HONOUR: Where do we go from here? 15
MR MANOS: You will be pleased to know that I didn't 16
ask Professor Wittert any questions about animals even 17
though I had some questions. I'm assuming I'm going to 18
be commencing on Monday with my lay witnesses again. 19
HIS HONOUR: Who are? 20
MR MANOS: Mrs Godfrey, Mr Stepnell and Mr Manning. 21
HIS HONOUR: And that will complete your case? 22
MR MANOS: I wish I could say yes. 23
HIS HONOUR: Why can't you? 24
MR MANOS: Because there's an issue that was raised 25
with me at lunchtime that we need to investigate. 26
HIS HONOUR: I think it would be fair to all the 27
parties, and indeed the court, if we are let into this 28
issue. 29
MR MANOS: I would be happy to discuss it with you 30
in chambers with counsel but I don't wish to make it 31
public. 32
HIS HONOUR: When we rise we will see counsel in 33
chambers because I don't want to leave without having 34
some idea where we are going. 35
MR MANOS: But subject to that that would be my 36
case. 37
HIS HONOUR: Given that you will be needing to raise 38

MR MANOS CALLS	1
+SARAH ELISABETH LAURIE SWORN	2
MEDICAL DIRECTOR, WALKER FOUNDATION	3
+EXAMINATION BY MR MANOS	4
Q. I think you were engaged to assist in relation to the	5
proposed wind farm by Acciona in Allendale East.	6
A. That's correct.	7
Q. You have volunteered your services in that regard I	8
think.	9
A. That's correct.	10
Q. You're not being paid anything.	11
A. No, not at the moment.	12
Q. I think you've prepared an initial report for the	13
purpose of the court hearing.	14
A. Yes, that's correct.	15
Q. Looking at the document now prepared, is that a copy of	16
the document.	17
A. Yes, that's a copy of the document.	18
Q. And you have signed that document.	19
A. Yes, I have.	20
Q. You've made a declaration on p.11 in relation to the	21
matter.	22
A. Yes, I have.	23
Q. And I think you were provided with a copy of the	24
declaration in the usual form but you wished to modify	25
that declaration at the time you prepared this document.	26
A. Yes, that's correct.	27
Q. Can you just explain why you slightly modified that	28
declaration.	29
A. Yes, I will. I was concerned that my position in terms	30
of being an expert witness was going to be compromised	31
because of the fact there's a proposed development near	32
my home and because of that, I would be perceived to be	33
lacking in independence. Whilst I am actually keen to	34
find out the truth of these issues in terms of the	35
health effects of wind turbines I also didn't feel it	36
was realistic to put myself forward as an expert witness	37
for that reason.	38

Q. That document still sets out your opinions in relation to the matter. 1
2
A. Yes, it does. 3
Q. There were a couple of changes, additions that I wanted to make as an update, if you could tell the court about those. 4
5
6
A. On p.9, in the first paragraph where it refers to Dr Jason Cruickshank. Dr Cruickshank Isn't yet collecting data on the patients with stories of acute hypertensive crisis. That's on hold for now, the only other date is that the one of the sleep position in Ballarat is collecting data and participating in the study. So that was the only addition to that document. 7
8
9
10
11
12
13
Q. I tender that document. 14
EXHIBIT #A20 REPORT OF DR LAURIE TENDERED BY MR MANOS. 15
ADMITTED. 16
17
Q. You were then asked to respond to some information that the solicitor has taken on behalf of what Acciona had posed. I think you provided that information by way of email response to me dated 7 December 2010. 18
19
20
21
A. Yes. 22
Q. Looking at the copy produced to you, is that a copy of your email to me, responding to that request. 23
24
A. Yes, it is. 25
Q. There is an attachment to that document. 26
A. There is. 27
Q. Entitled 'Transcript taken by Dr Sarah Laurie'. 28
A. Yes, that's it. 29
Q. That forms part of the email. 30
A. It does. 31
Q. I think you have got some little changes that you would like to make to the transcripts. 32
33
A. Yes, there are. The first one was an inadvertent error. I just made a mistake in terms of the subject number reference. Subject No.20 'Parents' which are referred to, if you look under subject No.20 at the end I've referred to his elderly parents as being subjects 19 and 34
35
36
37
38

20 in my original transcript. That is incorrect. They are subjects Nos.24 and 25. The other changes: subject No.39, an update to this, this was a patient who had a history suggestive of an acute hypertensive crisis, I was able to obtain her medical records with her consent and it showed that in fact she didn't have an episode of an acute hypertensive crisis on that occasion.

Q. So you would strike out the fourth sentence.

A. Yes.

Q. That's what we should do.

A. Yes, that's correct.

Q. Are they the only changes to the transcript.

A. No, there's one more, which is an addition, subject No.20. About halfway through it refers to the fact that he was having cardiac investigations done. I've received confirmation from his GP and from him that he had a 24-hour halter monitor test done just prior to Christmas, which included blood pressure measurement and that result, I haven't seen the reported result, however his GP and the patient both told me that his nocturnal blood pressure at night apparently when he was asleep was markedly elevated.

Q. You said a halter measurement.

A. Halter, blood pressure halter monitor test.

Q. What is that in layman's terms.

A. A halter monitor test is a continuous ECG trace of your heart rate. It's not something that a patient measures themselves. It's something that a technician or doctor would fit you with and information about your heart rate and your blood pressure is transmitted into a little device that you wear on your belt or in a pocket and then it's read by a technician cardiologist later. As a result of that test his GP is so concerned about the level of his blood pressure being so high despite having normal blood pressure during consultation in the doctor's rooms and also when he was measuring it at home, that she started him on antihypotensive medication and he's reported me in the last few days that he's now

getting dizzy during the day. 1

Q. You make those additional comments in relation to 2
subject No.20. 3

A. That's right. 4

MR MANOS: I tender that email and the transcripts. 5
EXHIBIT #A21 EMAIL AND ATTACHED TRANSCRIPTS TENDERED BY 6
MR MANOS. ADMITTED. 7
8

HIS HONOUR: I'm admitting all these documents because 9
I don't hear anything to the contrary from the 10
respondent. I assume that's the case. 11

ADJOURNED 1.05 P.M. 12
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RESUMING 2.19 P.M. 1

Q. Before lunch we were considering some of the documents 2
you presented. The next document I think you prepared 3
is an addendum to your original report, which is exhibit 4
A20. Looking at the report entitled 'Addendum of 5
Dr Sarah Laurie' dated 7 December 2010, attachments 6
under tag 1, is that your addendum report. 7

A. Yes, it is. 8

Q. That addendum I think largely reports on a conference 9
that you attended in late October in Canada. 10

A. Yes, that is correct. 11

Q. You attached to that report some extracts from I think 12
some of the papers that were presented at that 13
conference. 14

A. That is correct. 15

MR MANOS APPLIES TO TENDER DOCUMENT 16

OBJECTION: MR HENRY OBJECTS 17

MR HENRY: I have got an objection to some of the 18
material in the addendum report. 19

HIS HONOUR: I thought you might. 20

MR HENRY: Particularly at p.4 of the addendum 21
report, which is at tab 1. The addendum report dated 7 22
December 2010, p.4 there is a heading 'Other information 23
from Canada animal/insect observations made by 24
residents'. Leaving aside the whole question about the 25
hearsay nature of the material which is being discussed, 26
these passages, particularly the first and second 27
paragraphs, seem to be directed to the question of 28
whether there might be adverse effects on animals and 29
whatever Dr Laurie's qualifications might be, as I 30
understand them they don't extend to matters of 31
veterinary science. 32

HIS HONOUR: What do you say about that, Mr Manos? 33

MR MANOS: I don't think it has been put forward on 34
the basis that the discussion is seeking to prove that 35
the wind farms are causing injury, if you like, to 36
animals but rather Dr Laurie's reporting on the 37
discussions that she had which arose during the course 38

of her attendance at a conference specifically about 1
wind farms. In my submission, they are generally 2
relevant. 3
HIS HONOUR: On what basis? 4
MR MANOS: Just in relation to her reports of what 5
she was informed about when she was in Canada. 6
Professor Whitham in his report, which is not before the 7
court yet, makes reference to low lambing rates at 8
Waubra. So there is a connection back, if you like, to 9
animals generally. So, I don't think what is being put 10
forward by Dr Laurie is seeking to prove the truth of 11
any impact on animals rather than simply reporting what 12
she has been told. 13
HIS HONOUR: Let's assume, to take a silly example, 14
that she was told that these turbines cause earth 15
quakes. It wouldn't be relevant, would it, if there is 16
no foundation for it for us to receive wildly 17
exaggerated claims. So, generally speaking the fact 18
that she is told things doesn't take it anywhere. It 19
has still got to be relevant, doesn't it? 20
MR MANOS: We are dealing with a wind farm that is 21
proposed in an area where clearly there are animals. It 22
is a matter that the court needs to consider in a 23
general sense. 24
HIS HONOUR: Why? 25
MR MANOS: Because the circumstances of the land in 26
which the wind farm is proposed is such that it's 27
primary production land effectively zoned that way, 28
largely used that way, and issues of animal behaviour - 29
HIS HONOUR: What are we to make of it though? 30
Because it is the subject of expertise, isn't it? If 31
there was to be a suggestion that these turbines cause 32
problems with animals, as I recall this is one of the 33
things that Mr Henry raised before we arose on the last 34
occasion, namely that if you were proposing to call a 35
farmer from the South East or wherever who was going to 36
talk about health effects with respect to animals, he 37
would be objecting because it was the subject of 38

expertise. Now, isn't this just another way of getting
this sort of evidence in?

MR MANOS: No. Given the circumstances of the land
say used for primary production purposes in a general
sense surrounding the area of the wind farm, it is a
relevant consideration that there had been some reports
about impacts on health. That is not to prove that
there is a link. It is simply a report that that is
what has been told to Dr Laurie. It is not seeking to
prove the truth of it. If this wind farm was proposed
in the middle of the CBD then we probably couldn't care
too much about what the worms are doing or otherwise
which is commented on as well but it is just a general
issue that is reported and, therefore, affects the
knowledge of this witness and this witness has come
forward and identified that information. Can I just
say, from my discussion with Dr Laurie if she had been
told that a wind turbine could create or have an impact,
likely to have an impact on an earth quake, I believe
she would put that forward. She is reporting to her all
information that she has received in relation to wind
farming.

HIS HONOUR: She is giving evidence as an expert in
matters of human health, not animal health. I uphold
Mr Henry's objection and the court will disregard the
references to animal/insect observations.

OBJECTION UPHELD

EXHIBIT #A22 ADDENDUM TO REPORT OF DR LAURIE DATED 7/12/2010
TENDERED BY MR MANOS. ADMITTED.

XN

Q. The next document I produce to you is a document called
'Further articles and information considered by
Dr Laurie'. Looking at the document now produced to
you, is that booklet a series of articles that you have
had regard to in your consideration of the matters in
both your original report and the addendum.

A. Yes, that's correct.

MR MANOS APPLIES TO TENDER DOCUMENT 1
OBJECTION: MR HENRY OBJECTS 2
MR HENRY: I object in particular to the document at 3
tab 3 which seems to be a statement of evidence prepared 4
by one Daniel Shepherd for a New Zealand court appeal 5
concerned with a particular proposal for a wind farm. 6
It deals with acoustic issues. This is not a learned 7
article. It is not an article published in a peer 8
review journal. It is simply a piece of evidence which 9
has been drafted for a particular purpose by a 10
particular expert in respect of a particular proposal. 11
The difficulty with this matter going in is that these 12
documents are generally understood only when there has 13
been an opportunity for and, indeed, the fact of a 14
cross-examination on the document itself. Ordinarily 15
you don't cross-examine the author of a peer reviewed 16
article in a journal but we know that often shades of 17
meaning arise from appeal statements and only in 18
cross-examination. It would be inappropriate for the 19
court to receive Mr Shepherd's statement of evidence 20
which was clearly tendered in a contested court matter 21
in New Zealand. 22
HIS HONOUR: Did that preclude the reception of any of 23
it? 24
MR HENRY: I would object to it all being received 25
unless there is some further explanation as to which 26
parts of it have been relied upon and in what way. I 27
would object to the totality of it. 28
One of the difficulties is that we are told that 29
these are simply articles and information which have 30
been considered by Dr Laurie in the formation of her 31
opinions but it is not identified in what way they have 32
influenced the formation of those opinions. So, we are 33
somewhat in the dark as to what use is to be made of 34
these documents. 35
HIS HONOUR: That's a different matter I guess, 36
Mr Henry. I am sure that if this was to be admitted we 37
would hear about the use to which we are to make of it I 38

guess. Whilst I can see that it may well have been prepared for a hearing, it is, in a sense, a statement of evidence. There is a lot of general material in there, is there not?

MR HENRY: That's true.

HIS HONOUR: There is reference to standards and then reference to articles and reference to studies, do they fall into the same category of needing to be read in the context of the circumstances surrounding the particular hearing or could they not stand on their own?

MR HENRY: They wouldn't necessarily stand on their own if they had been put together as part of a statement of expert evidence for the purposes of a particular appeal proceeding for a particular proposal. We don't know enough about the context of that proposal or that appeal proceeding to be confident that what is said is a complete and reliable record of the body of scientific information which is relevant to the issues before this court. That's the difficulty.

HIS HONOUR: I understand what you are saying but I just see so much of what is contained within this as being of very much a general nature and it is almost like the author of this has put his name up and then produced a whole series or referred to a whole series of studies really. The extent to which we would rely upon them might be the subject of debate but whether they are inadmissible because they have formed part of an expert statement, I am not sure that I necessarily see that.

MR HENRY: I am in the hands of the court. I have made my objection. If the matter goes to weight I will make submissions at the end of the day.

HIS HONOUR: It is a matter I think that goes to weight and we will admit it. If that is the only part that is objected to we will admit the further articles and information considered by Dr Laurie.

EXHIBIT #A23 FURTHER ARTICLES CONSIDERED BY DR LAURIE 1
TENDERED BY MR MANOS. ADMITTED. 2
3
XN 4
Q. The next document is a document entitled 'Personal 5
journals recording blood pressures etc'. Looking at 6
this document, is this a document that you have in 7
effect put together as following information that you 8
have received from various persons who are identified by 9
their initials living in the Waubra area and then 10
attached to some power output data from the Waubra wind 11
farm. 12
A. Yes, that is correct. 13
Q. The charts that appear under the first few tabs, are 14
they in a form which you had some input into. 15
A. All I did was design the pro-forma. I had nothing to do 16
with the material that was put in there. 17
Q. You designed the layout and asked these people to fill 18
out the document. 19
A. Yes, that is correct. 20
Q. You have the names of the persons whose data is 21
recorded. 22
A. I do. 23
Q. And would simply protect their confidentiality by simply 24
inserting their initials. 25
A. Yes, that is correct. 26
EXHIBIT #A24 DOCUMENT ENTITLED 'PERSONAL JOURNALS RECORDING 27
BLOOD PRESSURE ETC.' TENDERED BY MR MANOS. ADMITTED. 28
29
Q. The individuals whose details appear in Exhibit A24, 30
they are all people you have spoken to personally. 31
A. Yes. 32
Q. In Exhibit A21, which was the email where we had the 33
transcript where you spoke to all of those people. 34
A. Yes. 35
Q. Approximately how many people have you spoken to 36
personally to discuss medical issues with them who live 37
near or adjacent to a wind farm. 38

- A. Okay, in combination with the Australian people and people that I met at the conference and people I stayed with in Ontario, it would be around 60.
- Q. Have all of those people reported to you any adverse symptoms as a result of living near or adjacent to a wind farm.
- A. Yes, those people have. There have been a couple who said they live adjacent to a wind farm and they have had absolutely no health problems.

CONTINUED

Q. When you say a couple, could you quantify, is it two, 1
three, five, 10. 2

A. Two, three, yeah. 3

Q. I think you've also read the affidavits that were 4
prepared and filed in another court proceedings. 5

A. Yes, that's correct. 6

Q. Looking at the bundle of documents now produced to you, 7
is that the bundle of affidavits that you have also had 8
regard to. 9

A. Yes, that's correct. 10

Q. Have you spoken to any of the deponents to those 11
affidavits personally. 12

A. Yes, I have spoken to a couple of them. 13

Q. In person or by telephone. 14

A. In person. In person with three I think and by 15
telephone with one. Let me just double-check. Yes, two 16
in person and one by phone. 17

Q. Can you indicate from - 18

A. Sorry about that. It's three in person and one by 19
phone. 20

Q. Would you be in any breach of any confidentiality if you 21
were to identify who those people are. 22

A. No, I don't think so. I have spoken in person with 23
Eileen Quinn, Graham Andrew Thomas, Robin Anne Thomas 24
and I've spoken by phone with Paul Jeffrey Wedding. 25

Q. Did you discuss with them matters that are deposed to in 26
their affidavits in terms of their experience in living 27
near or adjacent to the wind farm. 28

A. Yes, I did. I did not discuss the contents of their 29
affidavits. I just asked them what had changed for them 30
since the turbines had started. 31

Q. So that's information you have taken into account in 32
terms of preparing for today's hearing. 33

A. I didn't take the contents of the affidavits to put in 34
the transcript. The transcript's contents is purely 35
what I obtained from them personally but I am aware of 36
this, yes (INDICATES). 37

Q. For the purpose of giving your evidence today, you've 38

considered that material. 1

A. This material, yes, I have (INDICATES). 2

MR MANOS: On that basis I seek to tender that 3
bundle of documents. 4

MR HENRY: In my submission, that's an insufficient 5
basis on which to tender a bundle of documents. Simply 6
to say, presumably this is post the preparation of the 7
formal report and the addendum, it seems that the 8
witness has now been given a series of affidavits that 9
were tendered in the other matter, the matter of Quinn, 10
and said 'Have you read these before you came along to 11
give evidence'. 12

No question has been asked as to what effect the 13
affidavits might have had on the opinion or the evidence 14
that is to be given and to simply tender them on that 15
basis, in my submission, is an insufficient basis on 16
which the court would receive them. 17

We are not dealing here with a peer-reviewed journal 18
article. We are not dealing with some expert report. 19
We are dealing with a series of factual allegations and 20
I'm conscious that your Honour might not have seen this 21
document but the two commissioners might have because 22
it's material that was tendered in the matter of Quinn v 23
AGL. 24

HIS HONOUR: I'm aware of it because we discussed this 25
earlier on in the hearing during the evidence of 26
Mr Quinn when it was sought to tender these affidavits 27
and I ruled that we wouldn't receive them for some of 28
the reasons you are probably now going into, namely, 29
that I am not privy to the information that surrounded 30
the hearing of that matter, whilst my colleagues may be, 31
and that I think I indicated to Mr Manos at the time 32
that I thought that, rather than assisting me, it may 33
give me a distorted picture of the matter because I 34
didn't understand the full import of the evidence 35
because I wasn't in the case. 36

MR HENRY: The other difficulty is that there were a 37
number of other witnesses who gave oral evidence in the 38

AGL case which rather gives a different complexion to 1
the whole thing. If Dr Laurie has looked at half the 2
evidence in the Quinn mater but not the other half and 3
is now going to be invited to comment on the effect of 4
that half of the evidence, then, in my submission, 5
that's simply an unsatisfactory way in which to proceed. 6
I can say no more than that. 7

HIS HONOUR: Mr Manos, bear in mind - and I refer to 8
p.341 of the transcript - that I've already ruled in 9
relation to these affidavits. 10

MR MANOS: The affidavits are, again, part of the 11
knowledge basis that the witness relies on. I'll be 12
asking the court to take notice of the approach that 13
Dr Laurie has had in relation to speaking to people 14
personally in seeking to ascertain the personal 15
circumstances of people who live near or adjacent to 16
wind farms, as opposed to the approach of Professor 17
Wittert who does not seem to have spoken to anyone who 18
lives near or adjacent to the wind farm. 19

In terms of what you may have ruled, probably can I 20
say my understanding of these 13 affidavits, that 21
Mr James Thomas and Mr Paul Wedding gave evidence in 22
person, so their affidavits were supplemented by their 23
oral evidence. As I commented last time and I 24
understand your Honour's position, but the other members 25
of the court have had the benefit of considering this 26
material before. As I understand it, Mr Henry can not 27
object to the other 11 affidavits being received. To 28
that extent, their evidence can't be compared in a 29
different context. They weren't asked any other 30
questions. They simply had their affidavits tendered to 31
the court in effect by consent or at least not opposed. 32

This is information that goes to the heart of the 33
issues that we are raising in relation to the health 34
effects of the wind turbines. If Dr Laurie has taken 35
this material into account in the preparation for giving 36
evidence because it's a relevant consideration, 37
otherwise she will be cross-examined 'Where did you get 38

that information from? Did you just make it up?'. 'No, 1
I've read it. I've seen the information. I've spoken 2
to these people as well'. 3

HIS HONOUR: Well, the only thing I would add to what 4
I have said, Mr Manos, is I note that the attitude of my 5
colleagues was that they were quoting from para.99 of 6
their decision that they were 'unable to draw any firm 7
inferences from the anecdotal evidence before us' and 8
that's in reference to these affidavits. 9

MR MANOS: I don't understand there is any medical 10
evidence sought to be led in that matter by a qualified 11
medical practitioner. 12

HIS HONOUR: No, I'm not inclined to receive these 13
affidavits for the reasons I have already outlined, so I 14
uphold Mr Henry's objection. 15

XN 16

Q. How many wind farms have you visited. 17

A. In Australia, I visited in South Australia Clements Gap, 18
Mount Brian, Waterloo. In Victoria, I visited Cape 19
Bridgewater, Waubra, Toora. In New South Wales, I 20
visited Crookwell, and in Ontario, I visited wind 21
development north of Toronto in the Shelbourne and 22
Amaranth areas. 23

Q. Is that one or two. 24

A. Look, it's a large extended wind development that 25
extends I think in technical terms to two different 26
proponents. I couldn't give you the exact details. 27

Q. About 10 or so wind farms. 28

A. Yes. 29

Q. Have you spent much time in the area of those wind 30
farms. 31

A. Yes, I have. I've spent not weeks on end but I've 32
certainly stayed for a period of days next to the Cape 33
Bridgewater wind development, and north of the Waubra 34
wind development and I visited the Toora wind 35
development for one afternoon last year. In Canada, in 36
Ontario, I visited, over a period of a couple of days, 37
where I was actually staying every night, it was not 38

next to a wind development but I spent quite a lot of 1
time during the three days. 2

Q. How many nights would you have spent sleeping in 3
premises near or adjacent to a wind farm. 4

A. One, two, about seven by now, yes. 5

Q. Have you noticed any symptoms to your health as a result 6
of any of those stays or visits sleeping near or 7
adjacent to wind farms. 8

A. Yes. I have not initially, not the first 24 hours, but 9
after that I certainly did. There was one evening when 10
I developed quite severe nausea quite out of the blue 11
and I was at that stage staying in a house where I 12
didn't know whether the turbines were operating. It was 13
about 3 km from the nearest house. It was in a valley 14
and you couldn't see the turbines. 15

Q. Was that the only symptom. 16

A. It was the only symptom at that stage. I have had 17
headaches. I never get headaches but I have had 18
headaches regularly when I've been in the vicinity of 19
turbines when they have been operating over both night 20
and during the day and I have recently just come back 21
from visiting Victoria. I was at Cape Bridgewater and 22
again, while I was there, I developed headaches and also 23
got symptoms of the ears ringing, as they're commonly 24
described, some ringing in the ear, some tinnitus, 25
neither of which I've had before. 26

Q. So that was only as recently as, what, last week. 27

A. Yes. 28

Q. Did those symptoms pass after you leave the area of the 29
wind farm. 30

A. Yes, they did. The headaches, not straightaway, it 31
would take about half an hour but the ringing in the 32
ears, certainly. 33

Q. These symptoms that you've experienced are similar to 34
what people have reported to you. 35

A. Yes, they are. 36

Q. Now you started your interest in this matter because I 37
think a wind farm was proposed near your own place of 38

residence. 1

A. Yes, that's correct, yes. I had no idea that there were 2
any health concerns at all with turbines and, in fact, 3
my son and I used to go and watch Mount Brian being 4
built. He was two or three at the time and fascinated 5
with big trucks, as little boys are, so we used to go 6
and watch them being constructed and he took a great 7
interest in what was going on and so did I. 8

Q. I think you have taken your children to a rally 9
supporting green energy. 10

A. That's right, we did. Our family is very concerned 11
about climate change. We've got solar panels on our 12
roof and we have plenty of like-minded friends and 13
neighbours in the valley and also just personal friends 14
who are active in the green movement and very concerned 15
about climate change and what we can do to mitigate. So 16
when the children were four, I think it was September 17
2008 a friend of mine was organising a rally with Getup 18
which is an advocacy organisation and she asked if the 19
children would like to proceed in a rally down King 20
William Street and they were keen to do that. So they 21
ended up carrying a wind turbine. 22

Q. Were you supportive of wind turbines. 23

A. Absolutely, I still am but in the appropriate place. 24

Q. Since the turbine plans were announced to you, are you 25
able to help the court generally as to how much time you 26
would have spent on gleaning information, talking to 27
people generally in relation to wind turbines. 28

A. Yes, certainly. I was first made aware by an Origin PR 29
person who rang one night. I think it was March 2010. 30
At the time it was 7 o'clock at night and I was trying 31
to get the kids to bed and I said to this person that 32
no, I couldn't attend a community meeting the following 33
night because one of the children was sick and I spent a 34
fair bit of time on my phone because my husband works 35
away and I was very interested and he was saying there 36
wasn't any angry health effects, 'rest assured' but just 37
that week Dr John Carnie had brought out the press 38

release in Victoria to say that there were no adverse 1
health effects, and I was reassured by that and pressed 2
on with my life and then about a month later one of my 3
neighbours came to me with a paper found on the Internet 4
by Dr Amanda Harry. Dr Harry described what happened in 5
a little village in Wales where symptoms were occurring, 6
and she was a country GP like me, and that made me very 7
concerned because the range of symptoms that she 8
described did appear to have a temporal relationship 9
with the turbines that were starting, turbines had 10
commenced operation in her village. So the symptoms 11
were quite worrying and I decided I needed to look into 12
it a bit more thoroughly. I had to have some major 13
surgery so I didn't pursue it until June, July. I was 14
asked to speak up at a public meeting in Laura to give 15
my opinion on what I was finding out and really, since 16
July 18, which is the day I realised that there really 17
were some significant and very worrying health concerns, 18
I've spent up to 18 hours a day on this. 19

Q. Every day. 20

A. Every day. 21

Q. Who has been funding all of that. 22

A. My husband. 23

Q. You gave your position as a director of the Waubra 24
Foundation; is that an unpaid position. 25

A. Yes, it is. The Waubra Foundation is an organisation I 26
have helped set up the idea of. It was conceived by a 27
Victorian man called Peter Mitchell who was concerned 28
about, as I was, about the lack of research that had 29
been done into the adverse health effects of wind 30
turbines, particularly in light of these growing reports 31
and the growing number of people experiencing health 32
problems around the world. So he drafted up some 33
objectives and applied to have this foundation 34
registered but I think he was possibly waiting for 35
someone like me to come along. Then within a couple of 36
days of me speaking at this meeting at Laura, he rang me 37
to ask me if I would be interested in helping to work on 38

this which is what I was doing anyway because I was very
keen to find whether or not, indeed, these health
problems people were describing were real. I found it
very difficult when I started working to work out what
was genuine and what wasn't and there was a lot of spin,
I would call it, on the Internet from both sides, from,
you know, people who I have described as climate
sceptics and people within the wind industry and I was
very interested in finding out what the truth was and I
still am.

Q. The work that you have begun doing in Waubra which is
partially recorded in those transcripts, what is the
purpose of gathering that information.

A. Okay. The purpose of gathering the information is so
that we can then work out what are the specific areas of
research that we need to carry out in order to find the
answer to the questions that we've got about what
symptoms are being experienced by people and what might
be causing these symptoms, the numbers of people who are
affected, and the sorts of circumstances which make it
more likely that some people are going to be affected
and others not. So it was in the effort to carry on the
research myself because I immediately identified that I
would be perceived as having a conflict of interest
although I have quite openly said on a number of
occasions now to the proponent, Origin Energy, that I
would be quite happy to have turbines up on the hills
near my home providing the independent health studies
are done to show that there are indeed no adverse health
effects.

Q. Is that still your position today.

A. Absolutely, it is. However, I guess, as I'm getting
more and more information on who are effected by
turbines and fellow professionals not working in the
area I am now extremely concerned and think there is an
urgent need for some research to be carried out and
answer these questions from everybody's interest,
including the wind industry.

Q. You have referred to some government inquiries that have
been undertaken. Has it been your experience that the
research that needs to be done is, in fact, starting to
be done.

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A. I understand from a colleague in Ontario, Dr Hazel Lyn who I met with when I was over there, Hazel is certainly proposing a public health study in the Gray/Bruce area. I met recently with some officers in the Victorian Department of Health. My understanding is that they are certainly going to pursue the issues of independent research.

Q. Does the Federal government have an inquiry.

A. Yes, that's correct there is currently a Federal government senate inquiry underway. Submissions close on 10 February. One of the key platforms that they are investigating is the reported adverse health effects of these turbines on people.

Q. In the various documents that the court has just received today, there are a number of articles and the court has received some articles that Professor Whittert has referred to, that is not the complete range of articles you have considered.

A. No.

Q. Were you able to help the court as to how many articles there might have been that you have considered.

A. There would be over 200, yes, it's quite an extensive range.

Q. You have read through most of those.

A. Yes, I have. I haven't got photographic memory but I can remember the gist of the more relevant ones.

Q. So the Waubra Foundation, you are gathering information seeking to identify areas where further investigation and research needs to take place.

A. That's correct.

Q. And you are hoping to have some independent research take place by people other than yourself.

A. Absolutely, who are independent of the foundation, because whilst we are wanting to act as a catalyst to get the research done, we also have an advocacy role. There is a clear conflict of interest there. I think it's really important that this research is done independently so everyone can trust it.

- Q. Presumably you have a funding issue. 1
- A. We do. 2
- Q. Is this something that you have raised with any level of 3
government. 4
- A. Well, we have. We are working on some fund raising, 5
shall we say. I guess pursuant to that one of my 6
colleagues Dr Liz Hanna who's with the ANU Centre for 7
Population and Health, Dr Hanna presented a paper to a 8
giant bureaucrats meeting, environmental health meeting 9
in Sydney on 24 and 25th November, and during that 10
meeting this issue was raised. I am told by Dr Hanna 11
that all present at that meeting agreed that there was a 12
need for independent research. Yes. So it's on 13
people's radar, put it that way. We are certainly 14
planning some independent research ourselves in terms 15
of, we have worked out there are certain things we need 16
to do. There are independent researchers trying to help 17
us on the smell of an oily rag, that include Dr Wayne 18
Spring, a sleep physician, a solid practitioner in 19
Ballarat and Dr Bob Thorne who is an acoustics, who has 20
an academic position, an associate professor at Massey 21
University in New Zealand and he has done extensive work 22
in wind farm noise measurement and in Australia and New 23
Zealand. 24
- Q. Have you gathered enough information to point you into 25
the right direction into the areas that need further 26
research and investigation. 27
- A. It's an ongoing matter. We have certainly got - I 28
believe on the basis of what we have been finding that 29
blood pressure is a real concern, and there are some 30
endocrine issues as well that are arising. 31
- Q. Can you be more specific. 32
- A. Yes, I can, there are concerns about cortisole, elevated 33
cortisole levels. There is also concerns with just 34
disturbances to sleep patterns, so the sleep studies are 35
also an urgent area for research. 36
- Q. Coming back to the elevated cortisole, what impact does 37
this have. 38

A. I am not an endocrinologist. I defer to my colleagues' expertise in this area. My understanding is elevated cortisole has a number of serious sequelae including cardio vascular disease, impaired immunity, diabetes, I think is another, but again I am not an expert in this area. 1
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Q. So blood pressure, endocrine and sleep issues, are they the primary ones merging at the moment. 7
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A. Yes, the psychiatric issues are extensive as well. There is a professor who's name just escapes me for a minute who's the head of the rural school of Melbourne university based in Ballarat. He's interested in pursuing something as well but we have only had very general discussions. 9
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Q. So your role in the Waubra Foundation is ongoing. You continuing to gather information. 15
16

A. That's correct. 17

Q. I think you have seen a report and various attachments that have been prepared by Professor Whittert, you have a copy of that I think. 18
19
20

A. Yes, I have. 21

Q. I think you have made some notes on that document for your own purposes. 22
23

A. Yes, I have. 24

Q. You have some other notes and terms that you have prepared. 25
26

A. Yes, I have. 27

HIS HONOUR: If we are going to be referring to this document in any detail it's probably appropriate to tender it now. 28
29
30

MR HENRY: I am happy to tender it now. 31

MR MANOS: Can we just receive the document and I will receive objections a bit later on. 32
33

HIS HONOUR: Yes, we will mark it for identification. 34

MR MANOS: I think it will be received but I might object to one or two of the attachments, a bit like Mr Henry did, but I think the report and most of the attachments are going to be received. 35
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MFI #Y REPORT OF DR WHITTERT AND ATTACHMENT MARKED FOR IDENTIFICATION. 1
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HIS HONOUR: Something went haywire. It's probably 4
indicative of the state of mind of all in the 5
courtroom - I am not taking the wrap for this alone, but 6
there is no exhibit V and no exhibit W. When we went to 7
Exhibit X which was the New Zealand Standard of 8
Acoustics Wind Farm Noise, I am loathe to go back. 9

MR HENRY: I have got a V and a W, but no X. 10

HIS HONOUR: Don't be difficult Mr Henry. 11

MR HENRY: I am happy with what I have. 12

XN 13

Q. You have read through the statement of Professor 14
Whittert. 15

A. Yes, I have. 16

Q. And the attachments. 17

A. Yes, I have. 18

Q. As I read Professor Whittert's statement, he hasn't been 19
able to find any correlation, if you like, between wind 20
turbines and negative impact on human health. Putting 21
it very generally in support of that, he's had reference 22
to all the articles. Has that opinion or statement 23
caused you to alter the opinions you have formed in 24
relation to the matter thus far. 25

A. No. 26

Q. The material that Professor Whittert has referred to, is 27
that material that you were aware of prior to 28
presentation of his report to you. 29

A. Some of it I had seen. Some of it I hadn't. 30

Q. Some of the material has been around for 20 years. 31

A. Yes, some of it had been. There were some articles 32
however I hadn't seen that I found very interesting. 33

Q. You have read through those. 34

A. Yes, I have. 35

Q. I think you wished to comment about various paragraphs 36
in Exhibit Y. Can I start with para.7. 37

A. Yes. 38

Q. In a sense, does that describe your position prior to March 2010. 1
2

A. Yes, I think that is fair. I guess if anything I was probably very pro wind energy and pro renewable energy. 3
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Q. In the next paragraph Professor Whittert says he's been engaged as an independent medical expert on the basis of his broad understanding of human health and understanding of ecological methods.' Do you claim expertise in those areas. 5
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A. No, I don't. 10

Q. You claim a general understanding of those matters. 11

A. Yes, very general understanding. My expertise is in taking history and practising as a general practitioner so taking history, examining patients, a very basic form of medicine, I am not an academic. 12
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Q. But ability to critically review evidence depends on how you interpret that, but that might be a reference to various papers published, articles. 16
17
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A. Yes. 19

Q. Or people's own case histories, so to speak. 20

A. I can certainly critically review evidence. I am not an academic. I don't do it for a living. But I can certainly look at papers and form my own opinion about the residents and the usefulness of the data. 21
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Q. Para.11. Professor Whittert says he's considered your report and in para.12 there is anecdotal evidence that some people living in the vicinity of wind farms etc. may present with a range of symptoms and central health defects.' I assume that is a reference back to your report, anecdotal evidence. Is that a fair comment in relation to what you have presented. 25
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A. I think it is in relation to the material that I have presented in the transcripts, because it certainly is a collection of anecdotes, but there is some other information that is available which is certainly not anecdotal which I have referred to, which I have submitted to the court. 32
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Q. Is the work that you have done, in a sense, at the 38

bottom of the food chain. 1

A. Yes, in terms of causality absolutely. 2

Q. What is at the top of the food chain. 3

A. In terms of the evidence that we have now Dr Michael 4
Nissenbaum's case control study. 5

Q. Between what you have done and the case control study 6
are their various different steps. 7

A. Yes, there are, there is a survey which Dr Amanda Harry 8
did which was the initial paper that I was concerned 9
about, that paper again is low down the food chain in 10
terms of causality, but it was a very good sort of 11
descriptive study of the sorts of symptoms that people 12
were describing experiencing after the turbines started 13
up in the area where they lived in Wales. 14

Q. So you have gathered information, there is a survey, 15
what is the next step. 16

A. The next step would be a case series. 17

Q. What does that involve. 18

A. A case series is a collection of - it's a more 19
formalised study and a collection of individuals who 20
have experienced, you know, the symptoms of whatever it 21
is that you are looking at in this instance. 22

Q. Can that be in a controlled environment. 23

A. It's more structured than just a survey. I guess what I 24
am moving onto is the work by Dr Nina Pierpont which is 25
described as a case crossover, so Dr Pierpont's study 26
wasn't just a collection of cases, a case collection, it 27
actually described what happened to people when they 28
were living in their homes and then what happened when 29
they moved away from their homes, and then what happened 30
when they came back again. So it's not just a 31
collection of anecdotes. 32

Q. But it is gathering information from a nominated group 33
of people and gathering that information three different 34
times, in effect. 35

A. That's right in a structured way with a structured 36
questionnaire. 37

Q. Is the next step with Dr Nissenbaum. 38

A. Dr Nissenbaum took this - 1

Q. Sorry, what tag did you give to that. 2

A. Dr Nissenbaum's study? 3

Q. Yes. 4

A. The case control. 5

Q. Case control, thank you. What does that involve. 6

A. That involved initially doing a case series, 7
interviewing with a structured questionnaire, people who 8
lived adjacent to a wind turbine development, and then 9
using the same questionnaire, interviewing people who 10
didn't live adjacent to a wind turbine development and 11
matching them for various characteristics, such as age, 12
sex and occupation, which is what he did as best he 13
could with that group, and he compared these two groups. 14
So the only difference between the groups essentially 15
was that they didn't live adjacent to wind turbines. 16
The non-exposed group were removed from the turbines. 17

Q. I think you have got some of the information from 18
Dr Niebaum's results in Exhibit A2. Did you mark your 19
copies. 20

A. Yes, I will just check. Yes, that's correct. The 21
second page in the tab 8, is the study table that I am 22
referring to. 23

Q. Do I read that there were 49 people who were the subject 24
of this case control study. 25

A. Yes, that's correct. 26

HIS HONOUR: Behind tab 8. 27

XN 28

Q. So we have got 49 people and then the chart, I think, 29
reads for itself. 30

A. Yes, that's correct, so 'exposed' means exposed to 31
turbines and 'non-exposed' means not exposed. 32

Q. Now it's got various topics there. In your discussion 33
with the 60 odd people you have explained who previously 34
lived near or adjacent to wind farms, are the symptoms 35
they speak of similar to those listed in that chart. 36

A. Yes, absolutely. 37

Q. So if I can be basic about it, their information which 38

you have gleaned, is it a bit like, where there is smoke 1
there is fire. 2

HIS HONOUR: Mr Manos, I mean, this is 3
examination-in-chief. You know better than that. If 4
you want to ask a question, elicit what this witness 5
thinks with respect to her professional opinions. You 6
don't need to put the words in her mouth. 7

MR MANOS: Thank you. 8

XN 9

Q. So coming back to Exhibit Y para.12, where we are 10
talking about the anecdotal evidence, that comment I 11
think is a fair comment on the information that you have 12
presented. 13

A. It's a fair comment on the information that I have 14
presented in the transcript. It was not my intention 15
ever to purport to do a study. It was collecting field 16
observations with which we would then inform our 17
research direction. 18

Q. Then Professor Whittert goes on: 'The observation that 19
these adverse effects have made when an affected 20
individual moves away from the region is suggested as 21
sufficient evidence to attribute causation.' Are you 22
suggesting because those symptoms apparently go when 23
people move away, that that is the cause of the ill 24
effect, that the wind turbine is a cause of ill effect 25
of those symptoms. 26

A. Cause and effect is difficult to establish in medicine. 27
I think it's suggestive that there is an effect going on 28
but I think there is an urgent need for more 29
comprehensive independent research to sort this question 30
out. 31

Q. Is any of the material in the personal journal relevant 32
in terms of that topic. 33

A. Yes, I think it is, in the sense that there are a number 34
of symptoms that people experience and they describe to 35
me they experience only when turbines are operating. In 36
four of the five subjects, from the personal injury 37
analysis, those people tell me - I have been to their 38

houses and I know when they are inside their house -
they can't tell whether or not the turbines are
operating from seeing them because they can't see the
turbines.

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XN 1

Q. They can't hear them as well. 2

A. In one of the houses, with certain wind conditions they 3
can hear them but they can't see them, but only when the 4
wind is blowing from the south-west, when the wind is 5
blowing from the north-west, the north, and the turbines 6
are operating they can't tell, but they still receive 7
symptoms. In other words they can still tell from the 8
basis of their symptoms that turbines are operating. 9
They go outside and they can see they are on. They can 10
be sitting in their house, on the basis of their 11
symptoms they can tell me whether the symptoms are 12
actually operating. In the house at Evansford the two 13
residents are definitely blinded, they can't see them 14
and can only hear them in very rare circumstances, they 15
can tell me on the basis of their symptoms whether the 16
turbines are turned on or not. 17

HIS HONOUR 18

Q. I would assume in an operating wind farm these turbines 19
would be going most of the day and night. 20

A. Your Honour, they don't turn when the wind is not 21
blowing. So when the wind is not blowing, the turbines 22
are not operating, and the wind is not always blowing so 23
there is a period of time, some time they are shut down 24
for maintenance or for other reasons, so no, they are 25
not operating the whole time. 26

Q. But for large periods of time I would assume they are, 27
are they not. 28

A. For large periods they are. 29

Q. And these effects that people complain of, do they 30
switch on and off; these symptoms that they complain of 31
are with the movement of the turbines or do they carry 32
over and have a lasting effect such as you describe. 33

A. It depend on the symptoms. The vibration symptoms that 34
people have described in my experience absolutely relate 35
to turbines on and turbines off. In other words, when 36
the turbines are off they are not getting the vibration 37
symptoms. 38

XN 1

Q. What do you mean by 'vibration symptoms'. 2

A. Various people have described symptoms where they have 3
described either chest or lip vibration, the lip 4
vibrations have been described to me as from a distance 5
of up to 10 km away. Then I discussed it with an 6
acoustician, who has experienced how far sound and 7
infrasound waves can travel and they have said yes, it 8
is possible that infrasound can travel that distance, 9
and yes, it is possible for those symptoms to be 10
experienced. That now has been reported to me by I 11
think five people now at a distance of five, 10 km. The 12
vibration systems in my experience are highly specific 13
for the turbines operating. Things like headaches, 14
people say yes, they certainly do get headaches when the 15
turbines are operating, but headaches, they can be 16
non-specific and I certainly wouldn't want to attribute 17
all headaches to the turbines operating, so they are not 18
- headaches are certainly an experience and people who 19
live next to turbines describe such a marked increase in 20
headaches, but the - when the turbines stop operating 21
there seems to be a lag time as well with the headache 22
going, so some symptoms yes, there is an on/off effect 23
but others no. 24

HIS HONOUR 25

Q. I guess that's why I asked it, if the symptoms carry on, 26
leave aside the vibration symptoms, if the symptoms 27
carry on, how would they if the turbines were operating. 28

A. In those houses? 29

Q. Well, they can't see them. 30

A. That's right, they don't know. 31

Q. They tell you they do know. They can get in there, they 32
drive and see. They are not far away. I'm suggesting 33
they are in their houses, they can't see them but they 34
know whether they are operating or not; they can't see 35
them, getting in their car would be defeating that, 36
wouldn't it. 37

A. On the basis of the symptoms they are experiencing at 38

the time in their house they can tell me whether or not
the symptoms are operating. There is a way of telling
whether or not the turbines are operating, apart from
looking whether the turbines are operating, getting on
the phone and telling your neighbours, that's one thing
people have done.

Q. Sorry, it's my fault. If there is a lag in your
symptoms, whether that be an hour or an afternoon or a
day, presumably they would think the turbines are on all
the time.

A. I don't think I'm quite following your question.

Q. Just that if they can tell you without looking that the
turbines are operating because of their symptoms, and if
their symptoms continue, as I think you have said, after
the turbines stop, how would their symptoms then tell
them whether the turbines are operating.

A. Okay, the symptoms I rely on for that are the ones I
find to be more specific for turbine operation. For
example the vibration, the tinnitus is another one or
the ear pressure, that is another one that is specific
for turbine operation. Other people have described
chest tightness and a very thick head, a distinctive
headache that they only get when the turbines are
operating, they don't get that headache any other time.
You're absolutely right, if there is a time lag, it -
the turbines can be off and they will still have a
hangover effect.

XN

Q. Talking about those persons, I think you've seen this
morning a further analysis prepared by Professor
Wittert.

A. Yes. This is his analysis, personal recordings.

Q. Yes. I just want to ask you some questions about that.

EXHIBIT #A20 PROFESSOR WITTERT'S ANALYSIS OF PERSONAL
JOURNAL RECORDINGS TENDERED BY MR MANOS. ADMITTED.

XN

Q. I think you have had a chance to consider that exhibit

very briefly. 1

A. Yes, that's correct. 2

Q. And you haven't checked the actual plots, presumably. 3

A. I have had a quick look. 4

Q. But you haven't compared the plotting. 5

A. No, I haven't had time. 6

Q. As I understand it, the blue line in the graph, the 7
weight consists of systolic blood pressure and the green 8
line is. 9

A. Waking. Systolic blood pressure blue line and waking 10
systolic blood pressure. 11

MR MANOS: Should the witness explain what they 12
mean? 13

HIS HONOUR: It's your case. 14

XN 15

Q. I don't understand the term, could you quickly explain 16
what those two terms - 17

A. I'll do it in layman's terms. The upper measure or the 18
systolic blood pressure is when you're taking a 19
patient's blood pressure you put a cuff on which 20
occludes the blood flow to your hand, the first flow is 21
the systolic blood pressure, when the sound goes away 22
that means the blood vessels are completely free of 23
occlusion, so the upper level, the systolic is when the 24
blood starts flowing through, having been occluded and 25
the systolic is where the sound - where there is no 26
occlusion. 27

Q. So if we have 150/90, 150 is the blue line, the 90 is 28
the green line. 29

A. That's correct. 30

Q. Professor Wittert concludes at the end of his report or 31
analysis that the data - I'll read it 'These data are 32
inconsistent with any assertion that the output from 33
wind turbine has the adverse effect on blood pressure, 34
do you agree with that comment. 35

A. The data that was collected in the personal journal was 36
not complete. It was preliminary data. I agree with 37
what Professor Wittert has said, that they have evidence 38

of hypotension. What I found interesting was that one 1
of them when he went away to Phillip Island his blood 2
pressure actually went back down to what I would 3
describe as being within normal limits. I guess the 4
reason that information was included was more because of 5
the other symptoms that were then recorded as well as a 6
particular individual with his blood pressure when he 7
went away. But it's not the gold standard way to 8
measure blood pressure. The best way to measure it is 9
for a 24-hour halter monitor test. If you're doing a 10
community measurement that's what we plan to do, because 11
we're certainly concerned about elevated blood pressures 12
in the morning that have been described, not just with 13
these people but with other patients. With new onset 14
hypotension that people describe with wind turbines 15
operating in the air and the latest patient with 16
hypertension, just received this morning, received a 17
report of his halter monitor, this individual is 18
reported to have a normal blood pressure when he's at 19
home, normal blood pressure when he's in the doctor's 20
room but the 24-hour halter monitor test shows he had 21
marked elevation of his blood pressure when he's 22
apparently sleeping - we need to repeat the sleep study 23
to see if in fact he was sleeping but I'm told by the GP 24
that himself it was so high that they have decided to 25
start him on hypertension medication. What has started 26
now is he tells me he is getting dizzy in the day. He's 27
being treated for a condition where his blood pressure 28
is going up at night, where his blood pressure is being 29
operated and apparently going through his boots when he 30
needed to do his farm work. We need to see what's going 31
on with him and other people. I might add, this has 32
been reported by somebody else in Ontario. 33

Q. Professor Wittert's report is an analysis in relation to 34
blood pressure. 35

A. Yes. 36

Q. As said there are some other comments that appear in 37
those personal journals as well. Just on the question 38

of blood pressure, were you putting forward or 1
suggesting that the blood pressure was being elevated 2
consistent with the output from the wind turbines. 3

A. Look, I'm concerned it's an effect but when I looked at 4
this data, I didn't do the sophisticated analysis, I 5
don't have access to that sort of programming that 6
professor Wittert says, I don't reflect it's a 7
suspicious area that's happening, I think it's an area 8
we need to look at a lot further. 9

Q. Coming back to Exhibit Y, para.13, Professor Wittert 10
describes certain symptoms that are said to constitute 11
wind turbine syndrome, is that the type of symptoms that 12
people claim to suffer. 13

A. No, they certainly do describe the headaches, the 14
palpitations, we are observing elevated blood pressure, 15
irritability and severe sleep disturbance. On my 16
experience what people have told me is that if they are 17
affected, they are often disturbed most nights of the 18
week and multiple occasions, so they are chronic, 19
severely sleep deprived. The effect on mood 20
concentration and memory, absolutely. I agree with what 21
Professor Wittert has said there, there are some other 22
symptoms that do appear to be unique to wind turbine 23
syndrome, it seems it is being called, particularly the 24
vibration and tinnitus and the ear pressure. The 25
symptoms that have been described on many many 26
occasions, I'm not familiar with them being described in 27
literature, to do with anxiety and stress. 28

Q. But you acknowledge there is a crossover between some of 29
those symptoms that are spoken of and symptoms 30
associated with anxiety and stress. 31

A. Absolutely. 32

Q. You would say there are at least those other three 33
symptoms that are mentioned. 34

A. Yes, absolutely. 35

Q. Then Professor Wittert in para.14 talks about sleep 36
disturbance, that's obviously a matter you've touched on 37
as well. What do you say in relation to that 38

discussion. You see halfway through. 1

A. Yes. Look, my experience of particularly the people 2
that were there but particularly people in Ontario that 3
haven't been the subject of the transcript and some of 4
the people in South Australia in Waterloo, particularly 5
they actually welcome the turbine into their area. The 6
visual impact of the turbines wasn't something that 7
worried them. What has led to their distress is the 8
fact that they have now developed symptoms of illness, 9
which initially they didn't attribute to the turbines. 10
For some they became unwell straightaway, for others it 11
took some months; for some of them it was only when they 12
really started talking to some of their neighbours and 13
started comparing notes and realised some of these 14
symptoms had come on since the turbines started 15
operating and as they went away on holidays or work and 16
realised they felt well when they went away, they came 17
back and started feeling unwell, that was when they 18
realised the turbines might have had something to do 19
with it. In fact their attitude toward the visual 20
aspect of the turbines didn't have anything to do with 21
it. I'm aware of the studies Professor Wittert referred 22
to, is in the circumstance, but in my experience that 23
has not been the effect of many of the people I've 24
talked to. 25

Q. Those people are people who can't see the turbines and 26
can't hear the turbines or both. 27

A. In some instances they can't see them and can only hear 28
them on rare occasions. Some people can see them. And 29
as I said, their visual impact was not something that 30
was weird to them at all until they started becoming 31
unwell, and I think now when they are feeling unwell and 32
attributing those symptoms to the turbines the turbines 33
have taken on a rather different picture. 34

Q. Those articles that, attachments that Professor Wittert 35
refers to you, are familiar to those. 36

A. Yes, I am. 37

Q. You were familiar with those prior to considering this 38

report.
A. Yes.
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Q. In the next paragraph Professor Whittert is setting out what he is seeking to do in his statement, whether he says the statement examines the basis for direct cause and effect relationships between the symptoms and the presence of wind farm, in a sense your information gathering is related to that topic, isn't it.

A. Yes, it is. I guess what we want to do is try and understand why people are experiencing these symptoms, what are the factors that are having an impact on that and, you know, with an interest to seeing how we can ensure that humans and turbines can co-exist rather than having a situation where at the moment there is many people across the world who appear to be getting very unwell. We would like to find out why this is happening.

Q. Paras.16 of Professor Whittert's report refers to some attachments and some information he has considered about noise from wind turbines. The papers that he has referred to, attachment 4, is that a paper that you were previously aware of.

A. I wasn't aware of that one. I am aware of other papers that are similar. I have looked at it.

Q. Do you have that paper in front of you, tab 4 of Exhibit Y.

A. I haven't got Professor Whittert's attachments here.

ATTACHMENTS HANDED TO WITNESS

Q. That chart that appears on the first page, have you seen that chart before.

A. Yes, I have.

Q. In other papers.

A. Yes, similar.

Q. This is an article prepared for the British Wind Energy Association, do you know anything about that association.

A. The British Wind Energy Association I understand to be an industry, yeah, an industry group.

Q. Para.18 of Exhibit Y is entitled 'Low frequency sound and infrasound', this is an issue that I think you have

taken notice of in recent times. 1

A. Yes. Yes, it is indeed. My discussions with - I was 2
intrigued by this because one of the issues that keeps 3
coming up is whether or not infrasound is emitted from 4
wind turbines and whether that's an issue that might be 5
explaining some of the health problems that people are 6
experiencing. When I spoke to Dr Thorne, who is the 7
author of that report - 8

Q. When you say 'that report'. 9

A. I am talking about the Noise Impact Assessment Report 10
Waubra Wind Farm. 11

Q. This is the report referred to in para.18 of Professor 12
Whittert's statement. 13

A. That is correct and also in para.17. I asked him about 14
this specific issue and he said that he, in fact, wasn't 15
happy with the noise assessments with respect 16
specifically to infrasound that had been done at Waubra. 17
I think there was an issue of both time and money which 18
limited what he was able to do. He was very keen to 19
come back and do further measurements. I understand 20
that's what he is planning to do. 21

Q. Did you learn anything about infrasound at the 22
conference in Canada in October. 23

A. Yes, I did. It was very interesting. Mr Rick James, 24
who is an acoustics - who has had quite a lot of 25
experience measuring noise emissions from wind 26
developments in Canada and North American shared some 27
recent findings and measurements he had done at I 28
believe it was a turbine development in Ontario. He 29
found that using some new sound quality analysis 30
instruments that he had actually measured infrasound to 31
a level of 90DB, which he was quite surprised at and 32
concerned. He has done multiple measurements I 33
understand since then which have confirmed that in fact 34
infrasound is emitted from modern up wind turbines and 35
at much greater levels than anybody had thought 36
possible. He is intending to follow this up as are a 37
number of other acousticians. 38

Q. When were those measurements undertaken. 1

A. Prior to the conference. 2

Q. Obviously. 3

A. Sure. Look, within a couple of months. It was only 4
within a couple of months prior to the conference. 5

Q. During the course of 2010. 6

A. Yes, it would have been. I can get the exact date if 7
you would like me to. 8

Q. Some of the documents that are attached to Exhibit Y 9
make reference to infrasound and some statement to the 10
effect, for example, that was associated with the older 11
technology wind turbines, do you recall reading those 12
statements. 13

A. Yes, I do. Dr Diesendorf I think was one of them. 14

Q. Was he involved in the New South Wales government 15
inquiry. 16

A. Yes, I think he said that. A number of people have 17
asserted that. There is no doubt that there is research 18
that I think NASA did that show that the old down wind 19
turbines did emit plenty of infrasound. My 20
understanding, I am not an acoustician but what I am 21
told by acousticians with whom I work with in the 22
industry, there has not been the comprehensive 23
measurement of the wind turbine specific infrasound 24
around wind developments anywhere in the world, because 25
of that we don't know. So, when I guess I see that 26
Dr Diesendorf has stated that infrasound is virtually 27
undetectable at a range of 400 m I would be very 28
interested to see what his evidence for that is. 29

Q. Do you know Dr Diesendorf. 30

A. I don't know him personally. 31

Q. Do you know if he is a medical doctor. 32

A. I have been told he is not but I don't know what his PhD 33
is. 34

Q. The work that Rick James did in mid 2010 when you said 35
he did measure up to 90DBA. 36

A. No, 90DB. 37

Q. Sorry, was that in relation to a newer style turbine or 38

older style turbine. 1

A. It was specifically in relation to modern upwind 2
turbines. 3

Q. Is that the only report that you are aware of in 4
relation to measuring infrasound associated with new 5
modern upwind turbines. 6

A. It is at the moment. However, I understand that 7
Dr Thorne is busy preparing to come and do some 8
measurements. So, you know, I am hoping that we will 9
have some data that we can look at. 10

Q. Do you know which particular wind farm he is going to be 11
measuring. 12

A. I know he is planning to go back to Waubra. I believe 13
there is other wind developments that he is looking at 14
going to. 15

Q. I think various of the articles attached to Exhibit Y 16
deal with this topic. When I say 'various', more than 17
one of the articles deal with the issue of infrasound 18
and I think those reports are ten or so at least in one 19
instance old. 20

A. Yes. Are you referring to the National Institute of 21
Environmental Health Sciences report, The Toxicology of 22
Infrasound? 23

Q. There are so many reports I can't remember which one it 24
is. 25

A. I wasn't responsible for that one, that as Professor 26
Whittert. Attachment 7, is that the one? 27

Q. Yes. That is a report that you were familiar with prior 28
to this matter. 29

A. Yes, it was. 30

Q. What you say is that - 31

HIS HONOUR: I don't want you to suggest what the 32
witness will say. 33

XN 34

Q. Since November 2001 we have obviously had Dr Rick James' 35
research. 36

A. Yes. 37

Q. That report though, does that provide any information to 38

you or does it assist you in relation to the effect that
infrasound can have.

A. Yes, it did. In fact, there is a couple of papers that
we are trying to get translation from Russian because we
thought particularly given the infrasound emissions that
Mr James had measured, we think they could actually be
highly relevant. There is a couple of studies on rats
and myself I think they were -

Q. The studies in rats is on p.24 of attachment 7.

A. Yes, that is correct. P.24, studies in rats Alekseev,
Glinchikov and Usenko 1985. That study was looking at
the effect of infrasound on hearts. The infrasound
doses in that 4 to 6 hertz at 90 to 145DB. I guess
prior to Mr James' measurements we thought that 90DB was
probably not relevant but I guess now we are
re-assessing that and, you know, we really urgently need
to measure exactly what the infrasound - the wind
turbine specific infrasound measurements are to see
whether or not any of this is relevant because we
suspect it might be. There was another study which I
think was cited in the Nishimura.

Q. What page is that.

A. It is a very good question.

Q. I see one at the foot of p.17.

A. I believe it is in here. Yes, that's the one.
Nishimura 1988, on p.17.

Q. Did you consider the comment under the heading 'General
Toxicology' which starts on p.11 and the articles that
were referred to there on p.12, the papers from
Kuralesin.

A. Yes, we did. I mean, I have looked at those.

Q. Ranneva, on the same page.

A. Yes.

Q. Those levels of infrasound are less than what Dr Rick
James has measured.

A. Yes, they are.

Q. It is reported there that infrasound can have an effect.

A. That's correct.

Q. On a person with psychosomatic complaints and sleep disturbance. So, is it your opinion that that report, in conjunction with information from Dr Rick James, means we need to have further research into this topic. 1
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A. Yes, I believe we do. 5

Q. The next paragraph, Professor Whittert refers to the American Wind Energy Association and Canadian Wind Energy Association published in December 2009 regarding wind turbine sound and health effects where it is said that that report concludes there is no evidence of harmful effect of low frequency sound even if audible from time to time. Do you agree, first, that the report attachment 6 stands for that general proposition. 6
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A. There is a bit of inconsistency in that document. That is what they conclude but there were some inconsistencies in it. However, I guess my issue with that is that there seems to be a lack of primary research evidence which really supports that, particularly given Mr James' measurements now I think, you know, we need to get some data on exactly what is being emitted from the turbines and then we can start to look critically at what is actually going on. 14
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Q. The cover sheet of that attachment 6 identifies the authors to that paper. 23
24

A. Correct. 25

Q. Have those persons prepared any other reports or articles that you have considered previously. 26
27

A. Yes, they have. Dr Leventhall has prepared a number of documents or been a co-author on a number of studies. One of them was from the journal of sound of vibration, which Mr James referred to in his presentation, which is in A22, No.3. 28
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Q. About five sheets in or so. 33

A. Yes, that is the one. 34

Q. What we knew about ILFN sick buildings, what is ILFN. 35

A. ILFN stands for low frequency noise. 36
37
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Infra and low frequency sounds (ILFN). That's the terminology that you used. And that particular article that Leventhall was the co-author on - or paper - shows that work performance of people suggested to varying levels of infrasound, when they were given certain work tasks to do, certainly affected their ability to perform those tasks and also affected their social cooperation with each other. So in other words the low frequency sound did have an effect on people even at those levels.

Q. We've been proceeding on certain assumptions or understanding about low frequency sounds. Can you describe what you mean by that.

A. What I mean by that, my understanding is and I'm not an acoustician. I've been taught by the acousticians I work with. My understanding is that less than 20 hertz is inaudible generally to the human ear. There are apparently some people who might be able to perceive noise so it's not heard and it's often not felt.

Q. Not -

A. Not felt.

Q. What do you mean by that.

A. Well, perceived as a vibration, for example.

Q. So when Mr James recorded 90 dBA with a modern upwind turbine, that's not 90 dBA as we would generally describe.

A. No, that's correct. DBA that's used for the measure of audible sound, I'm not an acoustician but my understanding is that measurement of dBA automatically will not include measurement of infrasound.

Q. So what's your understanding of the measurement of the 90 dBA that's been mentioned.

A. My understanding is that the intensity or dose of infrasound is 90 and if it's infrasound it will be a range of frequencies potentially but less than 20 hertz.

Q. So a certain sound pressure which would still not be heard or felt.

A. Yes, that's my understanding.

Q. But this report you just took us to says that in some

circumstances infrasound can impact on someone's ability to undertake tasks. 1

A. Absolutely. 2

Q. Coming back to Exhibit Y, dealing with para.20 there, the next paragraph deals with attachment 7, infrasound in the report in 2001 and revised in 2002. You simply would repeat your evidence, what we have just been discussing, that there has been work done in mid 2010. 3 4 5 6 7 8

A. That's correct, yes. That shows that infrasound is indeed a problem requiring a lot of further study. One further comment I make about the Nice paper, that is attachment 7, I note in I think it's p.3 - I'll just get it out - in the summary, they did talk about numerous gaps in our current knowledge and I think this is just a good example of that. 9 10 11 12 13 14 15

Q. Sorry, where was that. 16

A. Sorry, p.3, the last paragraph. 17

Q. Of attachment - 18

A. This is attachment No.7 which is 'Infrasound Brief Review of Toxicological Literature', okay, so in the summary, in the last paragraph, it refers specifically to the fact that 'There are numerous gaps in our current knowledge and in particular a lack of high quality long-term experimental studies of infrasound and inadequate characteristics of environmental infrasound' and that's precisely what I'm talking about; we need to do the studies. 19 20 21 22 23 24 25 26 27

Q. You see on the executive summary on p.5, second last paragraph 'There is no agreement about the biological equivalent of infrasound. Recorded effects include a number of things including: vertigo; imbalance; disorientation; nausea' etc. Are those some of the symptoms that have been described to you by people living near or adjacent to wind farms. 28 29 30 31 32 33 34

A. Yes, they are. 35

Q. Para.22, is there anything you wish to add in relation to that paragraph that you haven't thus far covered. 36 37

A. No, I think we have covered it already. 38

Q. In para.23, the professor reaches a certain conclusion. 1
based on the report he considered and including that 2
report from Dr Thorne, I think, to suggest that the low 3
level of infrasound is not causally related to any 4
adverse health effects. If say 90 dBA were measured 5
using Rick James' testing equipment, would that lead you 6
to form perhaps a different opinion to that. 7

A. Yes, I would. In fact in Dr Thorne's report he did say 8
that there was a need to study this further. I think he 9
made a precise reference to issues of causality and that 10
this required further study specifically in the Dean 11
report. 12

Q. On p.6, you have a heading the 'Health Effects of 13
Noise', a reference to the World Health guidelines for 14
night noise in Europe, attachment 9. Is that a document 15
that you're familiar with. 16

A. I wasn't familiar with that particular one now but I 17
have looked at it. 18

Q. Reference is made specifically there in para.25 to road 19
traffic noise. I think you've got some documents in 20
relation to the annoyance levels of different types of 21
noises. 22

A. Yes, I have that. There was - in both Mr Rick James' 23
attachment and I believe it was Christopher Mannings' 24
attachment. Attachment No.7 is easier to read so - 25

Q. Attachment to A22. 26

A. To A22, that's correct. 27

Q. Is this about seven sheets in from the end. 28

A. That's correct. 29

Q. Sorry, five sheets from the end there is a graph. Is 30
that what you're referring to. 31

A. I'm referring to that one (INDICATES) which is entitled 32
'Why does WTN -' meaning wind turbine noise '- affect 33
sleep so much?' 34

Q. Who is the author of that graph, do you know. 35

A. Yes, it was taken from - it was a work by Peterson, 36
Peter Peterson and it's referenced, I believe, in Rick 37
James' one. It's just difficult to read. 38

Q. Peterson is from Sweden I think. 1

A. That's correct. 2

Q. And she is an acoustician. 3

A. I believe. She has certainly done a lot of work in 4
measuring annoyance of people. 5

Q. But not a medical doctor. 6

A. No, she is not a medical. She's got a PhD but she's not 7
a medical doctor. Yes, on p.5 of Rick James' 8
presentation, entitled 'Annoyance of common noises 9
versus wind turbines', this is a similar study. It 10
refers to similar studies and it specifically refers to 11
that study by Peterson and Waye 2004, so the bottom line 12
which has the triangle - 13

Q. I'm trying to find that page. 14

A. It's p.5 of the presentation under attachment 3. That 15
one (INDICATES). 16

Q. Is that the graph showing basically the same information 17
as that other - 18

A. Yes, it just refers to a number of other studies and so 19
there is data from a number of other studies 20
superimposed on it but the reference to the particular 21
work that we are referring to in Chris Hanlon's 22
presentation is 'Wind Turbines, Peterson and Waye 2004'. 23

Q. To the extent that Professor Whittert is seeking to 24
correlate road traffic noise with wind turbine noise, 25
you say that's an inappropriate comparison. 26

A. Well, what has been found is that the characteristics - 27
well, the percentage of highly annoyed people for the 28
same sound exposure level in dBA are quite different 29
when you compare aircraft, road traffic and railway 30
noise to wind turbine noise. 31

CONTINUED 32

DbA by definition will not include infrasound. 1
 Q. Stating the obvious, there is also an essential 2
 difference between those varied noises in that usually 3
 the other noises in that graph are intermittent, aren't 4
 they. 5
 A. Yes. I guess there are particular sound 6
 characteristics, and Peterson and Wayne refer to that in 7
 their article. The fact that wind turbine noise can go 8
 for much of the night, but that it's a position noise 9
 it's a 'woosh, woosh, woosh' rather than a continuous 10
 sound. They postulated that was one reason it was 11
 particularly annoying at a lower sound exposure. Other 12
 people have postulated that perhaps it's the infrasound 13
 that makes it more annoying. We don't know. I think, 14
 Peterson and Wayne also talked about, if people didn't 15
 like the look of the turbines or the fact that the 16
 turbines were there, that could be a component in why so 17
 many people became highly annoyed at a lower dBA. I 18
 think there are a number of reasons, but certainly as a 19
 result of Mr James' measurement, I guess people now are 20
 wondering if in fact the infrasound component which 21
 people don't hear might be part of it. 22
 Q. At para.25 Professor Whittert states that they would 23
 occur, there would appear to be a 'strong independent 24
 psychological and personality factors' referring to 25
 attachment 10. Is that a report that you were 26
 previously familiar with. 27
 A. No, I wasn't familiar with this one. 28
 Q. You have read that report. 29
 A. Yes, I have read it. 30
 Q. Do you understand this report has been prepared by 31
 non-medical practitioners. 32
 A. Yes, I hadn't actually noted that. I can't actual see 33
 their qualifications. That could well be the case. 34
 Q. It's proposed by Susan Wakefield and Susan Elliott from 35
 the school of geology. 36
 A. Attachment 10, was it? 37
 Q. Sorry, I am looking at the wrong one. My apologies. 38

There are names that I can't pronounce there. 1

A. Aslack Fyhri, and Sasvang. 2

Q. So one is from the Institute of Transport Noway and the 3
other one is from the Norwegian Institute of Public 4
Health Norway. Based on that report, Professor Whittert 5
expresses his conclusion at para.26. 'There does not 6
appear to be a relationship between either exposure or 7
response to road traffic noise and cardio vascular 8
problems'. Assuming that is the case, are you aware of 9
any cases where there is infrasound associated with road 10
traffic noise. 11

A. Look, I am not. I understand infrasound can be an issue 12
with all sorts of noise. I am not aware of any specific 13
reports about infrasound and road traffic noise. I am 14
aware of another study which is called - it's a hyena 15
study, which looked at slightly different topics, but it 16
looked at particularly night-time exposure to noise 17
which is relevant to what we are talking about, and the 18
hyena study reported in 2008, certainly found that with 19
long-term noise exposure, they talk particularly about 20
night-time air traffic, or aircraft noise and also road 21
traffic noise did have some statistical effects on blood 22
pressure, particularly on the night-time aircraft noise. 23

Q. Do you have the reference to that article. 24

A. Yes, I do. It's hyena study 2008. I have got the 25
authors, Jaiupjarup Et Al Environmental Health, I can 26
certainly get you the specific citation. They found it 27
was. The noise certainly was associated with the 28
increased, statistically significant increase in blood 29
pressure. That was quite a large study. That was 8,610 30
people multicentre. 31

Q. Was that article with reference to this article in 32
attachment 10. 33

A. No, I don't believe it was. I beg your pardon, yes, it 34
is Jarrod L on p.4942. It has got the exact citation. 35

Q. I now come to the heading 'Effects of wind farms on 36
health'. We were discussing the transcripts that you 37
have prepared. A further point he makes in sub.para.(a) 38

is 'Anecdotal evidence is not a reliable form of
evidence in trying to determine a plausible cause and
effect relationship between events'. You don't quarrel
with that, do you.

A. No, I agree absolutely.

Q. But what you say is given your information to date you
were of the opinion that further research is necessary.

A. Absolutely.

Q. There is another way to describe the anecdotal evidence
in a sense, coincidence, in this instance.

A. You could describe it as that. I think given the
context of these other studies which are not anecdotes,
Dr Piermount's study is a case, serious crossover study,
Dr Nissenbaum study is a case control study. They are
not just collections of anecdotes. They together with
the data that Dr Amanda Harry, Dr David Icer, and
Dr Robert McMertary collected, given there is remarkable
consistency in both of the symptoms being described and
the problems being identified in a multitude of
different countries, I think it's a little bit more than
a collection of anecdotes.

Q. In sub-para.D, Whittert then refers to attachment 11
which I think was updated overnight, so to speak. Do
you have that updated attachment 11.

A. Yes, which is the 1.20 risk assessment (INDICATES).
That it the one?

Q. Yes.

MR MANOS: Does the court have that.

HIS HONOUR: I do.

MR MANOS: Mr Henry provided it this morning.

XN

Q. You have had a chance to consider that document.

A. Yes, I have.

Q. What do you say in response to that document.

A. I found it very interesting.

Q. It's a document - you hadn't seen it before.

A. No, I hadn't seen it before, very interesting. I think
they make some very pertinent comments on p.448 in

'Introduction'. First paragraph, general question 1
'Fundamental questions being addressed are simple. What 2
specific kinds of ill effects on health is a substance 3
capable of causing and what conditions of exposure are 4
necessary to cause them?' I mean, in this situation 5
they were talking about chemicals. But if we are 6
talking about exposure, being exposure to wind turbines 7
I think it's pretty relevant. Following on, if levels 8
of exposure are sufficiently low, that an agent will not 9
be expected to affect the health and wellbeing of people 10
who are exposed'. I guess that is precisely what we are 11
trying to do with the work of the Waubra Foundation. 12
You know, work out what the extent of the problem is, 13
and what the appropriate setback distance might be of 14
people from turbines. 15

Q. In a sense, what is being discussed here is how many 16
people have to be exposed or present with symptoms 17
before you do something about it. 18

A. Yes. 19

Q. I mean, as I understand it, arsenic is quoted as a 20
deadly poison. 21

A. Yes, I think so. 22

Q. If you inject five rats and they all die after they 23
haven't injected by arsenic do you need to go any further. 24

A. Probably not. 25

Q. If you are trialing a new cream to hide skin blemishes, 26
you might want to have a greater sample number than 5. 27

A. Yes. 28

Q. Putting aside that the court hasn't received the 29
affidavit in the Mount Brian case, you have read that 30
information, have you spoken to 60 other people, that 60 31
includes two or three of those people as well. 32

A. Yes. 33

Q. Are you saying that from your observations that the 34
sample of 60 or 70 is sufficient to warrant further 35
research. 36

A. Yes, in my opinion, it is. 37

Q. Is it because of the nature of the symptoms, the effect 38

of the symptoms, or what is it that causes you to go 1
advocate there should be further research. 2

A. I think there are a number of things, the 2 points, the 3
nature of the symptoms, some of which are severe for 4
some people. It's the effect that those symptoms are 5
having on their lives. Some of the people, as I have 6
said in my transcripts, have been forced to move out of 7
their homes and some of those people are in a situation 8
where they are unable to sell their homes. So they are 9
in a particularly difficult spot. So I think the 10
seriousness of the symptoms and the problems being 11
described together with that, I think in terms of public 12
health, the planned deployment of turbines across 13
south-eastern Australia is quite significant, and those 14
turbines, the plans are impacting on more and more 15
communities with significant numbers of people. I think 16
it's in everybody's interests to get some answers to 17
these questions and find out what the extent of these 18
problems are. We don't know how many people are 19
affected because even basic epidemiological studies 20
haven't yet been done anywhere in the world, and they 21
need to be. 22

HIS HONOUR 23

Q. So, from the court's point of view, if even the basic 24
studies have been done and we are presented with a 25
development application or a development approval, what 26
approach do you suggest the court takes - put things on 27
hold until studies are done, or to set some as yet 28
undefined setback distance, or just what. 29

A. Because we don't know what a safe setback distance is 30
and given that we are people who are experiencing 31
apparent blood pressure changes at 5 km, as in new onset 32
of hypertension after the turbines have started 33
operating and these situations, this most recent one 34
where somebody has had this elevation of blood pressure 35
overnight, there are some fairly rapid studies that 36
could be done quite quickly if the political will was 37
there and the funding was there. It's not going to take 38

long to get some of this information. I guess to answer
your question we don't know what a safe distance is. My
concern about recommending a set-back distance is this:
We don't know. You could put a set-back distance in
place. It could be wrong. It could vary depending on
the terrain. It can vary, for instance, what a set-back
distance at, for example Waubra should be. It may be
completely different to the setback distance in other
places. My understanding is you can't necessarily
compare. However, if you gather information at the
existing development sites in Australia now, that could
certainly help inform planning and development
applications down the track, and planning regulations.
So I guess my position would be that things are put on a
temporary hold until the information is available.

Q. Are you saying we put things on hold until there is
either a benefactor, who puts the money up for a study
or there is a political will to have this study, either
of which are apparent to us at the moment.

CONTINUED

A. No, however there is Federal Senate inquiry submissions closing in a month. I suspect there is also going to be some increase in media about this issue, so it may well be that those current circumstances in terms of lack of funding changes.

Q. That could be looking at it realistically; that could be putting things on hold for years, couldn't it.

A. Look, that's out of my -

Q. No, but what you're suggesting to us is that the Senate inquiry, I've seen Senate inquiries, they consider their position, take a long time and there's a recommendation made and they go from there and then there may be a legislation produced, it may be amended, may not get through, the government may change; really, that's sort of out in the nether nether, in a sense, isn't it.

A. I understand that your Honour, but there certainly are clinicians who are becoming increasingly concerned about these issues and the lack of research. As I mentioned, I mean just a small study in terms of what we're planning to do in Waubra, on the smell of an oily rag, the acoustician and clinician are donating their time, it will require a small amount of money, we will require some result from that that will shed light on those issues fairly promptly. I don't think it's going to be years, certainly some decent funding will increase the quality and extent of the research. We would certainly prefer to have larger numbers, if we don't have the resources it is going to be limited.

COMSR AGNEW

Q. Did I read that you suggested there should be a separation distance of 10 km; did I read somewhere in your statement.

MR MANOS: I was going to assist the court, AD20, Dr Laurie's initial report and her opinion, has gone into bold print: about at least 10 km away.

A. Yes, I did, that was when I was, I guess, pushed for what would be a recommended safe distance, at that stage. I was actually unaware of people experiencing

symptoms at 10 km, the 10 km was 5 km plus a
precautionary distance. Now that I'm now aware of
people 10 km away, who were getting these specific
vibration symptoms, under particular terrain, particular
turbine development, I'm not saying applicable any, at
two places that's been described, we definitely need to
do the research.

COMSR AGNEW

Q. So you would increase that.

A. We need to do the research.

Q. So until you do the research what, you don't put a
separation distance.

A. We don't know; we literally don't know.

Q. So you carry on as you are until you know, is that
right.

A. I would prefer that existing and proposed turbine
developments were put on hold until we did the research
urgently, to find out what is a safe use, to inform us
what a safe setback is in everybody's interest, then we
can proceed with wind development appropriately
described so it is not going to affect adversely on
health.

Q. Research takes a long time, you have looked at research
worldwide, information that you have examined and others
have examined, now, you still, after all that research
that has been done, can't reach a conclusion, and that
may have been done over quite a number of years, so
maybe we're looking at what, 20 years ahead.

A. With respect, no, I don't think it will take that long,
I think the recent finding by Mr James that this
infrasound has been found. If, you know, proper
thorough acoustic measurements were done, which included
infrasound, independent and in a proper scientific way,
we would all get that information and try to benefit
from it and proper epidemiological study that works out
the extent of the population being affected, how far
away from envisaging turbines they are being affected.

HIS HONOUR: The court has some commitments which

requires us to adjourn now. 1

MR HENRY: Can I raise the question of timing, 2
because it seems we're probably about two-thirds of the 3
way through examination-in-chief, based on putting 4
Professor Wittert's statement to Dr Laurie. I'm 5
concerned if we don't pick the pace up we're going to 6
get to a stage where Professor Wittert isn't going to 7
finish tomorrow. I would invite the court to consider 8
giving fairly firm directions as to how long we should 9
take as to questioning of these two witnesses with a 10
view to making sure we do finish Professor Wittert's 11
oral evidence tomorrow. 12

HIS HONOUR: That's a really open-ended invitation. 13

MR HENRY: I can have a discussion with Mr Manos in 14
the course of the adjournment but I don't want to be in 15
a situation where there is allegedly cross-examination 16
of Professor Wittert only to find at 4.30, we are half 17
complete. 18

HIS HONOUR: You've said it and I think we have made 19
accommodations to all parties that they include the 20
appellants in this case and we've said and the knowledge 21
that Professor Wittert is here for tomorrow. 22

Mr Manos, you will bear in mind that we will finish 23
with Professor Wittert tomorrow and we must look at your 24
cross-examination with that in mind. 25

MR MANOS: I don't think I'll be much longer with 26
Dr Laurie your Honour. 27

HIS HONOUR: Do you want to start at 9.30? 28

MR HENRY: I would be happy to do that. 29

HIS HONOUR: We'll start at 9.30 and break to deliver 30
the ruling. We can do it earlier, but we are stuck with 31
that now, then continue with Dr Laurie, so we'll be 32
adjourning until 9.30 tomorrow. 33

ADJOURNED 4.40 P.M. TO FRIDAY, 14 JANUARY 2011 AT 9.30 A.M. 34
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JUDGE COSTELLO	1
COMMISSIONERS MOSEL AND AGNEW	2
NO.106/2010	3
	4
RICHARD PALTRIDGE AND ORS	5
V	6
DISTRICT COUNCIL OF GRANT AND ANOR	7
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FRIDAY, 14 JANUARY 2011	9
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RESUMING 9.36 A.M.	11
+SARAH ELISABETH LAURIE CONTINUING	12
+EXAMINATION BY MR MANOS	13
Q. You stated that you had briefly considered Exhibit Z,	14
the analysis prepared by Professor Wittert. I think	15
that overnight you have had a chance to further	16
consider that document together with the personal	17
journals.	18
A. Yes, that's correct.	19
Q. Did you want to add anything to the evidence you gave	20
yesterday about your personal journals on that exhibit.	21
A. Yes, look, I did. Professor Wittert has commented on	22
the blood pressure issue specifically. The reason I	23
wanted to include the journals was partly the blood	24
pressure issues with respect to the first person,	25
journal of AR, just to note the difference in his blood	26
pressure when he was away from the turbines at Phillip	27
Island I believe, between the 18th and 20 October. But	28
the main reason for including them was to just note the	29
symptoms that people were recording and also one of the	30
issues that came up yesterday was the operation of the	31
turbines and whether or not the turbines are turning;	32
what the graphs at the back show is the wind farm power	33
output data which correlates directly with whether or	34
not the wind is blowing. You will see that there are	35
periods where the wind is not blowing or where there is	36
no power output, and so from that there's periods of	37
time where people describe to me that they have no	38

symptoms at all and that correlates with the turbines 1
not turning and the power output not being generated, 2
and correspondingly, particularly the symptoms that are 3
specific for the illnesses that are being described, as 4
in the vibration particularly, it correlates directly 5
with the turbines operating. So, I just wanted to make 6
that absolutely clear. I believe the blood pressure is 7
an effect and we are going to look into that much more 8
thoroughly and with a much better measure than 9
self-reported intermittent blood pressure measurements. 10

Q. For the journal for AR, it's at TAB 1 of Exhibit A24, 11
so that page marked ... - 12

A. That's correct, yes. 13

Q. - has got Phillip Island written on the left-hand side. 14

A. Yes, that's correct. 15

Q. Then if we go to the next sheet - 16

A. p.3? 17

Q. Yes, sorry, on 22 October, I'm just trying to read the 18
symptoms, I think it reads 'felt very sick/', can't 19
read the next word. 20

A. Yes, throbbing headache, 'strong north wind, sunny', 21
and they are characteristic of the symptoms that people 22
describe. 23

Q. Are there other entries where people complained of 24
chest tightness and the like. 25

A. Yes, there are. I guess the chest tightness one was a 26
particular concern for GW, which is No.2, and the 27
reason I'm concerned about this is because I have had a 28
number of people, both in Ontario and in Australia, 29
describe to me symptoms of chest tightness which occur 30
when the turbines are operating, which sound very like 31
angina, and there's been a number of instances where 32
people have in fact had a heart attack when the 33
turbines have been operating, and I'm concerned that, 34
if indeed infrasound is causing some physiological 35
changes, including high blood pressure, which is what 36
we suspect might be happening some of the time, that in 37
patients who have got underlying ischaemic heart 38

disease, that in fact is going to be very detrimental to their health, and that is, I think, of extreme concern.

Q. So, if we look on the date, 23 and 24 November for GW under tab 2 and then we consider the power outputs for those two dates, do you see a correlation between the symptoms described there and the power output.

A. 22 - let me just double-check the time - I do for the 23rd; for the 22nd -

Q. Sorry, the 24th I meant.

A. Yes - 23rd and 24th, yes I do. The 22nd, 6-11 - yes, the 22nd, this person does complain of tightness in the chest, head and air pressure and tinnitus at a time when it looks as if the turbine out put has only just started. That has certainly been described to me. I guess the point that I want to make is that - I mean not all the chest tightness may be attributable to the turbines but it has certainly occurred in people when the turbines have been operating full pelt, and the link between the two I'm extremely concerned about. I'm not claiming that all the chest tightness is as a result of the turbines operating but it's certainly, I think, contributing to it, and this is one example. The other person who is blinded to the turbines operating, cannot see, cannot hear them from where they are and who does get particular symptoms of the dizziness - sorry, the vibrations - is RB, and that's No.4, and she has awful problems with vibrations, which she describes as tingling and vibrations, she also gets the nausea and from what I have looked through with her journal, it certainly does seem to correlate directly with the turbine operation. And I have also had this confirmed for me with patients in Ontario, that they are blinded as to whether or not the turbines are operating because they can't see them and can't hear them, but, you know, when they double-check they find that the symptoms do correlate with turbine output.

Q. So, is it your understanding that the journal entry was

prepared on an ongoing basis by the individual 1
concerned, you have then obtained the power output 2
data. 3
A. Independently, yes, that's correct. 4
Q. So, in the case of some of these people whose journal 5
entries appear, they are blinded so to speak and they 6
don't know what the wind farm is actually doing at that 7
time. 8
A. That is absolutely correct. 9
Q. Yesterday, you gave some evidence about measurements of 10
infrasound by Mr Rick James; I think that you have 11
ascertained from Mr James the distance at which he 12
measured that infrasound level. 13
A. Yes, that's correct. I emailed him to be absolutely 14
sure and he told me it was 1500 feet that he obtained 15
the sound pressure level of 90. 16
HIS HONOUR 17
Q. Sorry, what distance. 18
A. 1500 feet. 19
Q. 1500 feet. 20
A. Yes, so I guess approximately 500 m - I'm not good at 21
the conversions. 22
XN 23
Q. Now, coming back to Professor Wittert's report, 24
Exhibit Y, do you have that in front of you. 25
A. Exhibit Y? The statement? 26
CONTINUED 27
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Q. So when we broke yesterday we were considering para.27. 1

A. Yep. 2

Q. The original reference in para.27(d) was to a 3
particular attachment which has now been updated so to 4
speak and we have that risk assessment document that 5
you spoke of yesterday. But in that paragraph at p.6 6
there is reference to that landfill article. Have you 7
considered that article. 8

A. Yes, I have, not in detail I must admit, yes. 9

Q. As I understand that article to some extent it talks 10
about engagement that that seems to be an important 11
part of the process as to whether or not people might 12
object to a particular development. 13

A. Yes. 14

Q. Has that been your experience. 15

A. Yes. Look it has been both my personal experience with 16
what has gone on in my home region but also from what 17
people have said in that I guess the lack of engagement 18
and the lack of information that is provided helps to 19
disengage people from the process and certainly adds I 20
believe significantly to the distress, particularly 21
when they perceive that they can't in fact trust the 22
information that they're being provided with from the 23
proponents. I guess as against that I think it's 24
really, really important to actually look at what has 25
happened after the turbines have started operating and 26
compare attitudes before the turbines start operating 27
to afterwards because I think that's where you really 28
start to get valuable information about changes in 29
attitude which are reflective not so much of people's 30
personal position about whether or not they like 31
turbines but how those turbines and the operation of 32
those turbines near their homes has actually affected 33
them. There's a particularly good reference to that in 34
Daniel Shepherd's paper which is - it's in the 35
additional material which I can't locate at the moment. 36

Q. Exhibit A23 I think. 37

A. A23, yes, thank you, No.3. The particular section, I 38

mean there's a lot in that document that I think is particularly pertinent to the sort of points I've been bringing up. Yes, 6.7.

Q. Now the Waubra Foundation presumably has arisen because of the Waubra wind farm.

A. Yes. It's arisen really because of concern that there was a lack of credible independent research which was addressing the issues of health impacts. The reason it's been called the Waubra Foundation is because I guess that's where if you like the story got out in Australia about the fact that these people are becoming incredibly unwell and there's a lack of research and there seems to be some attempts to keep the story under the carpet so to speak.

Q. Is it your understanding that there was community consultation in relation to the Waubra wind farm.

A. There was some community consultation, yes, and my understanding from the people that I've spoken with is that the ones who are now saying to me that they are sick, and I believe that they are from my discussions with them, they see that they welcome the turbines into the area.

Q. So there was consultation as you understand it in relation to wind farms proposed there.

A. Yes.

Q. Yet in your opinion there are a number of people who are suffering following the establishment of the wind farm.

A. That's absolutely correct and absolutely confirms what Daniel Shepherd is saying he's found in this New Zealand study which he talks about in 6.7 Wilde 2008. I haven't read Wilde's study but I did read this comment of Daniel's and absolutely confirms what I found. I'll read out the pertinent piece. It says 'The same studies show that for people living within 5 km of the turbines attitudes towards the wind turbine installation appear to become more negative following the operation of the turbine. This trend was not

- observed with those living between 5-15 km and one can speculate that noise was a factor in this change.' I suspect it's also other ill health that's resulted from the turbines operating.
- Q. Daniel Shepherd's qualifications appear in para.1.1 of his statement.
- A. Yes, that's correct. Daniel has done a lot of work in analysis of community perceptions and works closely with other colleagues at Massey University in noise measurement with his work and he's probably one of the most experienced people working in this area certainly in our part of the world at the moment. He's collaborating with us, with Bob Thorne and Wayne Spring in this study that we're planning to start.
- Q. Just whilst we're talking about Waubra, I think that Professor Wittert refers to - I can't find the passage now but it will come to me in a moment - that stakeholders don't apparently appear to object or complain as much; para.31 that's discussed. Has that been your experience at Waubra.
- A. No, that's not been my experience at Waubra. I think now people realise that I am trustworthy and I'm not going to - I am absolutely going to respect confidentiality. I'm finding that family members of landholders are contacting me and telling me that either they or the landholder who in fact has the turbines has become unwell and for various reasons they don't want to publicise that information but they're very concerned about that.
- Q. Do you agree generally though that stakeholders don't seem to complain as much.
- A. Yes, and there's published evidence that supports that.
- Q. So that we're clear, stakeholders are the property owners who have allowed the turbines to be established presumably in exchange for some sort of financial compensation.
- A. Yes, that's correct.
- Q. So have you spoken to some stakeholders personally

yourself. 1

A. I haven't spoken to stakeholders who have - well no, 2
that's not true. I have spoken to some stakeholders 3
who are hosting turbines. I haven't asked them 4
specifically about their health issues because I wait 5
for people to contact me. But I guess when I hear from 6
first degree relatives that in fact either they 7
themselves have had health problems or their first 8
degree relative who has signed the contract I take that 9
seriously. There are also some reports emerging on the 10
internet in the form of affidavits which support that. 11
Just on that reference, the case study from south-west 12
Scotland that Professor Wittert referred to, I was very 13
interested to read that. 14

Q. That's - 15

A. This is the one you - yes, it's the attachment - 16

Q. The original attachment is it. 17

A. Attachment 13 'Does community ownership affect public 18
attitudes to wind energy.' 19

Q. Do you understand that that report was prepared by some 20
geographers. 21

A. I do understand that, yes. 22

Q. You've considered that document. 23

A. Yes, I have. I read it with interest and I think 24
certainly community ownership of turbines is a positive 25
move. One comment I make from reading it, when I read 26
it it was not my impression that it was a study that 27
was actually looking for evidence or not of people 28
suffering the effects of wind turbine syndrome. What 29
they were looking at was I think public perception and 30
attitudes towards the turbines. So that was one point. 31
Just as a bit of I guess background, from looking at 32
the photograph in that document there were three 33
turbines and I think the description was that they were 34
reasonably small turbines which has an impact on how 35
far and how much infrasound and noise is generated. 36
There's no scale on the picture and there was no 37
reference to it in the document but they didn't 38

actually say how far the turbines were away from where
people were living.

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Q. So on p.207 of attachment 13, there's two photographs, 1
is that what you are referring to. 2

A. Well, now, I'll just find it, 13. Sorry, what was the 3
page number again? 4

Q. 207. 5

A. Yes, fig.3 I understand to be the particular turbine 6
development that they are talking about on the island 7
of Gigha. 8

Q. Just to spell that for the transcript, G-I-G-H-A. 9

A. Yes. It was a little bit easier to see on the 10
electronic version, but my recollection of where the 11
housing was is over to the right towards the coast in 12
that photograph, which you can't really see very 13
easily, but I guess the point I'm making is we don't 14
know the distance, and the turbines appear to be small, 15
and the study didn't actually specifically look for 16
evidence or not of these illnesses. 17

HIS HONOUR 18

Q. When you say the turbines appear to be small, what are 19
you basing that on. 20

A. There was a reference in there somewhere to the size of 21
the turbines, I believe, which I remember to be 30 m. 22
Now, I can troll through and look. 23

XN 24

Q. In the discussion immediately above the photo fig.3, 25
there is some description of that wind farm. 26

A. Okay, yes, that is where I got it from, thanks. 27

Q. I think as you said, the three turbines, 0.7 MW 28
windfarm, you understand that there is a correlation 29
between the size of the - sorry, the power output of 30
the windfarm and the size of the turbines. 31

A. Yes. The acousticians who I am advised by say that 32
that is critical. 33

MR MANOS: Your Honour, I think it's 10 o'clock or 34
thereabouts. 35

HIS HONOUR: All right, we will make the call to Mr 36
Manning. 37

38

HIS HONOUR	1
Q. There is no need for you to remain in the witness box.	2
A. Thank you.	3
WITNESS STANDS DOWN	4
+THE WITNESS WITHDREW	5
ADJOURNED 9.59 A.M.	6
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RESUMING 10.06 A.M. 1

XN 2

Q. Onto para.28 of Exhibit Y. Is there anything that you 3
wish to comment about what's stated in that paragraph. 4

A. Well, yes - I mean as part of my discussion with 5
farmers who are living next to turbines issues about 6
animal health and associated matters have come up in 7
those discussions. Now I'm not sure as a result of 8
yesterday - if I can continue until I'm told that it's 9
not relevant - certainly the farming issues that have 10
come up, there is a lot of concern about animal health. 11
There's been no published studies done yet. I think 12
it's the same issue with the lag of human health. 13

OBJECTION: MR HENRY OBJECTS 14

MR HENRY: I do object to this. I think what we're 15
getting now with anecdotal evidence about animal health 16
issues - we're critical, and we will be critical of the 17
evidence which is anecdotal in nature in respect of 18
human health, but that's the nature of the beast that 19
we're dealing with - but anecdotal evidence about 20
animal health, in my submission, falls outside of the 21
field of expertise of this witness and ought not to be 22
received. 23

MR MANOS: Same point as yesterday, with respect. If 24
it's all right for Professor Wittert to quote from a 25
blog, surely it's okay for Dr Laurie to respond to that 26
and tell the court what she's been informed - not seek 27
to prove that there are health issues with animals, 28
it's simply a report of what's being said. It can't 29
sit comfortably in the mouth of Acciona to allow it's 30
professional witness to make a comment about animals 31
and then object when we want to respond to that. 32

HIS HONOUR: Well, we will not be reaching any 33
conclusion one way or another about the impact on 34
animal health. There's simply no evidence to support 35
one way or another. I don't see that we're going to be 36
assisted by Dr Laurie talking about matters well and 37
truly outside her expertise. If she's been told things 38

by people - a person or persons unknown, it cannot 1
assist this courts inquiry one iota. So we don't 2
propose to allow that evidence. 3

QUESTION DISALLOWED 4

XN 5

Q. Moving to para.29, I think we touched on this report 6
yesterday, attachment 6. Is there anything you wish to 7
say about para.29. 8

A. Yes, there's a number of things. I guess I would refer 9
your Honour and Mr Manos to Dr Daniel Shepherd's paper 10
because in fact there is quite a significant body of 11
evidence about direct physiological effects - and in 12
fact Dr Shepherd talks specifically about noise 13
sensitive people and makes it very clear that that 14
group of people are particularly vulnerable and they 15
include children and the elderly, and they are 16
particularly vulnerable to noise as a physiological 17
stressor. And I've had certainly many examples of that 18
- which are not detailed in the transcripts because I 19
stuck to adult evidence, but there's plenty of reports 20
to me and also detailed particularly in Dr Nina 21
Pierpont's study - and if the court would like to look 22
at the raw data of Dr Pierpont's work, which is 23
attachment 1 - in further articles and information - 24
A23. Dr Pierpont is a paediatrician, I'm not - and she 25
certainly discussed issues to do with children, 26
starting with case history A3 on p.131. Her 27
description of this child having nigh terrors has been 28
something that has come up a number of times when I've 29
interviewed people. Issues about speech development 30
and - I mean she's got the expertise to discuss that, 31
and I don't, but that's certainly something that 32
parents have noted to me. Issues with hearing and ears 33
- and there's numerous others, which I know time is a 34
factor so I'm not going to sort of point them all out, 35
but there are numerous others in that raw data section 36
which allude to the fact that children are particularly 37
vulnerable. So I understand also, just in terms of who 38

wrote that panel review, that it's not the sort of 1
information that I would regard to be credible because 2
it has been something that has been commissioned by the 3
Canadian and American wind industry and I've been 4
informed by my Canadian colleagues that Dr David Colby, 5
who's the lead author, was actually a microbiologist 6
and he's been apparently castigated by the Ontario 7
physicians for his role in this review - and so much so 8
that I believe from them - 9

HIS HONOUR 10

Q. I don't know how much further we can stray - sorry to 11
interrupt you. 12

A. Yes. 13

Q. But this court is not bound by the rules of evidence in 14
the way in which other courts are, but there has to be 15
a limit to the hearsay upon hearsay upon hearsay. Now 16
were now straying into what you understand somebody has 17
said about another doctor. It's not going to be very 18
helpful because we don't know the circumstances - 19

A. Okay. 20

Q. - we don't even know whether it's true or not, nor 21
indeed do you, and I don't criticise you for raising 22
it, but I think we are far more assisted by what we can 23
read in these papers than by what you've heard and 24
observed yourself then by any indirect criticisms of 25
authors in these. 26

A. Yes, I guess the point I was making with that 27
particular review is that it's been widely used, 28
particularly by the NH&MRC rapid review of the evidence 29
- and it's been heavily relied upon, and I find it's 30
seriously lacking. 31

XN 32

Q. The information that you took the court to yesterday 33
from Dr Nissenbaum, would that fit within the 34
description of evidence that might show that there are 35
impacts. 36

A. Yes, absolutely. Yes, I mean in my opinion and in 37
others' opinion, it's the best evidence we have yet 38

that's been published and presented. It hasn't been 1
published in a peer review journal, it has however been 2
published and presented on a number of occasions. 3
Q. And that was, I think, called the 'Case Control Study'. 4
A. That's correct, yes. 5
Q. So that was the top of the food chain in terms of - 6
A. That's the top of the food chain so far. Dr Nissenbaum 7
presented further work at the Society for Vigilance 8
Conference in Ontario that I attended. Unfortunately 9
that's not yet publically available because it is being 10
submitted for publication to a peer review medical 11
journal. 12

CONTINUED 13

HIS HONOUR 1

Q. What's the importance, in your mind, of material being 2
published in peer-review journals. 3

A. Okay. I think the critical thing is that it's 4
peer-reviewed. Publication in a peer-reviewed journal 5
is important however if it's not published in a 6
peer-review journal, that doesn't diminish the weight 7
and the validity of the actual science that's done or 8
the study that's done. 9

Q. Why wouldn't it have some impact on the weight. 10

A. I guess in - 11

Q. Isn't that the purpose of having it peer reviewed. 12

A. Yes, it is in that sense but it doesn't diminish the 13
quality of the study, it just means that it hasn't been 14
published and there are many reasons why some journal 15
articles aren't - or some papers are not published. A 16
PhD, for example, is a long document; it's not going to 17
be published in a peer-reviewed journal but it is a 18
credible body of science. The reason the Dr Pierpont 19
study was not published in a peer-reviewed medical 20
journal was simply that it was too long and she was of 21
the mind, very, very firmly, that because this was a 22
new illness and a significant illness and because there 23
was going to be significant opposition to finding that 24
there was this new illness, she felt it was very 25
important that this body of work was kept together and 26
in addition that the raw data which informed so much of 27
that work was included in the patient's own words. 28
Because so much of it is subjective symptom, you know, 29
symptom description and that's why I've included it. 30

Q. Do you say that there is no way that Dr Pierpont would 31
publish those findings other than by the complete body 32
of work. 33

A. That's my understanding from her. She did approach a 34
number of journals and they looked at it and found that 35
the research was credible but they were not able to 36
publish it because it was too long and she was unhappy 37
to shorten it. But having said that, it has been - it 38

has been peer reviewed and I think it's one of the 1
unfortunate misunderstandings that has arisen. 2

Q. And where has it been peer reviewed. 3

A. It was peer reviewed by her peers. I mean I haven't 4
actually got a copy of the book with me but I 5
understand Mr Manos has and I can read out the people 6
who peer reviewed it. 7

MR MANOS: Can I hand to the witness a copy of the 8
book. 9

XN 10

Q. Now you have in front of you a book. 11

A. That's right, the title of it is 'Wind Turbine 12
Syndrome: A Report on a Natural Experiment' and it's 13
by Nina Pierpont MD PhD. 14

Q. I think in the middle of that book is the raw data. 15

A. That's correct. 16

Q. And that is what's been reproduced in Exhibit A23. 17

A. Yes, that's correct, with Dr Pierpont's permission. 18
Okay. People who have peer reviewed her work include - 19
and I'm reading now from the last section of the book, 20
'Referee reports'. The first one is Jerome Haller MD, 21
Professor of Neurology and Paediatrics, retired in 2008 22
from Albany Medical College, Albany, New York; Dr 23
Haller is a member of the American Academy of 24
Paediatrics, the American Academy of Neurology and the 25
Child Neurology Society. They're listed in the book. 26
I won't read them out but - another peer reviewer is 27
Joel Lehrer, Fellow of the American College of 28
Surgeons, Clinical Professor of Otolaryngology, the 29
University of Medicine and Dentistry of New Jersey, 30
formerly Professor of Otolaryngology, Mt Sinai School 31
of Medicine, New York. Ralph Catts, DMD MPH PhD Fellow 32
of the American College of Epidemiology, Professor and 33
Chair Department of Epidemiology and Health Promotion, 34
New York University, College of Dentistry, New York, 35
New York. So - and Henry Horn PhD, Professor of 36
Ecology and Evolutionary Biology and Associate with the 37
Princeton Environmental Institute, Princeton 38

University. So it has been peer reviewed by a number of different relevant people in their field.

HIS HONOUR

Q. I suppose it really depends on what we understand or what is to be understood by the term 'peer review', I guess ... about that. Speaking for myself, I've always understood peer review is something where you present it to a recognised publication - a journal or something of that nature - it's considered by representatives and then published in that journal or whatever.

A. Yes, okay -

Q. But that's what I've always understood.

A. Sure. And Professor Phillips says otherwise. I mean there are many people who say if it's - the process of peer review is that your colleagues look at your work, critique it, make suggestions and comments on it which you may or may not adopt. The publish - you know, the fact of publication is something in addition to that.

Q. Okay, thank you.

XN

Q. Now dealing with para.30, Professor Wittert seems to acknowledge that in some circumstances there can be an annoyance for some individuals by wind farm noise then he goes on to quote some specific numbers. Does that coincide with your understanding of the published studies etc.

A. Yes, it does however I guess the - the issue that comes up and that Dr Daniel Shepherd talks about is the difficulty of using noise numbers in terms of assessing the impact of turbines on people's health. Because noise numbers alone don't actually reflect the individual experiences of that noise and the individual annoyance and I think that's a very - very important point to make.

Q. Professor Wittert refers to Dr Pedersen and I think we discussed Dr Pedersen yesterday; Dr Pedersen is a PhD in an area other than medical background.

A. Yes, that's correct.

Q. I think your attachment 7 to your addendum Exhibit A22 also deals with this topic. 1
2

A. Yes, it does and I think that we looked at this briefly 3
yesterday and this is work from Pedersen comparing the 4
aircraft, road traffic and railway noise to wind 5
turbines, this graph here. And Pedersen's work 6
certainly makes it very clear that there's something 7
unique about wind turbine noise that a, you know, much 8
higher percentage of people find annoying at, for 9
example, the same sound exposure level. If you take - 10
if you look at 42 which is 42 dB(A) which is where 11
aircraft, road traffic and railway noise starts to 12
climb in terms of annoying people, at the sound dB(A) - 13
the same dB(A) level of 42, you've got upwards of 35% 14
of people who are highly annoyed. So in other words 15
there's something unique about wind turbine noise that 16
cannot be compared to aircraft, road traffic or railway 17
noise. And some of the reasons for that have been, you 18
know, postulated to be the intermittent, the whoosh, 19
whoosh, whoosh sound. I think Pedersen talked about - 20

OBJECTION: MR HENRY OBJECTS 21

OBJECTION UPHELD 22

CONTINUED 23

Q. Professor Wittert's discussion here is all about annoyance. 1
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HIS HONOUR: No, I have ruled on it, Mr Manos. In any 3
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MR MANOS: Thank you. 7
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XN 8

Q. Para.31, I think we have dealt with the stakeholder 9
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A. Yes, that is correct, I think. 15

Q. I think you said yesterday you understand that he is 16
17

A. No, that is correct. 18

Q. Para.33 is the National Health and Medical Research 19
20
21

A. Yes. 22

Q. That document has been reviewed by the Wind Vigilance 23
24

A. Yes, the Society for Wind Vigilance have reviewed it, 25
26

Q. You have read through that NH&MRC report. 27

A. Yes, I have. 28

Q. Is that, in a sense, just an analysis of a number of 29
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A. Yes, it's a literature review. What disturbed me the 31
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examining this problem. A lot of people saying that 1
there wasn't a problem, but not a lot of, you know, 2
good research. 3

Q. But the ... inquiry that is taking place, that's going 4
to receive personal submissions, is it not. 5

A. Yes, it is. 6

Q. That was absent from that report. 7

A. The NH&MRC report was a literature review, so it didn't 8
- I mean, it wouldn't and didn't collect anecdotal 9
data; it was specifically looking at the published 10
evidence that there was. 11

Q. If you come to para.36, where Professor Wittert 12
discusses attachment 6 again, it says that there are 13
three possible mechanisms by which symptoms of wind 14
turbine syndrome may originate. These are - I detail 15
those, the nocebo effect, sensory integration 16
dysfunction, and - I can't pronounce that - somatoform 17
disorders. Are you familiar with each of those 18
concepts. 19

A. Yes, I am. 20

Q. Then in para.37, there is a discussion there as well. 21
What is your response to paras.36 and 37. 22

A. Well, look, I'm afraid I - from my discussions with 23
people who have been living with wind turbines and from 24
my reading of extensive amounts of material in the last 25
six months, I find that there is very little evidence 26
for the nocebo effect particularly, particularly with 27
respect to the people that I have spoken to in 28
Australia. To date, there are numerous people who 29
welcomed the turbines into their area, some of whom 30
even helped construct the turbines who have become 31
unwell and are very distressed at what has happened, 32
and I haven't found any evidence to support the nocebo 33
effect. I have no doubt, though, that as publicity 34
about the adverse health effects that are being 35
reported by people emerges around the world that 36
communities where turbine developments are proposed, as 37
they become informed about these issues, do become very 38

concerned about the possibilities for them, and 1
particularly as they go and do their own homework and 2
go and visit and meet with people who are living next 3
to turbine developments at the moment, and then when 4
they realise the reality of the situation for those 5
people, it certainly does cause a lot of distress. I 6
guess the other thing I would just like to emphasise, I 7
have a real problem with genuine psychiatric illnesses 8
being dismissed, as I think they have been, by being 9
called 'psychosomatic'. There is a genuine level of 10
psychiatric distress that I have observed with people 11
living next to turbines and I think it has been ignored 12
for too long. 13

Q. In that context, Professor Wittert says in para.36 that 14
it's possible the physical illness is as a result of 15
the mental or emotional stress, recognition of the 16
connection between one's mind and body. The nocebo 17
effect, in one sense, put simply, is you're expecting 18
there is going to be a problem because you're told 19
there's a problem, therefore, your mind creates a 20
problem. 21

A. Yes. 22

Q. Is that not an illness in itself, then. 23

A. If it results in clinical anxiety or depression, then 24
the clinical anxiety and depression are certainly an 25
illness. 26

Q. That can arise, in your experience, or has arisen, that 27
has been reported to you. 28

A. There are people who are living in areas which have 29
been subject to turbine proposals who have become aware 30
of personal contact with people who are living adjacent 31
to wind turbines at the moment. People go and visit, 32
they do their homework, they find out what it's going 33
to be like. They come back having talked to people who 34
have lived next to turbines, done their research on the 35
Internet, and they do now become anxious, but the 36
people that I have spoken to who have been living next 37
to turbines did not start out that way. As I said, 38

they worked on the turbines; they welcomed them into
their community. Particularly in Waubra, there is no
history of the particular people who are getting sick
having any objections to the turbines; in fact, they
have gone on the public record a number of times saying
that they - you know, that they welcomed them. So it
is a complex issue and I think as information about the
health effects of the turbines becomes more public, I
have no doubt that that is causing some distress.

Q. I then come to the conclusion discussion. Are you able
to comment about para.38.1.

A. Well, I guess the fact that infrasound has in fact been
measured both by Rick James and I have become aware of
a paper that was sent to me overnight that was from a
German government institution, where they are charged
with measuring or detecting whether or not there has
been any nuclear explosions, and their instrumentation
is such that they can detect the very low frequency
soundwaves. This is something that was presented in -

OBJECTION: MR HENRY OBJECTS

MR HENRY: I would object to this evidence coming in
at this late stage in this guise, and this paper is
said to have been provided to her overnight. We have
not seen it.

MR MANOS: That's not right, it was sent to you this
morning.

MR HENRY: I haven't seen it, the court hasn't seen
it. I'm not in a position to cross-examine on this
paper, and in my respectful submission, it's simply far
too late.

HIS HONOUR: We do have to bring an end to this, Mr
Manos, so that the - it seems a long, long time ago
that I was saying to you that even allowing Dr Laurie
to be called was an indulgence. I'm not inclined to
allow an exploration into this paper that we haven't
seen, we haven't considered, the respondents haven't
had an opportunity to consider. When I indicated
before that were they to ask for an adjournment in

relation to Mr Manning's evidence, that I would
favourably consider it, that was not an invitation to
the parties to create situations where that would
occur. I think we are trying to do fairness to all
parties in this case. I think it would be unfair,
given the time constraints, for us to permit you to
launch into what would be, I can only imagine, a
difficult area to get on top of and then cross-examine
on. So I won't -

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MR MANOS: I've had the benefit of a brief discussion 1
in relation to the paper. It's not that complex in 2
terms of what it stands for. I provided it to Mr Henry 3
and his instructors this morning. I don't expect they 4
would have seen it. 5

HIS HONOUR: I accept what Mr Henry says. He hasn't 6
seen it. 7

MR MANOS: No. 8

HIS HONOUR: It came late and it's come too late so I 9
won't allow you to pursue it. 10

MR MANOS: I accept that in relation to Dr Laurie but 11
I passed it on and said that Mr Turnbull may wish to 12
consider this before his further cross-examination 13
because it deals precisely with infrasound. 14

HIS HONOUR: It occurs to me that much of the evidence 15
Dr Laurie has been giving in relation to infrasound is 16
obviously beyond her expertise and a good deal of the 17
questioning would be far better directed towards an 18
acoustical engineer such as Mr Turnbull and I think 19
we'd be better informed if it was. But there's been no 20
objection in large measure so we've chosen to allow you 21
to proceed. I think you've indicated what I think 22
should be the outcome of it. If it's to be used at all 23
it can be used in cross-examination of Mr Turnbull. 24

MR MANOS: Thank you. 25

XN 26

Q. Moving to 38.2, Professor Wittert finds that the health 27
effects appear to be confined to a small group of the 28
population. There is likely to be the same response 29
wherever you put a wind farm. That suggests to me an 30
acknowledgment by Professor Wittert that there is an 31
issue and it doesn't matter where you put a wind farm 32
it's not a one-off phenomenon. Has that been your 33
experience. 34

A. Yes, it has been my experience where there've been 35
large turbines and there's been homes within 5 km I 36
guess I could accurately say. We don't know. There's 37
not been a proper epidemiological study so we actually 38

don't know the numbers. My personal experience from 1
meeting with people out at Cape Bridgewater and at 2
Waubra particularly and at Toora is that I think the 3
numbers will be much higher when we do do a proper 4
thorough epidemiological study. 5

Q. What do you say about - you use the words 'confined to 6
a small group of the population'. 7

A. We need to do the studies and in my experience I 8
believe it will be much higher than a small group. 9

Q. Let me ask you this question. Let's assume for the 10
purpose of this question there are health effects 11
associated with wind turbine, do you say that no person 12
should be exposed to any effect whatsoever or do you 13
accept that it may be appropriate that there may be 14
some impacts felt by a small number of the community. 15

A. I accept the latter. I do accept the latter. 16

Q. So if they're affected say for one hour a week or a day 17
or a fortnight or what. 18

A. Look, I think we need to find out what the effects are 19
firstly. Blood pressure seems to be emerging as a 20
serious issue and blood pressure is often undiagnosed 21
and undetected and blood pressure, chronic high blood 22
pressure is a killer. So I think we need to do our 23
research first and then work out from that with proper 24
information you know as a public policy issue what's an 25
appropriate percentage of people to be annoyed or level 26
of risk or whatever. 27

Q. But you're not looking for total protection at all are 28
you. 29

A. Absolutely not, no. I don't think that's realistic. 30

Q. And now I'll move to the last heading 'Concept of 31
acceptable risk'. Have you considered that discussion. 32

A. Yes, I have. 33

Q. And that, what I just put to you in a sense comes back 34
to this issue of about some people being affected. You 35
don't quibble with the approach that Professor Wittert 36
has set out there. 37

A. No, I don't. 38

Q. That's a recognised approach. 1

A. No, I think it's - 2

Q. But he concludes in para.41 there's no compelling 3
reason to recommend that there be a further 4
investigation so to speak. You obviously strongly 5
disagree with that. 6

A. Yes, that's correct. 7

WITNESS SHOWN DOCUMENT 8

Q. You've stated that you've considered a number of 9
documents in preparing for this matter and just having 10
a general understanding of that. One of the documents 11
that you've considered a report from Suzlon entitled 12
'Parameters influencing wind turbine noise.' 13

A. Yes, that's correct. 14

Q. Who or what is Suzlon. 15

A. Suzlon is a wind turbine manufacturing company. 16

Q. What is that document as you understand it. 17

A. My understanding is that is a document that was 18
presented by one of its employees Mr Eric Sloth at a 19
Clean Energy Council conference in May 2010 and it was 20
sent to me by one of my acoustic colleagues who's very 21
concerned about what's going on. 22

Q. Where was that conference. 23

A. I understand it was in Sydney. 24

HIS HONOUR: What is this, Mr Manos? 25

MR MANOS: It's another article that Dr Laurie has 26
considered which isn't yet before the court. I was 27
just asking some questions about it. 28

HIS HONOUR: But is this evidence of an expert in 29
relation to matters of acoustics? 30

MR MANOS: It's a report by someone who works for a 31
wind farm company which deals with issues of acoustics. 32

HIS HONOUR 33

Q. Somebody who works for a wind farm company. 34

A. Yes, that's correct. 35

HIS HONOUR: Well, without more how would that assist 36
us? 37

MR MANOS: It was just part of the information that 38

has been considered and taken into account by 1
Dr Laurie. 2
HIS HONOUR: I'll hear what the other parties say 3
before we go any further. 4
MR HENRY: I've looked at this. It was given to me 5
at the close of business last night. It has the 6
hallmarks of a Power Point presentation. It certainly 7
doesn't have the hallmarks of an article published or 8
otherwise and it deals on my brief reading of it 9
entirely with acoustical matters associated with wind 10
turbines and it appears to have nothing to say at least 11
in any meaningful sense about health issues. In my 12
submission whether Dr Laurie has read it or taken it 13
into account is of no moment. It's simply not 14
something that goes to her field of expertise. 15
HIS HONOUR: For the reasons that I've already 16
indicated, Mr Manos, if the documentary material that 17
you've got is of any significance it can be placed 18
before Mr Turnbull. Mr Turnbull can be asked to 19
comment on it. But if we receive it we're going to 20
receive a Power Point presentation by someone who's 21
worked for a wind farm company, received by Dr Laurie 22
whenever but I can't for the moment see how that's 23
going to assist us to hear Dr Laurie's comments about 24
that. 25
MR MANOS: Well, I'm not going to press it but I just 26
say briefly Dr Laurie has obviously got a starting 27
point when she received a lot of information and she's 28
received information that noise is an issue. 29
CONTINUED 30
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This is a document that she has taken in to 1
consideration in forming her opinion, but I will deal 2
with the document by Mr Turnbull. That's all that I 3
have by way of my examination-in-chief of Dr Laurie. 4

HIS HONOUR: Thank you. 5

+NO CROSS-EXAMINATION BY MR PSALTIS 6

HIS HONOUR: I can indicate that we will take a short 7
break at 11.15. 8

+CROSS-EXAMINATION BY MR HENRY 9

Q. I'll deal firstly, if I may, with your report which 10
comprises Exhibit A20, if you just turn to that and 11
I'll just deal with your qualifications, I'm not sure 12
that this is contentious, but in para.2 you recite that 13
you have the twin bachelor degrees that effectively 14
make you a legally qualified medical practitioner. 15

A. Yes, that's correct. I'm just looking for my document, 16
just bear with me, so it's A20. 17

Q. A20, this is your report or statement. 18

A. Yes. 19

Q. I'm not sure that it's even dated frankly. 20

A. Thank you, A20, yes. 21

Q. So you've got Bachelor of Medicine and Bachelor of 22
Surgery. 23

A. That's correct. 24

Q. And your history in the profession has been that of a 25
general practitioner. 26

A. That's correct. 27

Q. You don't profess to have any particular field of 28
specialisation. 29

A. General practice is a specialisation. 30

Q. Yes. 31

A. And I am a specialist general practitioner. 32

Q. I'll put it in these terms - and no other field of 33
specialisation other than general practice. 34

A. No. 35

Q. As I read the material that you've provided for us you 36
don't have any experience in undertaking formal 37
scientific research. 38

A. That's correct. 1

Q. And it would follow that you don't have any experience 2
in undertaking formal medical research. 3

A. That's correct. 4

Q. And I think you frankly said to the court that the 5
activities that you've undertaken so far in your role 6
as the Medical Director of the Waubra Foundation don't 7
amount to scientific research. 8

A. That's correct. 9

Q. Now, at the end of your statement, that's Exhibit A20, 10
you make a particular declaration. 11

A. Yes. 12

Q. And as I understand it that declaration is a 13
modification of the declaration referred to in the 14
court rules. 15

A. Yes, that's correct. 16

Q. And is the effect of your modification that you weren't 17
prepared to declare that you had made all desirable and 18
appropriate inquiries, you were only prepared to 19
declare that you had made certain inquiries. 20

A. My concern about the declaration that Mr Manos had 21
originally asked me to sign was that I was 22
uncomfortable with describing myself as an expert 23
witness, Mr Henry. I have fully disclosed to the court 24
everything which I consider to be relevant of the 25
material that I've come across. I have not omitted 26
material which I consider to be relevant. 27

Q. But what you do say by way of declaration is that 28
you've made certain inquiries, you haven't said that 29
you've made all of the inquiries that you think would 30
be desirable and appropriate. 31

A. No, that's correct, this is a work in progress, I'm 32
finding out new information all the time, including 33
things like the email that was sent to me last night. 34
It's an ongoing process. 35

Q. Let me turn then to the personal observations that 36
you've made and as I understand it the effect of what 37
you're saying is that there are some people who live 38

near the wind farm at Waubra who present with symptoms 1
that you set out at para.25 of your statement. 2

A. You're dealing with A20 still? 3

Q. Yes, I'll let you know when we move from A20. 4

A. Okay, thank you. Para.20. 5

Q. 25. 6

A. 25, yes, okay. Yes. 7

Q. Effectively what you're saying - perhaps I'll repeat 8
the proposition that - is that there is a group of some 9
people living near the wind farm at Waubra who are 10
presenting with the symptoms that you discuss in the 11
body of para.25. 12

A. Yes, the symptoms that were described and that I've 13
talked about there weren't confined to patients to 14
Waubra, they were patients from a number of different 15
wind developments across Australia. 16

Q. When you speak of patients they're not your patients, 17
they're the subjects of your inquiry. 18

A. Affected residents. 19

Q. Yes, okay. So it's not just Waubra, it's in the 20
vicinity of other wind farms in Australia and perhaps 21
overseas, but - 22

A. Yes, that's correct. 23

Q. - the gravamen of what you're saying to the court is 24
that this group of people that you've inquired in to is 25
presenting with these symptoms. 26

A. That's correct. 27

Q. Those symptoms aren't unique to people living near wind 28
farms, are they. 29

A. No, they're not. 30

Q. In fact they're symptoms - 31

A. With one exception. With one exception. 32

Q. You say that there is a symptom which is - 33

A. It may not have been described ... the vibration 34
symptom is the one - is the one thing that I have not 35
heard people describe in any other circumstance. 36

Q. What symptom is that that you're referring to. 37

A. The vibration symptom? 38

Q. Yes. 1

Q. People describe either - vibrating lips is the most 2
common description, but vibrations in their chest is 3
another one and some people have described vibrations 4
in their stomach. I've not heard or read of any 5
similar description with any condition. 6

Q. And are you able to tell us how many of the people that 7
you've spoken to experienced this vibration symptom. 8

A. The vibrations - do you mean in total of the 60-odd 9
people that I've spoken to or material that's 10
specifically before the court. 11

Q. Well, as I understand it, you've spoken to something in 12
the order of 60 people. 13

A. That's correct. 14

Q. They've reported to you the symptoms that you discuss 15
at para.25. 16

A. Yep. 17

Q. You've now said that there's this additional symptom of 18
vibrating lips, chests and stomachs and my question 19
was; how many of the 60 people have reported that 20
symptom to you. 21

A. Right, okay. There's been five, six - there would be 22
less than 10 who have described that, but only just 23
less than 10, I would say nine without being able to 24
refer to my database. 25

Q. Yes, all right. 26

A. Mm. 27

Q. Now, and that's a symptom that you say you've not come 28
across else where and is therefore unique to people 29
living near wind farms. 30

A. That's - that's correct I believe. 31

Q. Leaving those symptoms to one side and dealing with the 32
symptoms that you discuss in para.25, those symptoms 33
that I've referred to are not unique to people living 34
near wind farms. 35

A. That's correct. 36

Q. In fact they are symptoms that are experienced to one 37
degree or another by people living in the general 38

- community. 1
- A. Yes, that's correct. 2
- Q. Do you agree with Professor Wittert's assertion that 3
those symptoms are stereotypical symptoms of people who 4
are under stress. 5
- A. Not entirely, no. I think there are particular 6
descriptions of conditions which I've outlined in 7
para.25, for example, the history of the acute 8
hypertensive crisis which do not fit with a general 9
stress reaction. 10

CONTINUED 11

Q. All right, we might be at cross-purposes. My question 1
was just generally, in respect to the symptoms, those 2
symptoms are generally associated with patients who are 3
suffering from stress. 4

A. The sort of extreme nausea that people describe, I 5
don't believe is associated with stress. There are 6
particular aspects about each of those symptoms that in 7
my experience now have led me to believe that whatever 8
is going on adjacent to these turbines, yes, you're 9
quite right, many of those symptoms are part of a 10
generalised stress response, but there is a particular 11
pattern with some of the symptoms which I believe is 12
not just part of a generalised stress response. 13

Q. Perhaps if I can test my understanding of what you're 14
saying. Let's take hypertension or high blood 15
pressure. You accept that that symptom is generally 16
associated with a stress response. 17

A. Okay, hypertension is generally asymptomatic unless 18
it's severe, okay? Hypertension is associated with as 19
part of a stress response, yes. 20

Q. But you're saying that the people that you have spoken 21
to as part of this group of 60 people who are reporting 22
to you hypertension, that those people are not 23
suffering hypertension as a result of stress. 24

A. No. 25

Q. But as a result of some other agent. 26

A. Okay. 27

Q. Is that what you're saying. 28

A. I'm not saying - I believe it's complex. I believe 29
there is some stress and I think stress can be induced 30
by a number of different factors. Illness of its own 31
account can produce stress, feelings of disempowerment 32
can produce stress, all sorts of things can produce 33
stress. However, I also believe that there is a direct 34
effect associated with the operation of the turbines, 35
and my example of this particularly is in this man who 36
is apparently having these extremely high blood 37
pressure episodes at night in bed asleep in his home 4 38

km away from the turbines at Waubra, you know, to the extent that his GP has started him on high blood pressure tablets. So this man I'm sure is subjected to stress, you know, partly because of the chronic sleep deprivation which he is suffering. So it's complex, hypertension is affected by all sorts of things, but I believe that there is an extra component.

Q. I just want to clear about what you're saying here because it's important as a distinguishing point between what you say and what Professor Wittert says. You acknowledge that the range of symptoms that you have referred to in para.25 are generally associated with a stress response, but you assert to the court that the 60 people that you have inquired into are manifesting these symptoms not because of stress but because of some other agency -

A. I'm not -

Q. - some other cause or influence.

A. I'm not asserting that stress is not part of it, but I believe there is an additional causal influence. I guess what I'm saying is that these reports are emerging and these people are getting sick and that illness is being correlated with the operation of the turbines, and they are describing to me that they are well when the turbines are not operating for a length of time and they are well when they are away from their homes. I believe there is a need for further research to establish whether in fact the turbines are doing this. I believe from the research that has been done by other clinicians who are eminently capable of doing research, which I am not, that there is a body of evidence that's emerging that shows that there is a pattern here.

Q. Yes, but it's important for us to appreciate exactly what your position is. Are you asserting positively that there is something about the windfarms that is causing these symptoms or are you asserting that there is something about the windfarms that might be causing

these symptoms that calls for further research. 1

A. I believe on the basis of what I have heard that there 2
is a direct correlation, but my beliefs are irrelevant, 3
we need to do the research. 4

Q. So your belief, then, tell me if I'm wrong about this, 5
is based not on having taken an appropriate medical 6
history of these 60 people. 7

A. That's correct. 8

Q. You have not done that. 9

A. No, I haven't taken it. 10

Q. Nor have you attempted to undertake the sort of 11
diagnosis of these people's condition that you would if 12
you were their general practitioner or other treating 13
doctor. 14

A. Absolutely, there is a difference, yes. 15

Q. So there is no history and no diagnosis. 16

A. No, that's not true, it's not that there's no history; 17
it's not complete and it is not the sort of history 18
that I would take if I was their treating doctor. 19

Q. But on the basis of that limited inquiry into these 60 20
people, you're prepared to assert positively that there 21
is something about the windfarm which is causing their 22
symptoms. 23

A. I believe there is a need for further research urgently 24
because these people are describing symptoms which 25
arise in conjunction with turbine operation. 26

Q. But it's the case, isn't it, that in most population 27
groups that you might choose to study throughout 28
Australia, you could expect to find one or more people 29
with hypertension. 30

A. Yes, of course. 31

Q. And/or anxiety. 32

A. Yes. 33

Q. And/or depression. 34

A. Yes. 35
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Q. And all of the other symptoms that you have identified, leaving to one side the vibration symptom that you have referred to. 1
2
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A. Yes. 4
Q. So those symptoms occur in people who have nothing to do with windfarms and don't live anywhere near a windfarm. 5
6
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A. They do. 8
Q. It follows, doesn't it, that the mere presence of people with those symptoms near a windfarm doesn't indicate that the windfarm has caused the symptoms. 9
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A. That is absolutely correct, however, I would like to refer you back to Michael Nissenbaum's case-controlled table. 12
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Q. I will come back to that. If I miss it out, then you will be entitled to pull me up. As I understand it, you have interviewed 34 people. 15
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A. Look, it started off at 34 and then I think in the end, the transcript that I submitted included 40 case histories, yes, so it depended. When I wrote this report - 18
19
20
21
Q. It was 34. 22
A. - it was just before I went to Ontario, that's correct. 23
Q. Have you made any inquiries as to the total number of people who live in the Waubra area. 24
25
A. No, I haven't, and I am very conscious that this is not in any way a comprehensive population survey. We need to do the research. 26
27
28
Q. So the basic proposition is this, isn't it, that we don't know from the material that you have provided to us whether there is an elevated incidence of the symptoms that you detail in para.25 in the Waubra region compared to any other population that might be considered within Australia. 29
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A. That research needs to be done. 35
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Q. As a result of what you say in your statement, your 1
conclusion, and we touched on this towards the end of 2
yesterday, your conclusion at the time was that there 3
should be a separation distance of 10 km. That seemed 4
on my reading of it to be based on the proposition in 5
the second paragraph on p.11 that there was a person, 6
one person approximately 8 km away from turbines at 7
Waterloo - 8

A. Yes. 9

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- Q. - who's noticing new symptoms since the turbines commenced operations. You tell me if I'm wrong but it seemed to me that your process of reasoning was that we've got a potential connection between new symptoms that are 8 km away and therefore let's add a margin of error and require a separation of distance of 10 km, is that what you're thinking.
- A. No, no, that's not what I was thinking. I was - my position at the time was that because there were numerous people 5 km away who were experiencing and describing new symptoms which had started since the turbines started operating, in conjunction with information from Dr Thorne where he said that 3.5 km was the limit of what he'd found, that they hadn't looked further than 3.5 km. At that stage I was going on a precautionary principle using that and adding an extra margin in and it was - I guess it's been heightened by my concern that there were new symptoms being experienced by this person at Waterloo which have since been described by at least five - I think six other people in the Waterloo and Mt Bryan areas. So we don't know. I mean the basic research hasn't been done and if you're - this was not as a - as a permanent setback, for example, you know it was as a precautionary thing to do the research and find out what we're dealing with. In the context of the fact that there are so many turbine developments proposed across particularly south-eastern Australia which are going to be close to people's homes. If there is an effect - and I believe there is - we need to look into it and we need to find out what's going on so that we can work out what's safe as part of an appropriate risk assessment procedure.
- Q. You actually believe that there is a health effect which is associated with wind turbine developments, don't you.
- A. I do now; yes, I do.
- Q. And your view is that further research should be done

in order to prove what you already believe. 1

A. Further independent research needs to be done to find 2
out what the problem is. I'm not interested in proving 3
one side or another; I want the truth, I want to find 4
out what is actually happening. And as I have said, if 5
there is no health affects I'm quite happy to have the 6
turbines up on the hills near my home. But I am 7
extremely concerned by these reports of people having 8
to move out of their homes because of illness. And I 9
don't want that to happen to my family, nor do I want 10
it to happen to any other family. And because of that 11
I've clearly got a position which many would consider 12
to be biased and not objective and therefore I'm not an 13
appropriate person to be doing the research. 14

Q. Yes but I think you've quite frankly - and very frankly 15
and appropriately acknowledged that there is a wind 16
farm proposal which is nearby to your home. 17

A. That's right. 18

Q. Just looking through the to see if I can find the 19
reference. 20

A. I think it was in the beginning. 21

Q. How far away is it. 22

A. Look - well we're not exactly sure of the development 23
because it hasn't been submitted but I've been told 24
that there will be five turbines within a kilometre. 25

Q. Of your property. 26

A. Yes, of my home. 27

Q. And clearly if the court was to adopt the 10 km setback 28
distance that you propose in your para.26 that would 29
have the effect of preventing the wind farm which is 30
proposed near you until the research that you want done 31
is undertaken. 32

A. Yes, that's correct. 33

Q. The 10 km is not based on any scientific analysis. 34

A. No. 35

Q. As a figure. 36

A. Well it's based on the reports that I have heard from 37
people in Australia and on information obtained from 38

overseas about the distances which people are 1
experiencing symptoms. 2

Q. Even if we assume, as you believe, that there is some 3
adverse health risk associated with windfarms, you 4
don't know where those health risks stop, do you, in 5
terms of the distance from the farm itself. 6

A. Well, we haven't done the research, so no. 7

Q. So it could be 10 km, it could be 20 km, or it could be 8
100 km, as far as you're aware. 9

A. Well, I understand that infrasound has been measured in 10
Germany from this German windfarm. Infrasound has been 11
measured specifically from the turbines - from one 12
turbine 15 km away, and this is not - this is something 13
which came in last night, so it's not actually in the 14
evidence before the court. So look, my position is we 15
don't know. I was unaware that any wind turbine- 16
specific infrasound measurements had been done anywhere 17
in the world and I asked the acousticians who I know to 18
see if they could find, you know, a proper study that 19
had been done, and this came in last night. So look, 20
my position is we don't know, the appropriate studies 21
haven't been done, and I think we need to find out as a 22
matter of caution, and then if there are no problems 23
and if I'm wrong, we can build turbines without any 24
restriction. 25

Q. I want to turn now to your addendum; that's Exhibit 26
A22. This addendum, as I read it, is essentially a 27
report on the symposium that you went to in October. 28

A. Yes, that's correct. 29

Q. Can you tell us who organised the symposium. 30

A. Yes, I can, it's a group called the Society for Wind 31
Vigilance, who are based in Ontario. 32

Q. Can you tell us what the objectives or purposes of that 33
society are. 34

A. Well, look, I don't have their details in front of me, 35
but my understanding is that they would like to see 36
this current gap in the appropriate independent 37
scientific research addressed, and they are confronted 38

with the situation as we are here, with people becoming 1
unwell after turbines start operating in their area, 2
and they would like to find out why, and find out what 3
a safe setback distance is. 4

Q. But their purpose is to promote research into the same 5
issues that the Waubra Foundation is concerned with. 6

A. Yes, that's correct. 7

Q. And to, presumably, obtain funding for that research. 8

A. I think it's to get the research done however it is 9
done. Look, I'm not privy to the, you know - what 10
their plans were. 11

Q. But frankly, these days, if credible scientific 12
research is done, that costs money which has to be 13
funded from somewhere. 14

A. Yes, yes, that's correct. 15

Q. Would it be fair to say that one of the problems with 16
what you describe as the gap in research is that no-one 17
so far has provided funding to undertake the research 18
that you feel should be done. 19

A. I think there has also been a lack of perception of the 20
problem. 21

MR HENRY: I think your Honour indicated that there 22
would be a break? 23

HIS HONOUR: I did. If, however, you're in the flow, 24
as it were, we can continue, say, till half past 11, if 25
that is more convenient. It's just really to take a 26
break. 27

MR HENRY: Yes, I'm happy to do that. I've got some 28
further questions about the addendum. Perhaps we will 29
take a break when I've finished those. 30

HIS HONOUR: Yes, certainly. 31

XXN 32

Q. Would it be fair to say that the papers that were 33
presented at the symposium were all consistent with the 34
objective or the purpose that you have described as 35
being shared by the Waubra Foundation and the Society 36
for Wind Vigilance. 37

A. No, I wouldn't say that. 38

- Q. My reading of them was that they all pretty much came to the conclusion that further research ought to be done into a range of phenomena. 1
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- A. Yes, of the papers that I have included here, there were a couple of other papers that were - or not papers, they were talks, discussions, and they took a position on wind energy, which the Waubra Foundation doesn't take a position on, wind energy, either way. 4
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So -
- Q. Are you talking about the social desirability of wind energy or the health impacts of wind energy, or what aspect of wind energy did they cover. 10
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- A. One of them was an economic analysis, which is way outside my expertise and that is not something - the Waubra Foundation is solely focused on researching - or on making sure that the appropriate independent research is done into the adverse health effects of wind turbines. 13
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Q. Perhaps I'll put the question in this way - did any of the papers conclude either that there is no problem or that no further research is warranted. 1
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A. No. 4

Q. Do you know how the speakers at the symposium were selected by the organisers. 5
6

A. No, I don't. 7

Q. Would you agree with me that at least some of the speakers would have had a vested interest in arranging further funding or further research into the alleged health effects of wind farms. 8
9
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A. I'm just trying to think. Dr John Harris is a professor of physics. Mr Rick James, he's - John is at Queens University, he's very concerned about what is going on in Ontario. I don't - 12
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Q. Perhaps I'll put it this way - many of them are academics who undertake scientific research which is funded externally. 16
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A. Dr Michael Nissenbaum is a practising radiologist, he's done his research on the smell of an oily rag, Mr Henry. He is passionate about getting answers to these questions. I'm sure he would welcome some money which would enable him to do his research, but I don't believe he's feathering his own nest - if that's the point of your question. 19
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Q. No, I'm not putting that directly to you because you wouldn't know it. I'm satisfied with the answer. 26
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MR HENRY: I propose then to deal ultimately with some of the material which is included in Exhibit A22, but I'll do that in the course of addressing - 28
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HIS HONOUR: A22, which you've just been on? 31

MR HENRY: Yes, which I've just been on - so if that's a convenient time for the morning break. 32
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HIS HONOUR: Certainly. 34

ADJOURNED 11.20 A.M. 35
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RESUMING 11.37 A.M.

XXN

Q. I just want to ask you some questions arising from your oral evidence yesterday. You started off by giving some evidence about the subjects of your inquiries in Exhibit A21 - do you see that, it's a document that sets out the transcripts taken by yourself of the individual subject details.

A. Yes.

Q. And in respect of subject 20 I think your evidence was that that person's GP and the person him or herself was saying that there was elevated nocturnal blood pressure. Do you recall that.

A. Yes.

Q. You may have said this, but I don't recall it - is it the case that that person had, and has, normal blood pressure during the day.

A. That's correct, except he has had some episodes of what his GP and I both think are an acute hypertensive crisis. He's had five episodes of these, but the rest of the time his blood pressure has always been recorded as being less than 140 on 90 - well and truly less than 140 on 90.

Q. And that's during the time when the turbines have been in operation.

A. Yes, that's correct.

Q. And so is it the case that the issue as far as subject 20's blood pressure is concerned - that you're saying that there is some effect on his nocturnal blood pressure which has been caused by the wind farm.

A. We're not sure what's caused it, we're concerned that it is in association with wind farm activity when the turbines are turning. He has also - when I say his blood pressure is normal, as I said, he has had these episodes of documented acute hypertensive crisis - so he has had episodes of elevated blood pressure, but when his blood pressure is measured normally it is absolutely within normal limits.

- Q. Are you able to even hypothesise for us a basis upon which the wind farm would be causing an elevation in subject 20's blood pressure at night, but not during the day. 1
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- A. No, it's puzzling, I don't know - but what we're planning to do is put an infrasound logger in his bedroom and do a concurrent sleep study and also check and see what his nocturnal blood pressure is doing and see what we find. I don't understand - I guess one issue is that it's the first time he's had a continuous blood pressure monitoring device. It may well be that when we measure his blood pressure - if he has a holder monitor on for a month, that we find that he is in fact having day time markedly elevated blood pressure episodes. We don't know, it's the first time he's had the 24 hour holder monitor on. 5
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- Q. And are you aware of any reasons why a person's blood pressure might be elevated at night, but not elevated during he day time. 17
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- A. I am aware there are some clinical conditions where that can happen. 20
21
- Q. What are they. 22
- A. Specifically obstructive sleep apnoea, and I'm sure there's others - I'm not an expert in this area and I would absolutely be relying on and deferring to - and consulting with colleagues who have much more experience in this area than I do. But it was such an unusual finding that it's certainly worthwhile checking out further. I understand that this man has had a sleep study in the past, but not a recent one - which is why we need to do that. 23
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- Q. So it's a realistic hypothesis that subject 20 is suffering from obstructive sleep apnoea which is causing elevated blood pressure levels at night, but not during the day. 32
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- A. On the basis of his previous sleep study - his current body habitus, and reports from his wife that he doesn't snore, I don't think it's realistic. I'm intrigued as 36
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38

to what is causing this and we need to do some further
research. Doing a sleep study will ensure that we find
out.

HIS HONOUR

Q. Why did he have the sleep study in the past, what was
the reason for doing it.

A. I understand because he had difficulty sleeping - and I
don't know the date of it, I understand it was after
the turbines had started operating, but I haven't been
able to confirm that with a sleep physician.

XXN

Q. Mr Manos asked you some questions about the Nissenbaum
paper, which we find at tab 8 in Exhibit A22. And I
think you suggested that that's the top of the food
chain, as it were, in terms of scientific research.

A. I said it was the best evidence we have so far. It's
certainly not the best evidence that is possible, but
it's the best that we have so far.

Q. And as I understand it it's the best evidence in your
view because it's a case control study.

A. Yes, that's correct.

Q. You're not saying that case control studies generally
are the best form of scientific research, are you.

A. No, I'm not.

Q. You're just saying that because this is a case control
study it's the best evidence that we have at the
moment -

A. That's correct.

Q. - in respect of the issues that you're concerned about.

A. That's correct.

Q. And what we have here is - as I understand it and
you'll correct me if I'm wrong, a number of pieces of
paper that were presented at the symposium in October
2010.

A. No, that's not correct. The first piece of paper was
the abstract that was posted as part of the conference
proceedings - and the biographical information.
Dr Nissenbaum's presentation from that conference was

not part of this - it's not publically available yet
because it is awaiting publication in a peer reviewed
medical journal.

Q. Right.

A. The case control study results - the table was what I
put together from information which is in the following
document - which was a paper which Dr Nissenbaum
presented.

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Q. Just pausing there. 1

A. Yes. 2

Q. The table that immediately follows the bio - 3

A. Yes. 4

Q. - is your work derived from Nissenbaum's paper. 5

A. It's a graphical representation of the information, 6
that's right, that he described. 7

Q. And so then what is the status of the four page 8
document which concludes with the words 'Michael A. 9
Nissenbaum MD'. 10

A. Okay. 11

Q. And headed 'Wind Turbines, Health, Ridgelines and 12
Valleys'. 13

A. It is a paper that he prepared for presentation to the 14
- I understand the main medical association. It is not 15
published in a medical journal obviously. I understand 16
from Michael that he did get peers to review it. There 17
is no details of that there. 18

Q. I'll just make a note of this, it's not published. You 19
have been told it has been - 20

A. Peer reviewed. 21

Q. - reviewed by peers and do you know who they are. 22

A. No, I don't. 23

Q. Peers unknown and are you privy to what those peers 24
said about the paper. 25

A. My understanding is that they thought the methodology 26
was - 27

Q. Well, just a minute. The - 28

A. But this is hearsay so - 29

Q. Yes, the basis of your understanding is what you've 30
been told by Dr Nissenbaum about what these unknown 31
peers said about Nissenbaum's work. 32

A. Yes, that's correct. 33

Q. You've not spoken to these peers - 34

A. No. 35

Q. - yourself. 36

A. No, I haven't. 37

Q. Thank you, and following the four pages that I've 38

referred to that bears Nissenbaum's name, we see then a plan or a document relating to the Deerfield Wind Project at Vermont.

A. Yes, yes.

Q. Where is that from.

A. This was all part of the collection of paper - the collection of information that was part of what Michael submitted.

Q. Yes.

A. Yes.

Q. So that's part of the article submitted to the Maine board of health.

A. That's my understanding. This whole document from 'Wind Turbines, Health, Ridgelines and Valleys' to the final page was posted on the Wind Vigilance website and that's where I obtained it from.

Q. Yes.

A. And I asked Michael about it when I met him in Canada.

Q. Okay.

A. Yes, so it's not published in a medical journal. I was told by him it was peer reviewed, but I don't have any further information.

Q. Dr Nissenbaum's field of specialisation is in radiology.

A. Yes, that's correct.

Q. And diagnostic imaging. Are you aware of why a specialist radiologist was concerned about the purported health effects arising from a wind farm at Maine.

A. Because he lives in Maine and he was concerned that people were becoming unwell and he wanted to find out why.

Q. And do you know whether he lives near a wind farm.

A. No, I don't know that.

Q. Then if we turn to the first page of what he has written, it seems at about halfway down that the analysis is in respect of 22 out of about 30 adults who live within 3500 feet of a ridgeline. Now do you know

what the total number of people living within 3500 feet
of that ridgeline was. 1
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A. No, I don't. 3
Q. Do you know whether the 30 adults comprised the whole
of the population living within 3500 feet or whether
the 30 comprised some sub-group of that population. 4
5
6
A. I would imagine that it was a sub-group, but I don't
know. 7
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Q. And not all of the 30 were studied, correct. 9
A. My understanding was that - yes, that's - 10
Q. Well, let me put this to you. You may know more about
this than I do. 11
12
A. Yep. 13
Q. That paragraph reads relevantly. 14
A. Yes. 15
Q. 22 - 16
A. Out of the 30. 17
Q. - out of the 30 adults - 18
A. Yes, sorry, yes. 19
Q. - were evaluated. 20
A. Yep. 21
Q. Do you know how Dr Nissenbaum selected the 22 for
evaluation. 22
23
A. No, I don't. 24
Q. And do you know why he didn't evaluate the other eight. 25
A. No, I don't. There was a comment that he hadn't
interviewed children in a previous description of a
case series, but no, look I can't give any comment on
that. 26
27
28
29
Q. And do you know how he selected the 27 people who were
said to be not exposed. 30
31
A. I do know that he chose people who were matched for
age, sex and occupation as best he could and that they
were not - living within whatever the distance was. I
think it says three miles away, 'Compared with 27
people of otherwise similar age and occupation living
about three miles away'. 32
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Q. When you say matched, matched as a group or matched 38

individually. 1

A. My understanding was that they were matched 2
individually, but I'm not - this is not my area of 3
expertise and I don't - I can't give a definitive 4
answer to that. 5

Q. When I say matched individually, for say in the exposed 6
group you've got a male of 25 who works and is a 7
particular height and weight. You would then go and 8
find someone with those qualities or characteristics 9
who is not exposed and put them in the not exposed 10
group. 11

A. Yes, my understanding is they were matched for age and 12
sex and occupation, not height and weight. 13

Q. And then your analysis as I understand it in the table 14
is simply an interpretation of the information in the 15
bottom paragraph of the first page of the paper. 16

A. Yes, that's correct. It's just a visual representation 17
of that material. 18

Q. Can I ask you this, did any of the exposed individuals 19
report no symptoms. 20

A. Well, I can't tell that from the table and I can't 21
remember from the original case series. My 22
understanding is that there were some who - not 23
everybody reported all the symptoms. 24

Q. Yes, but every one of them reported one or more 25
symptoms. 26

A. Okay, I can't confirm that. Yes, look, I don't know. 27
Is that in here somewhere? 28

Q. No, that's what I'm putting to you. 29

A. Yes. Look, I can't confirm that one way or the other. 30

Q. That would suggest, wouldn't it, that the group of 22 31
were selected on the basis that they were reporting 32
symptoms. 33

A. It is certainly possible. I - look, I can't answer 34
that. 35

Q. And what we take from your table is that out of 20 36
people who were reporting symptoms - 37

A. Yep. 38

Q. - 82% of them were reporting sleep deprivation. 1
A. Yes. 2
Q. And 41% of them were reporting headaches. 3
A. Yes, that's correct. 4
Q. And 59% of them were saying they were newly stressed. 5
A. Yes. 6
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Q. We can't draw from your table, or from Nissenbaum's paper itself, what percentage of the total population were actually reporting those symptoms. 1
2
3

A. No, but that wasn't what was being asserted; we don't know, we haven't done the proper epidemiological studies. 4
5
6

Q. Well, the way I read your table was that it was asserted that 82% of all persons exposed had reported chronic sleep deprivation. 7
8
9

A. 82% of those exposed? 10

Q. Yes. 11

A. To turbines. 12

Q. In fact it's 82% who are complaining of symptoms, are complaining of that particular symptom. 13
14

A. Well, that's - I'm sorry, can you repeat the question? 15

Q. It's a fair analysis of Nissenbaum's work isn't it that the 82% who are reporting chronic sleep deprivation is 82% of a group of people who are reporting symptoms allegedly as a result of the wind farm near them. 16
17
18
19

A. Yes - well - 20

Q. Not 82% of everybody who lives within 3500 feet of the ridgeline of that particular wind farm. 21
22

A. No, that's correct, it doesn't purport to be a population survey, if that's - 23
24

HIS HONOUR 25

Q. Does it follow from what you are putting to the court in terms of a setback distance, that you disagree with Dr Nissenbaum, because he seems to be saying that the non-exposed group is 5 km away. 26
27
28
29

A. I've talked with Michael about this; I think one of the things that we're - because we haven't been aware that people further away could possibly be affected, it hasn't actually been looked at properly. Michael actually found in the subsequent work which was presented at the conference that indeed there was a dose - what we call a dose response curve - and that people that distance away from this follow-up work that he did, were affected. So, I can't present that 30
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information to the court because it's not yet publicly available, I can only report that from the conference. 1
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XXN 3
Q. One last point about this, if you turn over to the 4
third of the unnumbered pages of the text, there's a 5
paragraph that commences 'When pre-construction 6
modelling fails', do you see that. 7
A. Yes. 8
Q. And there's a passage two-thirds of the way down, it 9
says 'At Mars Hill where affected homes are present at 10
3500 feet, sound levels have been measured at over 11
52.5 dB(A), do you see that. 12
A. Yes. 13
Q. So, is it your understanding that that is part of the 14
factual context in which Dr Nissenbaum conducted his 15
inquiry or study. 16
A. Meaning that there were elevated sound levels recorded? 17
Q. Well, not necessarily elevated, but sound levels in the 18
order of 52.5 dB(A). 19
A. Well, that's what he said there. 20
Q. Yes, thank you. You mentioned yesterday and today the 21
issue of infrasound and in particular the work of a Mr 22
James. 23
A. That's correct. 24
Q. And I think you took us to Exhibit A22, tab 3, and you 25
said yesterday that he had measured 90 dB, then I think 26
this morning you indicated that he had measured that 27
distance of something like - 28
A. 1500 feet. 29
Q. - 1500 feet. I've looked through the material in the 30
abstract and the presentation, I can't see where Mr 31
James references the measurement of infrasound of 32
90 dB; can you take us to it. 33
A. There is not a spot where he says 90 specifically, it 34
was part of his oral presentation and I have an email 35
from him overnight which confirms that and I'm happy to 36
show that to the court. 37
Q. So, as far as the former presentation was concerned, we 38

have what we have at tab 3 - in the year of the 1
symposium, was this presented in the form of a 2
PowerPoint presentation - 3
A. Yes, it was. 4
Q. - up on the screen. 5
A. Specifically on the second last page - not second last 6
- it's on a page which is entitled 'New Insights into 7
Modulated WFILEN. Now, it's hard to understand from 8
this tape unfortunately, the reproduction, I have got 9
it on my computer, what he is talking about there 10
specifically, from my understanding, from what he said 11
at the symposium, was measurements of infrasound and 12
there's a couple of spectrograms that he has recorded 13
there, the top one, this is the top right-hand side, 14
'Maximum equals 69.14 dB sound pressure level', the 15
next one is hard to read, the last one 78.83. These 16
were just examples of sound spectrographs, 17
spectrograms, which he said he had taken adjacent to 18
wind turbines in Ontario, okay, and it was in the 19
context of that discussion that he said the maximum 20
that he had measured was 90 dB, 1500 feet from a 21
turbine. 22
Q. Did he provide any statistical analysis as to the 23
average or the mean of the measurements that he had 24
taken. 25
A. No, he was concerned about the peak. 26
Q. Did he give this information at the symposium as a 27
result of a question or as part of his primary - 28
A. No, it was part of his presentation. 29
Q. - presentation. Are you able to tell us what frequency 30
the 90 maximum related to - it was 20 Hz, 10 - 31
A. Less - well my understanding was - 32
Q. - 5. 33
A. - it was between 1 and 20 Hz, I don't know a specific 34
frequency and - 35
Q. Did he nominate the frequency but you've forgotten, or 36
did he not nominate a frequency at all. 37
A. I can't remember. I made a note of the 90 dB because I 38

was astounded at that and I distinctly remember - I 1
mean he said it was infrasound, but - 2

Q. Are you able to tell us - 3

A. And I'm not an acoustician, I am very clear about that. 4

Q. Yes, but this 90 figure is an important part of your 5
concern isn't it. 6

A. Yes, it is. 7

Q. Can you tell us how many wind turbines were part of the 8
farm that gave rise to the 90 measurement. 9

A. No, I can't, because he didn't mention it. 10

Q. And you didn't ask him any questions about it. 11

A. No, this was during the presentation. I did ask him 12
questions about it after but not that specific one.. 13

Q. Do you know what megawatt capacity the turbines were. 14

A. I couldn't give you a precise answer, they were large 15
turbines, 80, 90 m high, but I can't - yes. 16

Q. You don't know what the capacity was. 17

A. No, I don't, but I can easily find that out for the 18
court. 19

Q. And this was measured I think at 1500 feet. The 90 20
that was measured by Mr James, did that include all of 21
the ambient or all of the infrasound in the ambient 22
environment including the wind farm. 23

A. What he said, my understanding what he said was that it 24
was specific emissions from the wind turbine that was 25
90. So, I can't say anymore than what he, you know, 26
than what he said, you know. 27

Q. Are you aware that infrasound is present in the natural 28
environment. 29

A. Yes, of course. 30

Q. Do you accept that in order to determine the infrasound 31
which is coming from a particular source 1500 feet 32
away, it would be necessary to have some method to 33
screen out from the analysis the infrasound which is 34
present in the ambient environment. 35

A. Yes, if you were going to say that it was wind turbine 36
specific infrasound, yes. 37

Q. Now do you know how he did that. 1

A. He told me that what he used was a new instrument 2
called a sound quality analysis instrument. I'm not an 3
acoustician, I'm not familiar with the technology, I 4
rely on him. But I guess - 5

Q. So this is a new instrument that can tell you the 6
infrasound coming from a wind farm and ignore the 7
infrasound of a natural environment. 8

MR MANOS: I don't think the witness said that. 9

HIS HONOUR: Sorry, Mr Manos, if you want to object - 10

OBJECTION: MR MANOS OBJECTS 11

HIS HONOUR: On what basis do you object? 12

MR MANOS: Well because that's not what the witness 13
said. Put it as the witness put the evidence. 14

MR HENRY: Well I'm not proposing to do that. We'd 15
be here all day if I kept on repeating the evidence of 16
it. What I'm putting is that the effect of the 17
evidence is that Dr James has got a new machine which 18
is capable of distinguishing between an infrasound that 19
comes from a wind farm. 20

MR MANOS: I don't think the witness said that either 21
with respect. 22

MR HENRY: That's what I'm putting to her. 23

HIS HONOUR: Ultimately the debate might be a barren 24
one because I'm not sure that this witness is going to 25
be able to take us much further. 26

MR HENRY: Yes, we have to move on if it pleases the 27
court. 28

XXN 29

Q. I want to ask a question next about this infrasound 30
business which derived from some evidence that you gave 31
yesterday. Can I take you to Professor Wittert's 32
statement and to attachment 7. I'll take you to p.12 33
for the purposes of my questions. Now you make some 34
comment about the paper by Radneva, can you remember 35
that. 36

A. No, could you remind me please? 37

Q. It's on p.12 halfway down with a paper by Radneva of 38

1997. 1

A. Right. 2

Q. My recollection of it was that you referred us to that 3
paper or rather the abstract which is reported there as 4
part of your concern that there are studies that show 5
that infrasound can cause health problems. 6

A. Yes. 7

Q. Or have I got your evidence wrong. 8

A. No, no. Yes, that's correct. 9

Q. You would accept though that the Radneva study is 10
concerned with people who are experiencing both noise 11
levels above 60dB(A) that's audible. 12

A. Yes. 13

Q. And infrasound of 55-78. 14

A. Yes. 15

Q. There's no material at p.12 of attachment 7 which would 16
permit us to distinguish between the health effect 17
caused by the audible noise at 60 dB(A) and the 18
infrasound at 55-78; that's correct isn't it. 19

A. No. I haven't read the primary paper so you know, no. 20
Audible noise, I believe noise and infrasound is part 21
of what is causing the disturbance. Just on that, one 22
of the things that I've discovered and other people are 23
reporting as well, when you interview people they say 24
that there's no doubt the audible noise on occasions 25
wakes them up. However, there's a large number of 26
people who describe being woken up despite being unable 27
to hear the turbines and they wake up in a panic state 28
with sympathetic arousal, you know the sweaty palms, 29
fast heart rate and a feeling of panic and there's no 30
audible noise that they can hear. This is being 31
reported across the world. So we are concerned that 32
there is in fact an infrasound effect with these people 33
and that part of the sleep disturbance is actually a 34
mixed picture of both audible sound and infrasound. 35

Q. Now I want to take you then to Exhibit A22 which is 36
your addendum attachment 7. 37

A. Yep. 38

Q. Which comprises the work of Dr Henning. 1

A. Yep. 2

Q. You took us to the graph headed 'Why does WTN affect 3
sleep so much.' 4

A. Yes. 5

Q. You commented to the effect that the graph shows that 6
noise from wind turbines is more annoying than noise 7
from aircraft, road traffic or railways at comparable 8
sound pressure levels; correct. 9

A. That's correct. 10

Q. That's your understanding of the message from the graph 11
that I've referred to. 12

A. What it says is that the percentage of highly annoyed 13
people at the same sound exposure level is different, 14
quite dramatically different when you compare aircraft, 15
road traffic and railway noise with wind turbine noise. 16
Now my understanding of the paper from which this came 17
is that there are a number of reasons postulated for 18
that, one of them being the sound quality of the noise, 19
another being possibly the visual aspect, a number of 20
things but particularly the pulsatile nature of the 21
noise and there is certainly a growing number of people 22
who are wondering if in fact concurrent infrasound is 23
part of the annoyance factor. 24

Q. The other reference that we saw to the dotted line on 25
the left-hand side of that graph was in tab 3 of the 26
same document in Mr James' work; correct. 27

A. Tab 3, yes, that's correct. 28

Q. Whichever graph we look at the source of the dotted 29
line for wind turbines is Pederson and Waye. 30

A. Yes. 31

Q. Have you satisfied yourself that the dotted line is an 32
accurate representation of Pederson and Waye's 33
findings. 34

A. I haven't compared it to the original paper. I have 35
relied on - 36

Q. The presentations that we see - 37

A. Yes. 38

Q. - in your Exhibit A22. 1

A. Yes, that's correct. 2

Q. Are you satisfied that the comparisons between wind 3
turbines on the one hand and aircraft, road traffic and 4
railway noise on the other hand is comparable in the 5
sense that you're comparing apples with apples. 6

A. I don't believe they are. 7

Q. Well perhaps I'll be more specific. In terms of the 8
measurement parameters for aircraft we're dealing with 9
LEQs, we're dealing with peaks, are we dealing with 10
L90s or L10s. 11

A. Okay, I'm not an acoustician, Mr Henry, I make it very 12
clear. 13

Q. Can I put this to you. If you turn to Professor 14
Wittert's statement and go to tab 12 you'll recognise 15
the Pedersen and Waye article. 16

A. Yes. 17

Q. If you turn to fig.2 on p.483 you'll see the graph that 18
compares annoyance on the left-hand side with sound 19
pressure levels. 20

A. Yes. 21

Q. On the bottom. 22

A. Yes. 23

Q. Now I'd invite you to compare the graph which comprises 24
the dots with the representation of that figure in the 25
graph of Mr Henning's presentation. See the dot at 40 26
is at a level of say 15. 27

A. Yes. 28

Q. Whereas Henning represents the annoyance percentage as 29
being at 35. 30

A. Yes. 31

CONTINUED 32

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Q. In fact he's represented in his graph, hasn't he, the upper limit of the 95th - 95% confidence interval, hasn't he.

A. Yes.

Q. Is that a fair way to present Patterson's data.

A. Look, I can't comment on that, on the - I can't comment on that.

HIS HONOUR: Do you mean by 'fair', accurate?

MR HENRY: Accurate.

+RE-EXAMINATION BY MR MANOS

Q. Mr Henry asked you some questions fairly early on - taking about the precautionary approach and your 10 km setback distance and I put to you that you now believe that wind farms are creating a health effect, or you said you now believe that to be the case.

A. Yes.

Q. When did you form that belief.

A. Certainly prior to attending the conference in Canada. I was - I mean, I was initially very sceptical about this. I did not want to find that there were any health issues, both because for me and my local community it was going to create a problem, not the least of which might be that my family and myself might be personally impacted if it was true and I'm very pro green energy and wind - wind energy. So I really didn't take this issue seriously until I investigated after Dr Amanda Harry - after reading Dr Harry's survey and then reading through the National Health and Medical Research Council paper and all its source documents as best I could and really after I'd started actually speaking with people and finding out how their lives had changed since the turbines had started operating. So it took me a long time really, I wasn't - certainly was not convinced straight away. I became concerned after reading - reading the documents before I'd even spoken to someone and taking, you know, listening to affected residents has just amplified those concerns. In terms of ensuring that we get the best

quality independent research to find out what, you 1
know, what in fact is going on. 2

Q. You were asked some questions about patient 20 referred 3
to Exhibit A21 - 4

A. Yep. 5

Q. - and I just want to be clear, you said in your 6
evidence that patient 20 had some sleep studies before. 7

A. My - yes, my understanding is that he'd had a sleep 8
study done some time ago. I don't have a date. 9

Q. Sorry, that's what I want to ask you about, the 'some 10
time ago' I'm not clear, did - I thought his Honour 11
might have asked a question but I - do you understand 12
that was before or after the wind farm was turned on. 13

A. I don't have that information. 14

Q. Thank you. 15

A. Yes. But the reason I bring that up is because there 16
was an issue about whether or not - this was from his 17
GP, whether or not he had obstructive sleep apnoea and 18
she told me that she didn't believe he did, but that it 19
would be a good idea to repeat the sleep study because 20
it had been done some time before. 21

MR MANOS: No further questions, just a comment. The 22
witness has indicated that she can obtain additional 23
information from Mr James it would appear which was the 24
subject for cross-examination, I'm in the court's hands 25
as to whether or not we should be seeking that 26
information. Dr Laurie can re-present if need be. 27

MR HENRY: I'll oppose that course of action. I 28
didn't cross-examination on the content of this new 29
information, I cross-examination on material that was 30
already before the court and I can't control what the 31
witness says in terms of what she's heard in the 32
intervening interval, but in my respectful submission, 33
the time's long past for the presentation of additional 34
material, particularly of that nature. 35

MR MANOS: There might be a misunderstanding. What 36
the witness was indicating, she could find out the 37
number of wind turbines, their size, etc., that was the 38

question that was being posed. I seek to analysis that 1
information with the greater detail. I'm not talking 2
about any commentaries, simply the measurement of the 3
wind farm and the size and output, etc. 4

MR HENRY: I'm not calling for that information. 5

HIS HONOUR: I imagine you're not. But it's arisen in 6
cross-examination, it wasn't - and it - probably it's 7
provoked by some of Mr Henry's questions. The 8
difficulty I have, Mr Manos, is that, as this case has 9
revealed, what seem to be quite confined areas of 10
inquiry turn out to be open ended. 11

MR MANOS: The difficulty that I face is I can - 12
we'll hear Mr Henry making submission that that 13
information shouldn't be relied upon, we don't have 14
proper information, it could be the biggest wind farm 15
in the world for all we know, yet obviously we're at a 16
point where - it's difficult to put it forward, but if 17
we can find out that information readily - 18

HIS HONOUR: Again, the way it seems to me that it 19
would be better dealt with, more appropriately dealt 20
with is if Dr Laurie obtain the information then you 21
can put that as a proposition to Mr Turnbull who's the 22
witness I think who's far better served to deal with it 23
and see where it goes from there. 24

MR MANOS: Thank you. Well, I'll pursue that course 25
then. 26

HIS HONOUR: Okay. All right, Mr Henry? 27

MR HENRY: I've got no further submissions on the 28
question - 29

HIS HONOUR: No, you may have a witness that you're 30
happy to get in to the witness-box. 31

MR HENRY: Yes, I'm pretty keen about that. 32

NO FURTHER QUESTIONS 33

WITNESS RELEASED 34

+THE WITNESS WITHDREW 35
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