



COMMONWEALTH OF AUSTRALIA

# Official Committee Hansard

## SENATE

SENATE SELECT COMMITTEE ON WIND TURBINES

**Application of regulatory governance and economic impact of wind turbines**

MONDAY, 30 MARCH 2015

PORTLAND NORTH

BY AUTHORITY OF THE SENATE

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## SENATE

### SENATE SELECT COMMITTEE ON WIND TURBINES

**Monday, 30 March 2015**

**Members in attendance:** Senators Back, Canavan, Day, Leyonhjelm, Madigan, Urquhart, Xenophon.

#### **Terms of Reference for the Inquiry:**

To inquire into and report on:

The application of regulatory governance and economic impact of wind turbines, with particular reference to:

- a. the effect on household power prices, particularly households which receive no benefit from rooftop solar panels, and the merits of consumer subsidies for operators;
- b. how effective the Clean Energy Regulator is in performing its legislative responsibilities and whether there is a need to broaden those responsibilities;
- c. the role and capacity of the National Health and Medical Research Council in providing guidance to state and territory authorities;
- d. the implementation of planning processes in relation to wind farms, including the level of information available to prospective wind farm hosts;
- e. the adequacy of monitoring and compliance governance of wind farms;
- f. the application and integrity of national wind farm guidelines;
- g. the effect that wind towers have on fauna and aerial operations around turbines, including firefighting and crop management;
- h. the energy and emission input and output equations from whole-of-life operation of wind turbines; and
- i. any related matter.

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**COOPER, Mr Steven, Principal Engineer, The Acoustic Group Pty Ltd****Committee met at 08:35**

**CHAIR (Senator Madigan):** Good morning. I declare open this first public hearing of the Senate Select Committee on Wind Turbines. Firstly I would like to acknowledge the traditional owners of the land on which we meet and pay respect to their elders past and present.

There are various matters I want to raise before we proceed with our first witness. I remind all present here today that in giving evidence to a parliamentary committee witnesses are protected by parliamentary privilege. Firstly, it is a contempt of the Senate for a witness to be threatened or disadvantaged on the basis of their evidence to a parliamentary committee. Privilege resolutions 611 and 612 clearly state that interference with or molestation of witnesses may constitute a criminal offence under section 12 of the Parliamentary Privileges Act.

Secondly, I want to repeat the following advice from the Clerk of the Senate that was provided to the Senate Committee Affairs References Committee inquiry into wind farms in 2011. If a person who is covered by a confidentiality provision in an agreement gives evidence to a parliamentary committee about the contents of that agreement, they cannot be sued for breaching that confidentiality agreement.

Thirdly, I remind everyone here today that a person who is adversely named in evidence to a parliamentary committee has a right of reply. A right of reply has been afforded to those people who have been adversely named in written submissions to this inquiry. For purposes of the public hearings where a witness adversely reflects on another person, I will interrupt the witness and may suspend proceedings. There will of course be a right of reply for individuals who have been adversely reflected upon in the *Hansard* transcript. It is the committee's intention to gather evidence that is directly relevant to the terms of reference for this inquiry. While adverse reflections on third parties may be a matter of related interest, it does not assist the committee in responding directly and objectively to the terms of reference.

Fourthly, this is a sitting of the federal parliament, and it is my responsibility as chair of this committee to ensure that witnesses have the opportunity to speak without interjections. If members of the public here today do disrupt the committee's proceedings, I will suspend the committee and ask the interjector to leave the room.

Fifthly, the following comments are directed to members of the media who are present here today. There are rules that govern the attendance of the meeting of federal parliamentary committee hearings. A copy of these rules is available from the secretariat. I ask that members of the media present here today do not film or photograph from behind the committee and do not get in between the committee and the witnesses. If you are unsure where you can film or photograph, please ask the committee secretariat for instructions.

There is an opportunity at 3:55 pm today for people who are not appearing as witnesses on the program to give a short statement to the committee. This session will run for 30 minutes. There will be a strict three-minute time limit on these statements. When three minutes are up, I will ask the next speaker to take the microphone. To participate in this session I ask that you register with the secretariat. The order for speaking will be on a first-come, first-served basis. The secretariat will write your name down and advise you of the time that you will be speaking.

Welcome. Information on parliamentary privilege and the protection of witnesses and evidence has been provided to you, and copies are available from the secretariat. I now invite you to make a short opening presentation and at the conclusion of your remarks I will invite members of the committee to put questions to you.

**Mr Cooper:** I am an acoustical consulting and vibration engineer based in Lilyfield, a suburb in Sydney. I am here in the capacity of myself and my company, although I am the author of the Cape Bridgewater wind farm noise study, which was funded by Pacific Hydro. The study is a small telephone book, and I do not intend in terms of my submission to go through that study. It identifies problems, issues, measurements and results that occurred from the wind farm study. For simplicity one can go to the executive summary and the conclusion. The importance is that study has been hailed around the world as finding new information and material previously not put together or understood with regard to wind farms. It is such a point that I have been invited to a number of conferences in America to talk about this very study.

I have provided a submission to the committee, but it only went to the committee late on Friday, so it was not up on the website. It covers a brief outline of the study itself and then two specific parts of the terms of reference, of which there are some issues that I have raised of a technical nature. To go through the study itself will take some time, so I am basically here to answer any questions that the committee may wish to put to me in relation to the study.

**CHAIR:** Senator Leyonhjelm.

**Senator LEYONHJELM:** Good morning and thank you for coming along. I would like to know a little bit about you to begin with. How long have you been an acoustics engineer?

**Mr Cooper:** Thirty-seven years.

**Senator LEYONHJELM:** Have you been involved in standards committees?

**Mr Cooper:** Yes, I have been on a number of standards committees here in Australia in terms of noise and vibration. I was on the aircraft noise standards committee for 26 years, the railway noise subcommittee for about 10 years, the architectural acoustics standards in relation to laboratory testing for about 12 years, the whole-body vibration standards committee for 25 years and committees overseas in relation to helicopter and aircraft noise. I have been with the Helicopter Association International for acoustics fly neighbourly committee for about 23 years. I have been an observer to the American standards aircraft noise committee and I have advised the International Civil Aviation Organisation by way of the UK Department of Transport.

**Senator LEYONHJELM:** Have you been an expert witness based on your expertise as an acoustician?

**Mr Cooper:** Yes, I must do about 50 cases a year.

**Senator LEYONHJELM:** Fifty cases a year?

**Mr Cooper:** Yes. I appear regularly in the Land Environment Court of New South Wales and sometimes, in terms of licensing matters, local courts or what used to be a licensing court and occasionally district court, Supreme Court matters and two matters in the Federal Court.

**Senator LEYONHJELM:** All right. Let's get on to some broad detail. Is it an established fact—is it scientifically proven—that wind turbines emit infrasound?

**Mr Cooper:** Yes it is.

**Senator LEYONHJELM:** What can you tell us about infrasound? I am only a senator, so I do not know anything much. Give me a run-through on what it means.

**Mr Cooper:** If we imagine in many cases considering noise as the same as light, if you pass light through a prism, it will break up into different colours of the rainbow. We go from the reds, which is a low frequency, up to the yellows and ultraviolet as a high frequency. So that covers the broad spectrum of noise that we can hear, from bass in music up to cymbals, but there is also energy, just as in light that is generated outside what you can see. People understand infrared exists and can be used for therapy, and there is ultraviolet, which contributes to sunburn. In terms of acoustics we have the same terminology. Infrasound are the low frequencies below the normal level of hearing, so they are normally considered as being below 20 hertz. Ultrasonics are the frequencies above what we can hear and are normally taken as above 24,000 hertz or thereabout. As we age we lose our level of hearing in terms of its dynamics of frequency range, so some people have trouble hearing high frequencies. Musicians who train themselves to listen to music can pick a lot of these frequencies. Bats are very good at picking the high frequencies they use as sonar. So infrasound covers the area below normal hearing. Infrasound therefore is normally confined to the region between zero hertz or DC and 20 hertz. Low frequency in terms of discussion of turbines and general industry is considered between 20 hertz and 200 hertz.

The ear responds in a non-linear manner to noise. What happens is that we do not respond or detect the noise in the same way as a sound level meter. Sound level meters simply measure pressure. As we get different levels of sound, so the hearing changes in its sensitivity. You can generate high levels of infrasound where people can hear it, so studies have been done to determine what is called the threshold of hearing just as you can do the threshold of hearing for sound. When we get down to a level that it is no longer heard, that becomes inaudibility. The thresholds of hearing are done with various subjects, and you get a mean level. What is typically taken is the threshold of inaudibility is one standard deviation or about 10 decibels below the levels. When we measure noise, the common concept is to use decibels—after Alexander Bell, the originator of Bell—and it is a logarithmic scale. So one talks about different levels by reference to decibels.

Below what you can hear for infrasound are levels much lower at which people can perceive the level, so we actually have a threshold of perception where people can be subject to infrasound and they can feel it. Then at a much higher level we get the level of infrasound where people can hear it. Then when it goes above certain levels it can be a level of pain. You can do the same thing with the audible noise. We can have satisfactory levels, we can have painful levels, we can have inaudible levels. We can still have levels lower than inaudibility. It is just that we cannot hear it.

**Senator LEYONHJELM:** Does infrasound travel further? Is it transmitted any differently from audible sound?

**Mr Cooper:** Yes. What happens is that one normally expresses the attenuation or loss of energy on a basis of distance. Typically, for normal noises—the noises that you are hearing at the moment, traffic noise or industry noise when you are outside—it is normally considered to fall off at six decibels per doubling of distance. If you have a noise of, say, 50 decibels and you are 20 metres from a noise source—imagine a pump or an air conditioner—when you then go to double the distance, it will go down six decibels. Double the entire distance again and it will go down another six. That is normal noise and a normal propagation.

When you are dealing with the low frequency down to infrasound, the wavelength—that is, the dimension from a positive to negative and back to a positive of a wavelength—is much longer. Infrasound propagates at a lower rate. For many people who have carried out the work, it is between three and four decibels per doubling of distance. On low frequency energy, if you are subject to monitoring a rock concert, what people hear is the boom, boom, boom and they can hear the noise; but as you go further away, the general noise disappears and they are left with the bass. The bass frequency travels longer distances and particularly with infrasound.

**Senator CANAVAN:** How long is the distance?

**Mr Cooper:** I have measured infrasound from the Waterloo wind farm at eight kilometres. The University of Adelaide, during a shutdown of Waterloo, measured the Hallett wind farm, which was something in the order of 30 kilometres away. They are not hearing it, but they can see the data by the specific frequencies that are associated with the operation of turbines.

**Senator LEYONHJELM:** Does the ability to hear it or feel sensations from infrasound vary by individual?

**Mr Cooper:** Yes, different people will be subject differently. For an example, with sick sickness—going out on a boat—not everybody will get seasick. Certainly, not everybody will hear or perceive noise from various industrial operations. In terms of wind farms, not everybody detects the presence of the infrasound.

**Senator LEYONHJELM:** Can it penetrate insulated buildings and be felt in a built environment, so to speak, differently from outside?

**Mr Cooper:** If we take the first part of your question, all products that we have in building elements have a lower degree of the attenuation for low frequencies than high frequencies.

**Senator LEYONHJELM:** So they are more likely to be felt inside a building?

**Mr Cooper:** We will do the transmission part first. There is a lower degree of attenuation in the low frequency and infrasound. As to what happens with people perceiving low frequency or infrasound, firstly it is dependent on how loud or how much energy is there and secondly it depends as to whether the building interacts. In some cases, when you have energy such as infrasound that impinges upon buildings, it sets parts of the rooms, the walls and the floors into vibration so that it amplifies. If you go into an echoing room, everything sounds differently than if you go into a cinema, where it is designed to be dead. The room provides colouration of sound. You can understand that for normal sound. If you look at it or study acoustics, different materials in rooms change how a sound occurs once it is in the room. This same thing happens with infrasound. As a function of how big the room is or how small the room is, there can be natural modes or echoes that occur in the room.

**Senator URQUHART:** Given that we are not going to have a lot of time, are you happy to take questions on notice if I do not get through the number of questions I have got?

**Mr Cooper:** Yes, no problem.

**Senator URQUHART:** Thanks very much. Can I just confirm that you do not have any medical qualifications and that your experience is not of a medical background?

**Mr Cooper:** Correct.

**Senator URQUHART:** I understand that the study that you were involved in involved no medical professionals and also you did not gather any medical data about the participants. Is that correct?

**Mr Cooper:** That is correct.

**Senator URQUHART:** You and Pacific Hydro released a joint statement regarding the report that you talked about earlier. I would just like to go to some of the statements to see if you still agree with them. Firstly, the Acoustic Group and Pacific Hydro agreed that the study was not a scientific study. Do you still agree with that statement?

**Mr Cooper:** Yes.

**Senator URQUHART:** Secondly, the Acoustic Group and Pacific Hydro agreed that the report does not recommend or justify a change in regulations. Do you still agree with that statement?

**Mr Cooper:** Yes.

**Senator URQUHART:** Thirdly, the Acoustic Group and Pacific Hydro agreed that this was not a health study and did not seek or request any particulars as to health impacts. Do you agree with that?

**Mr Cooper:** Yes.

**Senator URQUHART:** Finally, on the statement that the study clearly states that no correlation had been found with standard acoustic parameters versus the wind farm, is that correct?

**Mr Cooper:** Yes.

**Senator URQUHART:** There are a number of experts that a very serious concerns about the methodology and the validity of your study. Among these are issues with the tiny sample size of six people and the fact that you only use subjects who already thought that wind turbines were the source of their health problems. Can I ask how you chose the participants of your study?

**Mr Cooper:** Yes. If you look specifically at the brief, the brief said that I was to undertake noise and vibration measurements to determine certain sound levels and certain wind speeds that related to specific local residents. The brief, which was issued by Pacific Hydro, said six residents. Those were the six residents, being the three houses that were looked at. Therefore, that was a restriction right from the start. The brief says that that is what I had to do. Some of the comments that have been made are from people who actually have not read the brief or looked at the report.

**Senator URQUHART:** The reason why there was not a larger sample size or a control group was that that is what the brief actually said from Pacific Hydro.

**Mr Cooper:** That is correct.

**Senator URQUHART:** Is it right that you have a history of appearing in court cases for wind opponents and casting aspersions on the academic research which shows that there is no evidence of the health impacts of wind turbines?

**Senator LEYONHJELM:** That is a bit loaded.

**Senator URQUHART:** I did not interrupt when you are talking, Senator Leyonhjelm. I am sure if Mr Cooper is uncomfortable with answering it, he will tell me.

**Mr Cooper:** I have appeared in one court case in South Australia and a VCAT hearing in Melbourne; I am not sure if you would classify it as a court as a strict technicality. I have been in no court cases in Sydney. I have only appeared in two matters in terms of providing evidence as to measurements that have occurred in wind farms. As to health impacts, I am not qualified so I have reported on the acoustic matters, that there is a wind turbine signature that is generated and that the dBA level which appears in permits, conditions and guidelines—so the New Zealand standard—do not cover infrasound and low-frequency noise. There is an issue there that they are inadequate to cover that specific spectrum of noises generated from wind turbines.

There is an issue in looking at saying this is what happens. Of the 11 wind farm that I have been to to conduct measurements, every one of them has exhibited this wind turbine signature. I am not the only person who has identified this. As my report sets out, the University of Adelaide has found this, the Shirley wind farm people identified this signature and Health Canada, in their major study, has identified the same signature. All of them have identified that that signature is not covered by the dBA method.

**Senator URQUHART:** With some of those groups that you talk about there—the Shirley wind farm and Health Canada, et cetera—do you have documentation supporting that?

**Mr Cooper:** Yes.

**Senator URQUHART:** Are you able to provide that to the committee?

**Mr Cooper:** Yes. I have made a reference in the submission to the material—

**Senator URQUHART:** As to all of those?

**Mr Cooper:** Yes. I have made reference to and I have included some data from the University of Adelaide, I have included the principal graph from the Shirley wind farm main report, I have included the spectrum information from Health Canada and I have made references to the primary source documents. For Health Canada, I have the two reports that have been issued by the group doing infrasound. I can give that to you. There are parts of it redacted in terms of it. I can certainly give you the entire Shirley wind farm report and also papers that have been issued by the University of Adelaide's research group, who have got an Australian Research Council grant to look wind farms.

**Senator URQUHART:** Great. If you could provide that, that would be useful. On the one that has the redactions, why are there redactions in it?

**Mr Cooper:** It identifies locations in terms of it. It is the same thing in terms of the Cape Bridgewater study. None of the residents are identified by name. The numbers that are used are houses, which are not the same as any other studies. The numbers went way up. They became house 87, 88 and 89. I have not mentioned any names. The residents have provided their section and an appendix for their comments, but the report is specific about not identifying people. That is the same thing that has occurred in the Health Canada report, because they talked about some locations. That is what I assume is the basis of the reductions.

**Senator URQUHART:** I understand the South Australian Environment, Resources and Development Court dismissed your expert evidence against the Stony Gap Wind Farm, saying of your work:

At present, on the basis of his evidence before us, it seems that his approach to the task includes privileging the subjective experiences of those residents who have experienced problems, and their perceptions as to the cause of these experiences, over other contradictory data.

What would you say to that?

**Mr Cooper:** I would say two things: the court also, if you read the judgement, said that they are required to utilise the guidelines that are in existence at the time—and the South Australian EPA guidelines actually state that a well maintained wind farm does not produce infrasound, so it has a bit of a problem; and it uses DBA so it has a second problem. The evidence that was provided at the ERD court was actually during the early stages of doing the work there at Cape Bridgewater.

The fundamental problem that you have in looking at the issue of wind farms is that there have not been health studies so the health studies are not there to show either an impact or no impact. Therefore, you cannot answer the question about what is occurring. It is a concept that I presented in Portland 2½ years ago. To get into this area, we needed to find first a signature from an acoustic viewpoint and do a socio acoustic study to work out the impacts from the noise perspective. Then when we had that we could move into the full character in the medical studies.

You read out just earlier that Pacific Hydro have agreed that there is no correlation between the normal noise indices and the wind farm. What that means is that even the permit conditions are not correlated to wind farms whereas if you use what I call the wind turbine signature, that is correlated to the wind farm and it is that concept that now enables that to move forward in the medical study. So acousticians that have been researching wind farms on both sides of the fence have actually said this concept of WTS or dB(WTS)—it is in my report—actually makes sense because it fits up with all the graphs and now it gives a tool so that you can move into the medical phase.

There are a number of places in America that are already adopting the survey profile that was done here for Cape Bridgewater and are looking at that very exact tool with people looking forward to move forward into the medical studies. If you did not have a way of relating the wind farm to what was occurring in the houses then you could not do the medical studies. Therefore, what you have said in the ERD judgement is correct and that is the basis why it is correct.

**Senator URQUHART:** Is that the same process that you undertook with the Cape Bridgewater study?

**Mr Cooper:** The Cape Bridgewater study had a specific brief. The brief was to determine certain wind speeds and certain sound levels that related to disturbances. It was not looking at health. I did satisfy the brief on both of those components. Having satisfied the brief, we now have an index that says we can relate it to disturbance. That index allows those studies to proceed.

**Senator BACK:** I go to the New Zealand standard 6808. You made the observation earlier that it does not measure infrasound; it does not mention infrasound in its particular assessment and measurement of sound.

**Mr Cooper:** Yes, it does not measure infrasound and it uses of a dBA parameter and that does not work for infrasound because the filter curve that appears has a very substantial amount of attenuation that it becomes insignificant in the dBA level.

**Senator BACK:** So the New Zealand standard is actually the one that has been used throughout Australia. Is that correct in satisfying local and state government requirements in planning?

**Mr Cooper:** That is incorrect. The New Zealand standard is used in Victoria and it is referenced in the permit for Cape Bridgewater Wind Farm and other wind farms in Victoria.

**Senator BACK:** What about in other states?

**Mr Cooper:** In other states, South Australia has a guideline and that guideline is also being used in New South Wales and sometimes it is being looked at in Queensland.

**Senator BACK:** And do those guidelines from South Australia and New South Wales also include infrasound in their particular assessments?

**Mr Cooper:** No they do not. The South Australian guidelines are dBA and they also make a point of saying well maintained wind farms do not produce infrasound.

**Senator BACK:** Can I conclude from the work here that any assessment process that does not incorporate infrasound is of little value?

**Mr Cooper:** That is correct.

**Senator BACK:** As an adjunct to that in the event that infrasound has not been considered by any sets of standards, then, by definition, they cannot have incorporated impacts on human health. Is that correct?

**Mr Cooper:** That is correct.

**Senator BACK:** The wind turbine signature concept that you have introduced in the Cape Bridgewater study, is that new to this whole world of acoustic interpretation of wind turbines around the world?

**Mr Cooper:** No, the use of 'wind turbine signature' is my use. I have been expressing it for a number of years because it was a way of describing what occurs from wind turbines. The fundamental of physics says that if you have a fan that rotates, it will produce a frequency that is called the blade pass frequency—the number of blades times the speed that the fan is doing—and it will produce harmonics. It is the law of physics. So all that happened was that does exist and it occurs from wind turbines.

If I go back to the late 1970s and early 1980s, a lot of work done in America including by organisations such as NASA, MIT et cetera identified that this signature exists. They were using a downwind turbine rather than an upwind turbine. All the other researchers had looked at narrow band—that is an important thing. So I have just used the term 'WTS'.

**Senator BACK:** So the term 'wind turbine signature' is accepted. I have a question in relation to these sensations as you describe them. The sensations seem to be what people anecdotally record and they record them on the level of severity from zero to five, with zero being nothing and five being maximum. The value of any scientific research, of course, is that it can be replicated anywhere and one would expect then that, if replicated faithfully, the same results or similar results would be repeated in other locations. That is what I understand to be the value of a scientifically valid outcome.

**Mr Cooper:** That is correct. What I attempted in the first instance for Cape Bridgewater was to replicate the South Australian EPA survey questionnaire from Waterloo.

**Senator BACK:** Which you have now developed further?

**Mr Cooper:** That is correct. What happened was, when the residents tried it, they found that it had ambiguity but it did not describe what they were perceiving. The EPA study was on noise and noise did not fit into what was occurring because they were not hearing it; they were perceiving it. We added in vibration as a separate distinction because residents were reporting vibration that they could feel through the floor or just experience.

I had looked at the concept of sensation in Waterloo in 2013 when I had looked at the perception. I put it to them: would this be an answer for what you have had trouble describing? They agreed that was the case and many of their complaints that had been attributed to noise should have been attributed to sensation.

**Senator BACK:** Finally then, one would expect we could now take your Cape Bridgewater findings and they could be replicated in other locations in Australia and elsewhere using the same methodology, using controls as in this case, using a wider sample of the population, and we would hope or expect that we would actually find similar outcomes based on sensations as they relate to changing of the activities of the turbines themselves?

**Mr Cooper:** Yes, that is already happening overseas. There is one looking at happening in Australia. As to the similar results, we may be getting some lower levels of sensation because they will involve people in controls who do not have a sensitivity.

**Senator CANAVAN:** Thank you, Mr Cooper, for appearing. Your report is very interesting reading. You prepared the report for Pacific Hydro; have you had any discussions with Pacific Hydro about your evidence today?

**Mr Cooper:** No.

**Senator CANAVAN:** I was interested in Senator Back's questioning before about the South Australian guideline. The guideline said that a well maintained wind farm would not produce infrasound. Is it possible in your view for a wind farm or wind turbine not to produce infrasound?

**Mr Cooper:** The laws of physics say a wind farm will produce infrasound for the speeds that we see. A windmill pumping on a farm has a small blade, has more blades and operates at a higher speed so it will produce a signature but there will not be any infrasound. What happens is as the blades get bigger, they have to reduce the speed. You get supersonic wind effects at the tips of the blades like helicopters. They are governed by the speed that the rotar can go by the number of blades and the size of them. So you have dynamic problems as you start getting bigger. What has occurred is the bigger turbines have started to reduce the speed

**Senator CANAVAN:** So it is physically possible to reduce infrasound but for practical purposes, it is not possible?

**Mr Cooper:** Yes and no.

**Senator CANAVAN:** I will phrase my question another way. Could a wind turbine operator change its operating guidelines to reduce or mitigate the production of infrasound, not necessarily to remove it but to moderate its generation?

**Mr Cooper:** I have not been permitted to talk to the wind farm turbine people to give you an answer. I found in terms of the data from the resident's observations that there were four different scenarios in which there was a greater degree of sensation: when the turbines were trying to start up, when the turbines were at maximum power, when they started to depower the blades and when they were changing the power output by more than 20 per cent going up or down.

If you are a pilot and you fly a plane with a variable pitch propeller, you can change the pitch to be more efficient in its operations. So what happens is the angle of the blade changes with the wind to have a more efficient flow. It has been suggested that when that angle is not correctly aligned for efficiency then you get more disturbance across the blades and the infrasound component becomes greater. They seem to be the four scenarios that the residents came up with that had a heightened level of sensation. But I was not able to talk to the wind farm designers to actually ask: does this hypothesis fitting with what's occurring—

**Senator CANAVAN:** Why were you not able?

**Mr Cooper:** Pacific Hydro said that they would handle it in-house.

**Senator CANAVAN:** Did you ask Pacific Hydro?

**Mr Cooper:** Yes I did.

**Senator CANAVAN:** And they said 'no'?

**Mr Cooper:** They said they would 'handle it in-house' and I did not get a reply.

**Senator CANAVAN:** What does 'handle it in-house' mean?

**Mr Cooper:** They have people who govern and look after turbines and who can look at the answers.

**Senator CANAVAN:** Did they say they would look into what you have raised but do so in-house? Did they actually make a commitment to look into this issue of the design of the turbine blades?

**Mr Cooper:** It was not the design; it was finding out what was happening in my concept. I never got an answer.

**Senator CANAVAN:** In your study, you say at the end there is a potential need for further investigations—although you do say there would be significant costs involved. Could you outline what are the priorities for further investigations now, given the results of your work?

**Mr Cooper:** Statistically, if we start off with six people who are sensitised then we find the worst-case scenario. If you want to create a standard or look at it, you need a much larger database or you need to repeat the study to see how it occurs across a wider area with different turbines. Therefore, there is an automatic limitation of being just six people in this work. You would need to have a much larger database if you were looking at introducing a standard. You certainly could not change the regulations in Victoria based upon six people.

The second part is you need to look at the medical impacts. If you go back a couple of Senate inquiries, they talked about the need for medical research into it. So I believe that if we have this tool we could go to that step. That needs a multidisciplinary approach, because it is not just a GP; you need people that look at brainwave function, sleep disorder—all of these combinations. So, in effect, the acoustic side is very much the tail that is wagging the dog.

**Senator CANAVAN:** I take your point that we could not really change regulations on an existing operator based on six people, but what do we do for future wind developments? There is a well-established precautionary principle in regulation. Is there enough here to say we should be very precautionary about approving further wind developments until we can do these studies?

**Mr Cooper:** If you look at the material that is available from the University of Adelaide, the Shirley Wind Farm and Health Canada, it tells you what is happening with infrasound. They say it is easy to measure out to 10 kilometres. We have material from NASA talking about annoyance; we have perception. The question becomes, in infrasound: what is the level at which we should be protecting people? I certainly cannot give you that level; I am just a noise engineer. So it is that that you need to look at. That is where the research needs to occur. People in America, particularly Dr Paul Schomer, are looking at this work. That is why they want me to come to America in May and August—to be on panels to talk about research into wind farms and where we should go as the next step.

**Senator CANAVAN:** But there are questions that remain about the impacts of wind farms, in your view, after you have done your study?

**Mr Cooper:** There are certainly questions about wind farms, but infrasound is not just restricted to wind farms. You get infrasound from power stations and gas turbines. I have been doing work up in the Blue Mountains, west of Sydney, where I have found that a coal powered fire station is affecting hundreds of people 15 kilometres from the power station. I started by looking at infrasound from a ventilation fan on a coalmine. I found that the coalmine does produce infrasound, but it is not of the order of magnitude that is causing the problem for residents. But the residents are experiencing the same sorts of effects as residents around wind farms. I have shown, very conclusively, that the infrasound components are coming from a very large power station.

**Senator DAY:** On the same path here, I played in a rock'n'roll band for many years, so I am very familiar with noise complaints and decibel levels. Also, coming from Adelaide, we hosted the grand prix for many years, and that took the concept of noise to a whole new level. We could hear that high-pitched sound from the grand prix 10 or 15 kilometres away. So I am interested in the difference with this whole new province of infrasound. What calibration or measurement system would you envisage would be encompassed in this new area of subaudible sound called infrasound? This is a fascinating subject. We all know about the sound above the audible level; we all experience that. But how is this new province measured in layman's terms?

**Mr Cooper:** I have an entire chapter in this report, chapter 10, that talks about instrumentation problems. Not everybody puts forward reports and says, 'These are the problems that we have,' but it is there for other researchers, because you require special equipment and knowledge in terms of doing this work. So it has cost me a lot of money in instrumentation to be able to do the job. I lost hundreds of thousands of dollars doing this Cape Bridgewater study in terms of time and money that I had to expend to be able to do it. So the report gives an entire chapter to help others. We got a special calibrator to measure down to infrasound for our microphones, because we could not rely upon manufacturers' work. So there are a whole pile of different protocols. I and other acousticians in America have been researching using microbarometers, pressure detectors, to measure what is occurring from wind farms, as a much cheaper alternative than special microphones. That seems to be the way that it is occurring. There is a draft American standard that is also including this in the mix for doing measurements. The Health Canada report on infrasound shows that they are using microbarometers, because this becomes a relatively simple way of doing it.

This is quite a new area, although it is not so new if people were doing it 30 years ago. It has just been forgotten about. But infrasound affects things like sick building syndrome. A former Prime Minister of New Zealand moved into an office and had an infrasound problem from the air conditioning. So it is a matter of understanding it and having the specialised knowledge to look at it. I have the advantage of having carried out for years machine vibration measurements looking at rotating equipment, so I automatically think about frequencies and dynamics. I have done a lot of work at concerts and nightclubs, and that is about controlling low frequency.

**Senator DAY:** I remember you. You shut us down once.

**Mr Cooper:** The laws shut them down. My job is to keep them going.

**Senator BACK:** A wise move, I think.

**Mr Cooper:** I did a lot of work with F111s and the Joint Strike Fighter for the Department of Defence. We were doing tests out in the middle of the desert on full afterburner, and we could tell when the pilot turned off the afterburner at 18,000 feet. So we understand how it travels, but actually there is not that much infrasound. It is noise frequency.

But it is very new, interesting work and a lot of people, if they do not have the right gear or they have not spent thousands of hours checking it to see what is going on, have problems. So I have worked closely with Adelaide university on calibration and we have exchanged ideas to help one another, to make sure we have the right microphones, the right settings, the right preamps.

**Senator DAY:** Those who are familiar with the movie *This is Spinal Tap* know they covered that by taking the dial up to 11 from 10. So you cannot just take it into minus when you are measuring the decibel level, because it is not decibels, is it?

**Mr Cooper:** Correct. It changes. We do a little bit more sophisticated limiting in nightclubs. Unfortunately, I have those very bad hours doing nightclubs and concerts at night—

**Senator DAY:** I am pleased to hear that.

**Mr Cooper:** sorting out those problems. So I understand where you are coming from and it is different. Infrasound is a completely new area and it is challenging to get the right results—that is for sure. That is where we have problems. A lot of the instruments that are available are measuring the wrong thing. We found two instruments from the same manufacturer that had different curves electronically and we had to unweight all those curves to get the right answers.

**Senator DAY:** I have a science background, so I know what you are talking about. That is very interesting. Thank you very much.

**CHAIR:** Senator Xenophon, are you there?

**Senator XENOPHON:** Yes, I am. I can barely hear you, Chair, and the irony is that a jackhammer has just started up outside my office in Adelaide. So there you go. There is no infrasound with that one, I think. Mr Cooper, I want to ask you some general questions about whether you have ever been gagged, silenced or limited in your ability to comment by anyone who has retained you as a consultant to investigate and remedy noise pollution. Bear in mind you are covered by parliamentary privilege in what you say, so any confidentiality clauses you may have signed would not be valid in the context of anything you say before this inquiry.

**Mr Cooper:** I have had a number of gag clauses in relation to contracts, in terms of legal engagements. Specifically I had one on providing an opinion with respect to the Uranquinty gas fired installation, which had a significant infrasound problem.

**Senator XENOPHON:** Where is Uranquinty?

**Mr Cooper:** Uranquinty is near Wagga, in New South Wales.

**Senator XENOPHON:** And there is a gas fired power station there?

**Mr Cooper:** That is correct. It was new one that presented problems on a particular mode of operation, basically the start-up of the power station. It affected houses out to about two kilometres.

**Senator XENOPHON:** And you were prevented from speaking out on that?

**Mr Cooper:** Yes. Well, I was retained and had significant clauses on disclosure of any material on it. I was representing the Australian supplier and the German manufacturer in various court proceedings. In relation to—

**Senator XENOPHON:** So if the committee were minded to ask you for a copy of that, if there were a formal request—that is a matter for the committee and I will go through the chair and the committee generally—is it the sort of material that you still have?

**Mr Cooper:** Yes, I still have some files and information on it.

**Senator XENOPHON:** Sorry, I interrupted you then. What else were you going to say?

**Mr Cooper:** In relation to this Cape Bridgewater service, I have a contract which has limitations in terms of confidential information that is provided to me from Pacific Hydro, which is a standard sort of format. The intellectual property material that is associated with this study has four components. There is confidential material provided by the company. There is principal intellectual property, which is material relating to the wind farm data which was supplied to me by Pacific Hydro. There is background IP, which is material I brought to the study, being my wind turbine signature—my graphical presentation of the noise level versus the wind and the power outputs et cetera. I hold that, so I do not have a restriction on that. Then there is the project IP, which is whatever is developed through the project.

So the dB(WTS) developed in the project is the property of Pacific Hydro. The observations that have been recorded and presented on graphs that show the output is the property of Pacific Hydro under the terms of the contract. Therefore, under copyright, I am not permitted to reproduce those graphs out of the report. So people around the world can have the report and look at it, but I am not permitted to take these graphs and present them. I have a number of peer reviewed papers that have been done for the purpose of identifying sections of this report and what has happened, and under the copyright laws I am not permitted to use those and I do not have a licence from Pacific Hydro to use even dB(WTS).

We have now proposed, with some other academics around the world, to use the terms LS-WT for wind turbines, LSW-AC for air conditioning or LSW-PS for power stations. So other researchers who were thrilled about the concept of dB(WTS) have now looked to use this terminology. Of course, if I have copyright problems, it is a bit hard to go to a conference and say, 'Here's the work,' if I cannot show any of the graphs. Most of the graphs refer to the wind speed, because that is a very important part of the Cape Bridgewater study. So that has presented a problem for me. Further than that, I still have what I will call gag clauses in the contract.

**Senator XENOPHON:** I just want to understand this. I think appropriate peer review is important for the robustness of any reports such as this, but you are saying that there are limitations on the level of peer review that can be carried out by virtue of the copyright limitations placed upon you?

**Mr Cooper:** No, I am not saying that about peer review. There was no peer review from my side of the equation before the report was done. There have been peer reviews done since the report was issued and people are using that work. What I am saying is that I am not permitted under copyright to provide any papers or publications that have graphs directly out of the report. My lawyers have confirmed that is the property of Pacific Hydro. I have requested a licence and permission for some peer reviews. In the submission that I have uploaded to the Senate committee's website, I have two of my peer reviewed papers where all the graphs have been removed, as required by Pacific Hydro. It shows that two of the papers to be published are completely useless. I could not present them to any conference.

**Senator XENOPHON:** To summarise, would it be fair to say that the absence of this copyright licence from Pacific Hydro restricts further public debate and discussion in respect of wind turbine noise?

**Mr Cooper:** It does not restrict people overseas or anywhere else in Australia discussing it; it restricts me from entering into those discussions and showing the material. So it just restricts me.

**Senator XENOPHON:** But the effect of restricting you as the author of this report would be presumably to restrict some robust debate and discussion about this whole issue.

**Mr Cooper:** I am having difficulty as to how I prepare a paper in May. That says I cannot use the material in the report—the Cape Bridgewater study the causal links. It is correct that I cannot use the data I have got and reanalyse it. I am okay about that, but there is a published report and it has a wealth of information. For example, chapter 9 identifies the problems in using the South Australian EPA methodology and it shows quite clearly how if you go a little bit finer in the resolution the answers are all there but if you restrict it you cannot do it. That is one of the papers that have been refused to be issued.

**Senator XENOPHON:** Before I go to the South Australian EPA methodology, have you raised your concerns with Pacific Hydro? To give credit to them, they did give you access to Cape Bridgewater. It was groundbreaking in that sense—that there was a level of cooperation—and I congratulate them for that. Have you raised with them your concerns about the lack of access or the copyright constraints placed on you?

**Mr Cooper:** Yes, in December last year I requested this very matter in terms of the licence because under the contract every time I want to use dB(WTS) I have to write to them to get their permission. So I did raise it and there were discussions about a licence. I provided them papers earlier this year and raised it again. I have been told that a licence is coming about dB(WTS) but I have been instructed that there is copyright over the reproduction of the report.

**Senator XENOPHON:** Could you please provide to the committee copies of all of your correspondence, including emails, any documents exchanged and any notes of conversations you may have had with Pacific Hydro or between your company and Pacific Hydro in respect of this. I would be quite interested to see that chain of correspondence.

**Mr Cooper:** I can but I point out that I am a little bit reluctant. But, yes, I can provide it.

**Senator XENOPHON:** Perhaps we can get advice from the secretariat and even the Clerk of the Senate as to your legal protections to provide such information. If there is a concern about that, you may want that to be considered in camera by the committee in the first instance. That is something we can perhaps ask Pacific Hydro shortly. Are there any other reports you have written in relation to environmental noise pollution where you have been constrained, gagged or in anyway fettered in terms of what you can discuss about those reports?

**Mr Cooper:** There are a couple but they are related to the Department of Defence where I used to have top secret clearance so that is involving matters of military concern. If I exclude that, no, I have not had any other restrictions.

**Senator XENOPHON:** Thank you. Finally, you refer in chapter 9 of your report to the South Australian EPA methodology. In a short summary—and you may want to elaborate on this on notice given the time constraints—

are you saying that the South Australian EPA guidelines are fundamentally flawed in considering these types of applications?

**Mr Cooper:** Yes, I have detailed in my submission as to where the flaws are. What I was saying in chapter 9 is if you go into one-third octave resolution you will not find any difference between a natural environment and a windfarm affected environment. If you put the narrow band in you see straight away that there are differences. That is what chapter 9 is all about—to show that if you use the right tools you can actually measure what is going on. If you restrict yourself to a dBA or a dBG, you will not find any difference between a natural environment and a windfarm affected environment. That is actually the critical aspect.

There is an acknowledgement that this study, which had the cooperation of the windfarm and the residents and did on-off testing, had never been done before in the world. We have the likes of Dr Paul Schomer praising this work. He was one of the authors on the Shirley windfarm report. They were very critical that the energy company would not assist in the work. They have said this is exactly what they needed. So when they did see the report—and they could not see the report before it was issued—every one of those authors of the report congratulated me. There is dialogue. I have in appendix B to my submission their comments about it. They think it is a major step forward as well as the threshold work that I have done.

**Senator XENOPHON:** Thank you.

**Senator CANAVAN:** I would like to follow up on Senator Xenophon's questioning. I find it extraordinary that you cannot use your own charts. Can I just clarify, if you are doing a PowerPoint presentation overseas, you cannot copy and paste a chart out of your report and put it on a slide?

**Mr Cooper:** If it is in this published document, I have been advised that I cannot. I prepared two peer reviewed papers and they are attached in my submission. I have a copy of it here, but I have cut out all of the charts on that specific instruction of Pacific Hydro about 10 days ago. My lawyer has confirmed that I cannot do it.

**Senator CANAVAN:** Ten days ago, they advised you that you could not do that.

**Mr Cooper:** That is correct.

**Senator CANAVAN:** That advice related to your submission to this Senate hearing?

**Mr Cooper:** I was in the process of doing my submission. It related to papers that I had given to them for the purpose of publication. I had a paper on infrasound, I had a paper on the narrow band and I had a paper on sensation.

**Senator CANAVAN:** I find it unbelievable that you cannot do that. These are all public documents too; that is, the charts in this document that you are not allowed to use. But you can google that, can't you, and find that on the internet?

**Mr Cooper:** That is correct. But my lawyer said under copyright law they are correct and I cannot do anything about it.

**Senator CANAVAN:** I will leave it there. I have some other questions, but I will put them on notice.

**Senator LEYONHJELM:** It is just straight copyright law that your lawyers are working off, isn't it, and it is not a specific laws that you had in the contract you had with Pacific Hydro?

**Mr Cooper:** There is a contract at the IP. It is their IP and the project IP is Pacific Hydro's IP. I cannot use it without their permission.

**Senator LEYONHJELM:** That is actually normal.

**Senator CANAVAN:** But you have asked their permission and they have not given it yet?

**Mr Cooper:** That is correct.

**CHAIR:** On my examination of the material in your report and in particular a reference to the Shirley wind farm, it would appear that the noise or the infrasound levels in house 87 are significantly greater than those obtained in the Shirley wind farm investigation. Is that correct?

**Mr Cooper:** Yes.

**CHAIR:** As I understand it, at the Shirley wind farm a lesser level that was recorded there was considered a public health risk. Is that right?

**Mr Cooper:** That is what the report says, yes.

**CHAIR:** Thank you for your testimony today before the committee.

**RICHARDS, Mr Andrew, Executive Manager, External Affairs, Pacific Hydro Pty Ltd**

[09:37]

**CHAIR:** I welcome Mr Andrew Richards from Pacific Hydro to the hearing here today. Information on parliamentary privilege and the protection of witnesses and evidence has been provided to you and copies are available from the secretariat. I now invite you to make a short opening presentation and at the conclusion of your remarks I will invite members of the committee to put questions to you.

**Mr Richards:** On behalf of Pacific Hydro, thank you for the opportunity to appear here today. Pacific Hydro is a clean energy solutions provider globally, with headquarters in Melbourne. We are wholly owned by IFM Investors' Australian Infrastructure Fund. Through its ownership, Pacific Hydro provides infrastructure investment opportunities for around five million Australian members of industry superannuation funds. Operating for over 20 years, Pacific Hydro develops, builds and operates renewable energy projects and sells electricity and carbon abatement products to consumers and customers in Australia, Chile and Brazil. Globally, we have 850 megawatts of operating hydro and wind assets and in excess of 2,000 megawatts of projects in our development pipeline around the world. Within Australia, Pacific Hydro owns and operates eight wind farms. We have 170 wind turbines, with a capacity of 306.55 megawatts.

While we strongly support the need for scrutiny of all aspects of the electricity generation to ensure ongoing development and operational standards are maintained, we are concerned that the scope of this inquiry unnecessarily duplicates similar inquiries and reviews of recent years. It is our view that the terms of reference have already been extensively assessed by over a dozen earlier federal and state based inquiries in recent years. We highlight to the committee that consistent conclusions have been reached by all of those recent inquiries and reports. For example, recent inquiries include the Climate Change Authority review of the renewable energy target in 2014; the Warburton review of the renewable energy target, including assessment of economic costs and benefits, in 2014; a further Climate Change Authority of the RET in 2012; the Senate committee investigating the social and economic impacts of rural wind farms in 2011; the South Australian Select Committee on Wind Farm Developments, which is still running; and the National Health and Medical Research Council's statement information paper *Evidence on wind farms and human health* in 2015.

In relation to the terms of reference I would like to quickly address some of the pertinent points. First is the retail impact of the renewable energy target. The recent Warburton review found that the final retail electricity bills are lower than they otherwise would have been due to the effect the renewable energy target is having to reduce wholesale electricity prices and that any material reduction in the RET would assist in higher power prices for consumers. That was a key finding from the Warburton review. While the RET itself does provide a variable subsidy to new renewable energy development, the effect it has on the final electricity bill is minor. It is clear from analysis of the Australian Energy Markets Commission that the impact of the RET on household prices in 2014 was less than \$2 a week, or around two per cent of the average bill.

The Australian Energy Market Operator found in its 2014 South Australian electricity market trend report that South Australian renewable energy generation is dominated by wind farms, which have low operating costs and tend to offer energy to the market at lower prices. When wind generation is available, it places downward pressure on the regional reference price. To put the impact of the RET on household bills into perspective, the largest contributors to electricity bill increases in recent years have been escalating network costs. For example, the Australian Energy Regulator's recent decision in the ACT and New South Wales distribution network charges stated that the network owners had overestimated capital expenditure from 2009 to 2014, resulting in substantial increases in network costs. The Queensland government has recently announced it will relax the gold plating requirement for network reliability, which should result in lower network costs for Queensland households into the future.

I will quickly address the economics of wind power specifically. With the exception of hydro power, wind energy remains the most cost effective large-scale renewable energy generation technology available to us today. The International Renewable Energy Agency found in its latest renewable power generation cost 2014 report that the levelised cost of electricity for new renewable technologies including onshore wind is firmly within the range of the levelised costs of energy for new fossil fuel power plants. However, to compete against fossil fuel generators that were built over 40 years ago in Australia by governments using taxpayer funds and that at times have and continue to enjoy various forms of subsidy themselves, renewable energy in Australia does require assistance if it is to feature as part of the future clean energy mix that Australians are demanding. So, yes, the renewable energy target is a consumer subsidy to offset the high initial cost of renewable electricity generation development. This subsidy, as I mentioned, amounts to approximately \$2 billion per year and contributes about two per cent of average electricity bills. It has so far resulted in approximately \$18 billion of investment into

renewable energy development in Australia and the creation of 29,000 jobs and an estimated 20 million tonne reduction in carbon emissions.

The assistance being offered to renewable energy is a fraction of what was provided in the past to coal, oil, gas and nuclear industries, particularly in their formative years, and it is clear that these industries continue to be heavily subsidised through various mechanisms in Australia and other countries. The International Energy Agency estimates that fossil fuel subsidies amount to more than \$550 billion in 2010 alone and outstrip subsidies for clean energy technology by a ratio of 10 to one in the last few years. Australian fossil fuel industries still benefit enormously from subsidies in various forms. Studies from the Institute of Sustainable Futures in 2007 and the Australian Conservation Foundation in 2011 confirm that fossil fuel subsidies outweigh renewable energy efficiency subsidies by a margin of 12 to one in Australia. We note that the Australian mining industry receives about \$4 billion in annual diesel fuel rebates and New South Wales provides an estimated annual subsidy of \$1.5 billion for coal associated with its 2010 electricity assets sale. It is a preferential sale agreement to a number of power stations.

With regard to our commitment to local content, wind farms provide much-needed economic stimulus in regional Australia, creating job opportunities, driving regional and rural investment and providing support for social and community initiatives. Pacific Hydro has a longstanding commitment to purchasing Australian made components where they are available. Every wind tower the company has erected in Australia has come from the Keppel Prince facility here in Portland. We will continue that commitment.

The energy payback time for a wind turbine is quite small. While the payback time varies depending on the nameplate megawatts of the particular turbine, studies suggest that, at most, it is two to three years and a minimum of seven months for turbines ranging between two megawatts and five megawatts. As stated in an article in *The international journal of life cycle assessment*:

... the energy payback time (time regarding the energy required to produce and implement a turbine) is less than one year, much smaller than the useful lifetime of the system, which is at least 20 years.

On the claim about health impacts and the NHMRC section of the terms of reference, Pacific Hydro acts on the best available information from peak health organisations to form the conclusion that no causal link exists between the operation of wind turbines and human health. A recent NHMRC study concluded that there is currently no consistent evidence that wind farms cause adverse health effects in humans. Meanwhile, the Australian Medical Association released a position statement on wind farms and health in 2014 which included the following statement:

The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms, as they are currently regulated in Australia, causes adverse health effects on populations residing in their vicinity. The infrasound and low frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur, and there is no accepted physiological mechanism where sub-audible infrasound could cause health effects.

The recently completed work by Mr Cooper at Cape Bridgewater has not materially changed our view of this issue given that it was not a health study, it was not a scientifically rigorous piece of work and was never intended to be and it did not provide sufficient evidence to justify any change of regulation in this area.

We note that there continues to be some confusion about this report. To assist the committee, we would like to table the joint statement from Pacific Hydro and the Acoustics Group which was released some weeks ago. We also note the NHMRC recently opened a targeted call for research into wind farms and human health, stating:

The TCR will support research that addresses one or both of the following issues:

- The relationship between wind farm noise and health effects.
- The broader social and environmental circumstances that influence annoyance, sleep disturbance, quality of life and health effects that are reported by residents living in proximity to wind farms.

We feel that the NHMRC is the most appropriate vehicle for this work to be carried out.

**Senator URQUHART:** Thank you very much, Mr Richards. I want to go to that joint statement you just raised. In that, there is a statement that both the Acoustics Group and Pacific Hydro agreed that the study was not a scientific study. Can you elaborate on why this work does not qualify as scientific study.

**Mr Richards:** To be fair to Mr Cooper, it was never meant to be a scientific study. It was a study quite specific to six residents living near Cape Bridgewater. So it was a very small sample size, as has been pointed out. That was part of the design, to be frank. It was really an attempt by Pacific Hydro to potentially try to understand what was giving rise to the complaints that we were continuing to have, because the wind farm is compliant. So it

was really an investigation on our part. Steven was the choice of the residents to conduct the study. He set up the study program, acting on the brief that we gave him.

**Senator URQUHART:** As we heard from Mr Cooper last night on the site, part of the study incorporated participants' diaries that showed the symptoms they experienced throughout the course of a day. Is it true that there were some diary entries showing that residents were experiencing symptoms when the turbines were actually turned off?

**Mr Richards:** Certainly in the extensive report that has been produced there were issues raised in diaries when the wind farm was in a shutdown phase. A feature of this is that the wind farm was shut down for an extensive period of time—a two-week period. That was because we were doing some line maintenance work. So we took advantage of that to—

**Senator URQUHART:** I am sorry to interrupt, but was that the whole—

**Mr Richards:** The entire wind farm was shut off up to between 10 and 12 hours at a time so that we could conduct that line maintenance. Again, we took advantage of that to simulate on-off testing of the wind farm. When you look through the data and the diaries you can see that there were certainly times stating higher sensation levels when the wind farm was not operating and had not been for 12 hours.

**Senator URQUHART:** Do you believe that using the word 'sensations' without a definition or measurement gauge is a useful means of determining health impacts?

**Mr Richards:** The study was not a health study, and it was never meant to be a health study. As to whether it is the right thing to do, I am really not qualified to answer that question. I will leave it for others to draw that conclusion.

**Senator URQUHART:** I would like some clarification on this. Do you know whether Mr Cooper changed his methodology and hypothesis into the project because the data was not showing any correlation? I have heard this, but do you know whether or not that is correct?

**Mr Richards:** Mr Cooper gave a presentation to the Portland community at the golf club here some weeks ago. He explained the process that he went through. The report really points out that at some point he was not able to establish any kind of link using standard methodologies. So he effectively developed a new methodology, which has now given rise to his wind turbine signature, to see whether there was any correlation or link at all. But up until that time, using standard acoustic methodology, there did not appear to be any issue.

**Senator CANAVAN:** Doesn't that go to the core of the issue, though? There is a new technique now and some new information. I am interested to know what you as a company that operate wind turbines are doing as a result of this new information. What further studies or investigations—

**Mr Richards:** Mr Cooper has been very clear in saying that these are new hypotheses that he has developed in the course of this. They are untested, untried and not really validated. With all due respect to Mr Cooper—

**Senator CANAVAN:** Clearly, though, he is an expert in this field.

**Mr Richards:** There are many other experts who—

**Senator CANAVAN:** I am not—

**Senator URQUHART:** Sorry, Chair, I am—

**Mr Richards:** I will happily come back to that later, Senator Canavan.

**Senator URQUHART:** Some people have suggested that differences in energy generated and energy used means that sometimes wind power does not get used or coal generators burn without putting any power into the grid? Is that actually correct?

**Mr Richards:** The Australian energy market is a very sophisticated system. It also has a very sophisticated wind forecasting system that gives it close to 99 per cent accuracy on what wind farms across a certain region are doing at any particular time. They can alter dispatch mechanisms within the system to ensure that there is no waste. There is not a coal fired power station just churning out fossil fuels while it is waiting for our wind turbines to come on.

**Senator LEYONHJELM:** It is called a spinning reserve, isn't it?

**Mr Richards:** Spinning reserve has been a feature of the market since it was built. There is always the need for a spinning reserve in case a power station goes out.

**Senator LEYONHJELM:** So it is not technically accurate to say that they are not running; it is just that they are not generating electricity because they have not been switched on.

**Mr Richards:** They are not running because of us. They are running because it is a feature of the market and always has been. If you required additional spinning reserve because of wind energy then the level of spinning reserve in the market would have gone up substantially in the last few years and it simply has not. In fact, the level of spinning reserve has fallen in the last few years.

**Senator CANAVAN:** What about over a longer time period, such as 10 or 15 years—has it gone up?

**Mr Richards:** No.

**Senator URQUHART:** Has Pacific Hydro undertaken any market research into community attitudes to wind farms in the region?

**Mr Richards:** From time to time we have.

**Senator URQUHART:** What have you found from those?

**Mr Richards:** Within the broader Portland south-west region there is a high level of acceptance. They are very popular amongst most people. But that does not discount the fact that there are some people who do not like them. It is like any form of infrastructure: there will be people who do not like them and people who do. There is a large majority of people who do not care either way. That is not necessarily a feature of wind farms but infrastructure everywhere. Generally speaking, people are quite supportive, particularly when they look at the jobs that are created and some of the other benefits that flow into the community, through our Sustainable Communities Fund, for example.

**Senator URQUHART:** Do you have any knowledge of the percentage of residents that say that they have health complaints as a result of wind farms?

**Mr Richards:** We have not done that particularly, no. From what we are aware of, a relatively small number of people have made that claim, but that is not to discount those claims.

**Senator URQUHART:** Some critics of wind say that the technology is intermittent and therefore not a reliable energy source. What do you say to that? Is that correct?

**Mr Richards:** It is variable. As I said, the Australian Energy Market Operator have a very sophisticated system. They do not seem to be phased at all by the variability of wind. They treat it very much the same as the variability of consumer demand, which goes up and down on a regular basis. They can predict wind generation very accurately, as was mentioned before. So it has not posed a problem to them, no.

**Senator URQUHART:** Are you aware of any authoritative medical body in the world that says there is evidence of health problems caused by wind turbines?

**Mr Richards:** No.

**Senator URQUHART:** What is the consensus amongst health professionals?

**Mr Richards:** Again, as a company, all we can do is look at the peak of medical associations and organisations. None of them are saying that this is an issue. We do look to the NHMRC, who are about to conduct some work in this area—and we are quite supportive of that—to try to deal with this issue once and for all.

**Senator BACK:** Just to interrupt, the President of the Australian Medical Association disassociated himself from that statement, didn't he?

**Mr Richards:** I am not sure if he did.

**Senator BACK:** He did.

**Senator URQUHART:** Can I put a couple of questions on notice?

**CHAIR:** Senator Urquhart would like to put some questions on notice.

**Mr Richards:** Yes.

**Senator URQUHART:** Thank you.

**Senator LEYONHJELM:** Mr Richards, what are your qualifications?

**Mr Richards:** I am not an acoustician.

**Senator LEYONHJELM:** What are your qualifications?

**Mr Richards:** I have got a Bachelor of Business from RMIT.

**Senator LEYONHJELM:** On what basis do you say that Mr Cooper's study is not a scientific study?

**Mr Richards:** Mr Cooper said that it is not a scientific study.

**Senator LEYONHJELM:** Well, he has a hypothesis—and you are saying 'just a hypothesis'; every scientific study begins with a hypothesis—for which he collects evidence. What he found was a correlation—just a

correlation; he is not saying causation. Even in business, a correlation is not causation. So I do not know how you come to the conclusion it is not a scientific study.

**Mr Richards:** Because Mr Cooper has said it is not a scientific study.

**Senator LEYONHJELM:** Well, I disagree with Mr Cooper, in that case. Where I am going with this is that it seems to me that what he has identified is a potential new source of vulnerability for your company in that there is a new source of harm to consumers, called infrasound. He has identified a method of measuring it and he has found a correlation—not a causation—between it and potentially adverse sensations felt by some people. What are you going to do? If I were in your shoes, I would be concerned that, in due course, a tort liability would emerge out of this. I would want to know a lot about it in case, at some point in the future, on the basis of Mr Cooper's work, a court might find that you had a duty of care to people affected by this infrasound. Do you share that view? Do you share that concern? Do you intend to do anything about it?

**Mr Richards:** The whole reason why we went into this process with Mr Cooper and the residents was to try and understand why a compliant wind farm, with current regulations, is still creating complaints of that nature. So we think, in conducting this report, we have been very thorough in trying to understand these issues. The report itself did not give rise, in our view, to any items that are actionable on our part. Again, we feel as though we have been very thorough and very transparent, and I would like to address some of the issues raised around the supposed gagging later on, if you would like. So, yes, we look at this very clearly, very closely. We are seeking other advice, a second opinion, if you will, because I am not an acoustic expert, and others at Pacific Hydro are not acoustic experts. We are certainly seeking other advice.

**Senator CANAVAN:** Would you just flesh that out. What other advice are you seeking?

**Mr Richards:** Other acoustic advice.

**Senator CANAVAN:** Can you be more specific? Have you engaged an acoustic expert at this stage?

**Mr Richards:** Yes, we have.

**Senator CANAVAN:** Who is that?

**Mr Richards:** I am not at liberty to say, but a report has been produced that is being provided to us in the coming days, and that will make that publicly available.

**Senator CANAVAN:** Is that measuring infrasound as well as—

**Mr Richards:** It is more an assessment of the data that has been collected in the way that Mr Cooper has got peer review.

**Senator CANAVAN:** So it is a hatchet job, basically?

**Mr Richards:** No.

**Senator CANAVAN:** Okay, so there is no more testing or evidence that you can generate out of—

**Mr Richards:** No, and it is not a hatchet job.

**Senator CANAVAN:** Are you planning to do that? Are you planning to have someone try and replicate Mr Cooper's study?

**Mr Richards:** No.

**Senator CANAVAN:** I might give you an opportunity, as you say, to clarify the issues around the gag order that you heard about from Mr Cooper where, at this stage, he has legal advice saying he cannot use the charts and information in his report publicly. Would you be at liberty to remove that constraint on his activities?

**Mr Richards:** There appears to be some confusion over the contract. Mr Cooper is able to use the report. We are quite happy to provide him with an ongoing licence to use that intellectual property—

**Senator BACK:** And the graphs?

**Mr Richards:** And the graphs and everything. The report is a public report.

**Senator CANAVAN:** He said he has asked you. Have you responded formally, in a letter?

**Mr Richards:** We certainly have.

**Senator CANAVAN:** With exactly the words you have just told us?

**Mr Richards:** There was an exchange of emails about a week ago. Then Mr Cooper would not return our phone calls. I eventually got hold of Mr Cooper on Friday, and he said that his lawyers had advised that he should not be talking, which was a little confusing. He said it was because of the gag clauses, which again was confusing because we do not believe there are gag clauses. An email was sent to Steven on Friday afternoon. I spoke to

Steven about midday. We sent that email to him about 4.30 on Friday. In our view, there was nothing in there that would preclude him from talking about it or using those charts. We feel as though it has been a misunderstanding. Certainly the data that we provided to him for the building of the report is our intellectual property. It is also commercially sensitive, so I think Steven has recognised that that belongs with us.

**Senator CANAVAN:** On gag clauses, I have here a document relating to the Sustainable Communities Fund that was issued by your organisation—application guidelines. I believe this is a fund set up to help fund local projects. Under the terms and conditions of that fund, clause 10 at j says:

The Recipient—

I presume the recipient of funds under this agreement—

shall not do or say anything or cause anyone to do or say anything that may prejudice or cause damage to the name and reputation of Pacific Hydro or its affiliated companies.

Would you explain that to me in layman's terms. To me, that reads like: 'Anybody who receives funds from your community fund cannot criticise you as an organisation.' Is that correct?

**Mr Richards:** No. They cannot do things that bring the company into disrepute.

**Senator CANAVAN:** It does not say that here; it says 'cause damage to the name and reputation of Pacific Hydro'.

**Mr Richards:** That would be doing something that brings—

**Senator CANAVAN:** But what if it was fair and reasonable to do that? It does not have any restriction here on something that is unreasonable damage. It seems to me just a straight-out gag clause. Why is that included?

**Mr Richards:** This whole issue of gag clauses gets misinterpreted a lot because people have common-law rights, so, if they have been harmed or damaged, there is nothing in any clause like that—

**Senator CANAVAN:** Absolutely, Mr Richards. I completely agree and I would like to go to those common-law obligations. I keep hearing from you in the evidence you have provided this morning that you comply with regulations, but you would accept you have a liability above and beyond any regulations we set. Is that correct?

**Mr Richards:** In respect of what?

**Senator CANAVAN:** A duty of care.

**Mr Richards:** We have a duty of care, certainly.

**Senator CANAVAN:** You have a duty of care. And you have a duty of care that extends beyond your direct customers. You have a duty of care to the local community and others with the impacts you might have.

**Mr Richards:** Correct.

**Senator CANAVAN:** So, whether or not your operations at the moment comply with the New Zealand standard or guidelines in South Australia or other things, you have a duty of care to ensure that harmful things are not done. You are telling us, though, that in your view—correct me if I am wrong—there is nothing reasonably foreseeable from Mr Cooper's report that would indicate that there are potential harmful effects from your turbines.

**Mr Richards:** That is correct.

**Senator CANAVAN:** Is that the position of your board? Has your board considered Mr Cooper's report?

**Mr Richards:** That is correct.

**Senator CANAVAN:** And your board has come to the view that there is no reasonably foreseeable harm that could be done by your turbines?

**Mr Richards:** That is correct.

**Senator CANAVAN:** In Mr Cooper's review, he has been up-front with us. It is not a scientific study and there are still questions to be asked. He does recommend that medical surveys be done now. Are you seeking to fund those yourselves, apart from the study you have already mentioned? If I interpret Mr Cooper correctly, I think he is saying that there should be a medical health study which tries to see if there is a correlation between health impacts and these potential infrasound impacts. Are you going to fund that study?

**Mr Richards:** No, we are not because the NHMRC has already suggested that that is exactly what they are going to do.

**Senator CANAVAN:** You said before that you do have a duty of care to residents in the community, but you are not going to fund these studies yourselves? They are your turbines; they are not the NHMRC's.

**Mr Richards:** Yes. And, as I said before, in our view, the report that was provided to us by Mr Cooper gives us no actionable items.

**Senator CANAVAN:** I am just getting a bit confused. On the one hand, you are saying that there is an actionable item because the NHMRC are taking care of it; and, on the other hand, you are saying, 'We don't have to do anything ourselves.' I am just not following it.

**Mr Richards:** I am not saying that at all. I am saying if the NHMRC wish to follow up on this report by doing some additional work then that is fantastic.

**Senator CANAVAN:** So the ball is in our court, so to speak, given that the NHMRC is an Australian government body.

**Mr Richards:** If you like.

**Senator CANAVAN:** I find that a bit hard to believe. You have commissioned a report. You have paid for a report. It has obviously got some findings of relevance to your operations. Whether or not you accept those findings, they have obviously been conducted by a man that is expert in his field, but you are not going to take any additional steps to try and replicate the study or do further testing on your own operations and the impacts on health.

**Mr Richards:** As I said, in our view, looking at that report and the advice is to us that there is nothing actionable in that report. There is nothing that we can act on in that report.

**Senator CANAVAN:** Mr Cooper mentioned earlier the harmonic signal and infrasound created by fans, and he wanted to get access to some of the data from wind turbine manufacturers about some design elements. I might be paraphrasing there. He apparently asked you if he could access that information. He said that you said no.

**Mr Richards:** Senator—

**Senator CANAVAN:** Just hear me out. I have not asked my question yet. You said no and you would look at it in-house. Is that something that you are looking at in-house in terms of the design?

**Mr Richards:** We do not design.

**Senator CANAVAN:** I understand that.

**Mr Richards:** The information in the report is clearly in the hands of the wind turbine manufacturers. Whether they choose to speak to Mr Cooper is entirely up to them. We have little control over that.

**Senator CANAVAN:** You operate the turbines. It comes back to this duty of care you have, Mr Richards. Regardless of whether you manufacture them or not, you have a duty of care to ensure that they are operated in a way that does no harm or no significant harm that is foreseeable.

**Mr Richards:** We do not believe this report demonstrates that they are doing any harm, because it is not a medical report.

**Senator CANAVAN:** Did you or did your organisation tell Mr Cooper that you would look at those issues in-house?

**Mr Richards:** We continually look at the operation of our wind turbines to make sure—

**Senator CANAVAN:** On this specific issue, have you gone back to the wind turbine manufacturers and said, 'We may have a problem here and we need to look at how infrasound is generated by wind turbines'? You have not done that at all?

**Mr Richards:** We have not gone back and said, 'We don't think we've got a problem.'

**Senator DAY:** You said that you had X-megawatts in the pipeline. In the construction of new wind farms, are you planning any changes to your guidelines with respect to proximity to residences?

**Mr Richards:** We are guided by what the current standards are; so we will comply with the current standards.

**Senator DAY:** That was not my question. In your planning for the construction of new wind farms, are you planning to change your guidelines with respect to the proximity of houses and residences to the construction of turbines?

**Mr Richards:** We are guided by what the—

**Senator DAY:** That has always been the case.

**Mr Richards:** Yes.

**Senator DAY:** Are you planning any changes?

**Mr Richards:** No, we are not.

**Senator DAY:** There are no changes. So it could be the case that all your future turbines could be the same proximity as the ones here in Cape Bridgewater?

**Mr Richards:** If they meet compliance standards, yes.

**Senator LEYONHJELM:** Are you planning to consider infrasound in terms of your impact on neighbours, or are you just restricting yourself to audible sound?

**Mr Richards:** We are restricting ourselves to the current standards. If the standards change then we will comply.

**Senator LEYONHJELM:** So you are totally determined by the standards.

**Mr Richards:** Correct.

**Senator LEYONHJELM:** This more or less answers Senator Canavan's question—you are reliant on the standards to meet your duty of care; no additional interests.

**Mr Richards:** We are reliant on the standards to meet our duty of care and to ensure that they are operating within parameters. As far as our duty of care is concerned, again, I point to the report that we have funded to try to understand this issue better. There was nothing in that report, in our view, that was actionable beyond what we have currently done.

**Senator LEYONHJELM:** I am reminded of the tobacco companies 50 years ago testifying to a committee somewhat similar to this one saying, 'Cigarettes do not cause lung cancer.' It became a very expensive mistake.

**Senator BACK:** The standards that you speak of were standards that Pacific Hydro wrote in the first place—where they not?

**Mr Richards:** Incorrect.

**Senator BACK:** Who wrote them?

**Mr Richards:** The noise standards?

**Senator BACK:** Yes.

**Mr Richards:** I do not know who wrote those.

**Senator BACK:** With regard to the contract you have with hosts, I understand there is a clause in the contract which basically indemnifies Pacific Hydro against any noise nuisance—is that correct?

**Mr Richards:** There may be some of those contracts, yes.

**Senator BACK:** Clause 5(12), I think, is the one that I am going to.

**Senator CANAVAN:** Can I just go to that one, if I can. We have had this submitted to the committee. Clause 5(12) in one of the landowners agreements with yourself says, 'The landlord acknowledges that generators may generate noise on or over the land which may exceed the New Zealand standard.' You said you comply with the standards. Why is there a provision in the contract which says you might exceed that standard?

**Mr Richards:** The landowner themselves are a turbine host and part of the conversation you have with them is to say: 'Under normal setbacks under the standard, we would not be able to put turbines on your land. So you have a decision to make as the landholder about whether you want those turbines on your land or whether you want them in this position which will maximise your revenue as well as ours.'

**Senator CANAVAN:** I have seen a report by Marshall Day for your organisation which shows that noise levels at some of the properties that are not hosts but are in the vicinity of your turbines exceed the New Zealand standard. Are you aware of those reports by Marshall Day?

**Mr Richards:** No. I would like to see those reports.

**Senator CANAVAN:** I have seen an extract of that report. Can you take that on notice—that any reports by Marshall Day acoustics to yourself have shown that noise levels at houses that are not hosts exceed the New Zealand standard.

**Mr Richards:** Are you talking about a particular wind farm?

**Senator CANAVAN:** Cape Bridgewater.

**Mr Richards:** Okay.

**Senator BACK:** The continuation of my question is fairly logical: if this clause exists in the contract and if your company believes there is no harm, why have the clause in there in the first place?

**Mr Richards:** Under normal circumstances, if you like, if they were not a host then we would not put turbines there.

**Senator BACK:** If you have no cause to believe there is any harm then there is no occasion to put a contract into the clause which indemnifies the company against any possible harm?

**Mr Richards:** On an audible noise perspective—if they were not a host landholder who had agreed to put turbines on their property, and we had come to that commercial agreement, then we would not have put the wind turbines there.

**Senator BACK:** I asked you earlier whether you wrote the standards. Is it not the case that Pacific Hydro in another forum have actually accepted that they did participate in writing the Victorian wind farm guidelines?

**Mr Richards:** Being consulted on the guidelines and writing them is very different. There were lots of people consulted.

**Senator BACK:** Perhaps you could clarify on notice please whether that was the case?

**Mr Richards:** Sure.

**Senator BACK:** You have said a couple of times you are compliant. Is the compliance as a result of the New Zealand standard?

**Mr Richards:** Yes.

**Senator BACK:** The New Zealand standard talks about audible sound but not infrasound?

**Mr Richards:** Correct.

**Senator BACK:** I congratulate you, in fact. I think you are the first company to have actually sponsored the study that Mr Cooper has presented to us. I think that is to be acknowledged, incidentally.

**Mr Richards:** Thank you.

**Senator BACK:** What is clear to me is that Mr Cooper has introduced the likely link between a different form of sound, being infrasound not audible sound. Indeed, should that be the case, and again I congratulate you on your statement that there is no limit from Pacific Hydro on Mr Cooper to now use the data in an open, international forum—

**Mr Richards:** The data that is contained in the report?

**Senator BACK:** Yes.

**Mr Richards:** That is the licence we are engaged in.

**Senator BACK:** You heard the question I asked Mr Cooper, which was that if infrasound, rather than audible sound, is the link then the compliance standards, be they from South Australia, New South Wales or Victoria, relating to audible sound of themselves become effectively useless, don't they? Following on from Senator Leyonhjelm's questions, it is necessary now for the industry to participate more fully to validate or invalidate what appears to be a conclusion drawn from this, shall we call it, tentative or pre-emptive study.

**Mr Richards:** You are right, this issue has caused a fair bit of debate amongst the acoustic community in particular. There are many views on either side. We have participated to some level; whether others choose to participate is up to them. Has this been a good experience from us? It is give and take. There are certainly some things that have been painful for us. Certainly, the final report has not given us an actionable item.

**Senator BACK:** As Mr Cooper said, it is not just the wind turbine industry. He pointed to a gas fired power station somewhere, but there was a coal fired situation in Katoomba in the Blue Mountains. I think it is very interesting. It is not a breakthrough, yet, but it is an indication that further questions should be asked and further studies should be made.

**Mr Richards:** As a company, we feel as though we have done all that we can to this point. We cannot fund any more studies. We will not be funding any more studies. There is a fairly hot debate going on within the acoustic community about whether this is true, untrue, partially true—who knows. So as a company we sit back with the best available evidence we have at the moment and have made the decision that there is—

**Senator BACK:** But with an open mind to the future.

**Mr Richards:** If regulations change in the future than we will certainly comply.

**CHAIR:** Just so we are crystal clear, currently Pacific Hydro believes there are no harms from wind turbines?

**Mr Richards:** Correct.

**CHAIR:** Why are the turbine hosts contracted to fully indemnify Pacific Hydro against any claims? You are telling us that you do not believe there are any harms, so why is that in the contract? Why does Pacific Hydro think it is fair to ask the landholder, who has no knowledge of health, acoustics, whatever it may be, to indemnify Pacific Hydro? How do you honestly think that a landholder is equipped to do that?

**Mr Richards:** I am not really sure I understand. We have a relationship with our landholders which is based on a negotiation we have had with them and their lawyers, which we have paid for. We have paid for the legal advice of every landholder who signs up with us. The contract they have signed with us take into consideration where the turbines are on their property and a whole range of other things that may occur as part of the operation of the wind farm: operational people driving around on their property, them continuing to use their property for farming purposes. There are whole range of issues that come up in a commercial arrangement between two parties. It is normal that those parties take their responsibilities and indemnify one another for issues—for example, if a farmer accidentally drives his backhoe into the substation.

**CHAIR:** I am not talking about that; I am talking about noise nuisance. You have asked them to indemnify, under the contract, Pacific Hydro from any noise nuisance.

**Mr Richards:** They have agreed to do that as part of the contract because they have agreed to have turbines closer to their properties than they otherwise would have been. If they were not a landholder as part of the project we would not have put turbines where they are. The fact that they have decided that they would like those turbines in the position that they are, so that they can maximise their revenue out of the project, is fine. In other words, they cannot say, 'You need to continue to pay me, but I want you to turn them off because I can hear them during the day.'

**CHAIR:** But is it not the case that there are turbine hosts who do not live on the said properties?

**Mr Richards:** At Cape Bridgewater, that is correct.

**Senator URQUHART:** Just quickly, can I just follow up: Pacific Hydro pay for the legal advice that the landholders receive prior to signing the contract.

**Mr Richards:** We will not sign the contract unless they have got legal advice.

**Senator URQUHART:** Do they get to choose their legal—

**Mr Richards:** Yes, they do.

**Senator URQUHART:** Thanks, Chair.

**Senator XENOPHON:** Mr Richards, is the market research that you referred to something that you could provide to the committee, even if on a confidential basis, so that we can get an idea of community attitudes and questions asked?

**Mr Richards:** Yes, certainly.

**Senator XENOPHON:** You said in relation to Mr Cooper that it is not meant to be a scientific study and not meant to be a health study. What do you say it is then?

**Mr Richards:** It is an investigation into why a number of residents continue to make the claims that they have been making, despite our having a compliant wind farm. It really was a genuine attempt on our part to try and understand the issues more than we did and to try and advance the discussion, if you like, beyond an adversarial one. Whether that has been successful or not I do not know.

**Senator XENOPHON:** I do not want to labour the point, but the fact is that Mr Cooper is an acoustician who has an international reputation. He is used by the Department of Defence. I think the way aircraft make approaches to runways around the world has been influenced significantly by Mr Cooper's work on aircraft noise. It is not as though you chose a lay person who has no knowledge of acoustics; you have actually chosen an acoustics expert. If that does not give it a scientific flavour or implication in respect of health matters, then what does?

**Mr Richards:** The residents actually chose Mr Cooper. We were happy with that: we recognised Mr Cooper as an acoustician of some experience. But the fact is that it does not matter how experienced the person is or what their credentials are, if the testing program was not set up using a rigorous, scientific method then it cannot claim to be a rigorous, scientific report. Again, it was never meant to be.

**Senator CANAVAN:** Are you saying that the report lacks rigour? There are two adjectives you used there.

**Mr Richards:** The report says it lacks scientific rigour.

**Senator CANAVAN:** Sorry, no. Is it rigorous or not?

**Mr Richards:** In a scientific sense? No.

**Senator XENOPHON:** So you are saying that Mr Cooper's methodology—the way he set up the equipment and the way he measured the noise—is not rigorous? That is a subtly different question.

**Mr Richards:** That is a subtly different question. We are not bringing into any doubt Mr Cooper's approach to this or his professionalism or anything like that. Stephen has gone about his work in a way that has been very rigorous. The fact is, to draw scientific conclusions from this report—

**Senator XENOPHON:** I am not asking that question now; I am saying do you agree that the testing was done rigorously and on a scientific basis? Leave aside the question of conclusions, just the testing: was the equipment he used and the way he went about it scientifically rigorous in your view?

**Mr Richards:** It is difficult, because I am not an acoustician. It appears—

**Senator CANAVAN:** Do you have any suspicions, belief, or reasons why it would not be?

**Mr Richards:** We have no reason to doubt that he has done anything wrong, no.

**Senator XENOPHON:** I will go to the issue of Mr Cooper's concerns. I asked him some direct questions about gagging or being constrained. It is interesting that it was in relation to a gas fired power station at Uranquinty in New South Wales where it seems that he has been gagged. Haven't you actually made a rod for your own back by not allowing Mr Cooper to use those graphs in the context of making submissions overseas and the like, by raising the copyright card? Isn't that being unnecessarily restrictive, given the relationship you have had with Mr Cooper to share and obtain information in the context of this study?

**Mr Richards:** Again, we are quite happy and prepared to offer Mr Cooper an ongoing licence to use anything in that report that he has produced, whether it be the charts, the graphs or the report itself. It is a matter of coming to an agreement on that. We are quite prepared to do that. We have written to Mr Cooper recently to advise him of that. I think it is probably an interpretation around the contract. We had never believed that it did restrict him. His lawyers seem to believe that it does. We want to have a conversation with Mr Cooper to resolve that so he can do exactly what he wants to do with that.

**Senator XENOPHON:** I am pleased to hear that. It is just that when you said, 'People can always rely on their common law rights,' I saw red on that. I have been a lawyer for over 30 years and I can tell you that saying that people can rely on the common law rights could mean a very protracted and very expensive legal dispute that could run into the hundreds of thousands of dollars, which I think would not be a fair fight in terms of what Mr Cooper would be risking to test that at common law. You can see my point that I think that it is better to resolve this than having a stoush at common law.

**Mr Richards:** We do not want to have a stoush. We do not want to go to court over this. We believe that it is a misunderstanding that can be resolved fairly quickly. We wrote to Mr Cooper on Friday to that effect. We have been trying to contact him all last week to that effect.

**Senator XENOPHON:** You are both in the same room; here is a great opportunity to sort it out. Can I just pick you up on one thing and maybe I misheard you and maybe I transcribed wrongly what you said: you said something along the lines that the variability of wind is like the variability of consumer demand, which goes up and down. Did you say words to that effect? That is what I jotted down.

**Mr Richards:** That is correct. If you talk to the Australian Energy Market Operator, it is a similar kind of challenge for them. What they get from wind farms though is a level of forecastability that allows them to manage the market quite easily.

**Senator XENOPHON:** Respectfully, isn't it somewhat disingenuous to say that, because wind is variable and consumer demand is variable, but the variability of wind and the variability of consumer demand do not often intersect. For instance, if there is a peak demand between 5 pm and 7 pm in the evening, when people get home from work and it is a hot day, if the wind is not blowing at that time, there is not an intersection between the production of wind power and the demand for power.

**Mr Richards:** That is a slightly different question. You are talking about availability there. If the wind farms are not available due to lack of wind, then the market can react to that pretty quickly. This is not our assessment. This is the assessment of the Australian Energy Market Operator.

**Senator XENOPHON:** Could you just refer to that, because I am surprised that they would say that. That is, just on your statement that the variability of wind is like the variability of consumer demand. It does not take into account the fact that when there is a high demand, there may not be a high output of wind. I do not want to take it any further than that, but if you could refer us to that. Do you consider that Mr Cooper's report provides some further information in considering what some have described as the nocebo effect in terms of the effect of wind turbines to the extent that it rebuts, at least in part, the allegations or the assertions made of a nocebo effect.

**Mr Richards:** I am not sure that it addresses that particularly, no.

**Senator CANAVAN:** Earlier, I mentioned a report from Marshall Day Acoustics. I will just clarify that was report number 002012008332. I have got a date here of 21 July 2010. It is entitled *Cape Bridgewater wind farm post-construction noise compliance assessment*. That was one that I was referring to. I have seen some charts in that report that show that noise levels exceed the New Zealand standard on some properties that are hosts. What is the average known plate capacity on your turbines?

**Mr Richards:** It is 2.2 megawatts.

**Senator CANAVAN:** It's 2.2 at Cape Bridgewater. How many megawatt hours a year would you expect from them?

**Mr Richards:** About 110 gigawatt hours. That is 110,000 megawatt hours.

**Senator CANAVAN:** That is 110,000 megawatt hours per turbine.

**Mr Richards:** Not per turbine, as across—

**Senator CANAVAN:** For the lot. The RET price at the moment is about 30?

**Mr Richards:** Or thereabouts.

**Senator CANAVAN:** So you get \$3.3 million a year from RET credits?

**Mr Richards:** Yes.

**Senator CANAVAN:** You do not have any more funds to fund more studies?

**Mr Richards:** No, but we have to pay the banks back.

**CHAIR:** Is Pacific Hydro aware of a 2007 Victorian decision in relation to low-frequency noise and vibration impacts arising from the operation of a Melbourne gas fired power station; I believe it was the Metroll factory that Snowy Hydro elected to buy out. Are you aware of that decision?

**Mr Richards:** Yes.

**CHAIR:** Thank you. We will break and then call Keppel Prince Engineering and the Australian Manufacturing Workers Union.

**Proceedings suspended from 10:30 to 10:40**

**DIAZ, Miss Trinidad (Trini), Private capacity**

**KELLY, Mr Craig, Assistant State Secretary, Australian Manufacturing Workers Union**

**McKINNA, Mr Daniel, Assistant General Manager, Keppel Prince Engineering**

**MILLS, Mr David, Private capacity**

**WILSON, Councillor Gilbert, Private capacity**

**CHAIR:** I welcome representatives from Keppel Prince Engineering and the Australian Manufacturing Workers Union to the hearing. Information on parliamentary privilege and the protection of witnesses and evidence has been provided to you and copies are available from the secretariat. The committee has before it submissions from Councillor Wilson, Miss Diaz and the AMWU. I invite each of you to make a short opening presentation. At the conclusion of your remarks I will invite members of the committee to put questions to you.

I also inform the hearing that we are running behind schedule. We wish to make sure that everybody who is here today gets a chance to contribute to the hearing. As such, we will be taking a little bit of time off each presentation to get us back on schedule, as there are people who have to catch planes at the end of the day. I ask you to persevere with us so everybody gets a fair go. Thank you.

**Mr McKinna:** I will give a quick snapshot of Keppel Prince Engineering. We are a fabrication, maintenance and construction firm. We are a wholly owned subsidiary of the Keppel group from Singapore. Our operation is based here in Portland and our head office is on Darts Road. We currently employ 270 people in Portland. Our business focus is the aluminium industry, timber, port, shipping, oil and gas, and the renewables—and in that we are involved with solar, obviously wind and wave generation as well.

With the wind business we are the manufacturer of the wind turbine towers, so we provide, if you like, the stand that the turbine and blades sit on. We also provide erection services for tower construction on site. Our primary focus is manufacturing and we have been manufacturing towers since 2000. When we are manufacturing wind towers that accounts for approximately 50 per cent of our business revenue and that part of the business employs 120 people here in Portland. We have invested \$15 million in plant and equipment. We have trained our employees in specialist manufacturing and non-destructive testing techniques for wind towers and have invested heavily in this skill of our employees. We have a manufacturing capacity of 150 80-metre towers at our current facility. Only the tower and internal platforms of the wind turbines are currently manufactured in Australia. To date we have purchased all the steel for our towers from BlueScope out of their Port Kembla facility.

Where are we at the moment? Obviously the continued reviews and indecision on the RET have stifled our industry. Ongoing debate over the impact of turbines creates uncertainty and clouds public opinion. Then there are the issues around placement of turbines and planning permits. Effectively at this point in time the industry is strangled.

What is the impact on our business? There has been no investment for over 18 months. No new projects have commenced since the final stage of the Portland wind energy project and also Chepstowe. We have mothballed our tower production facility here in Portland, so all our plant and equipment is currently sitting idle. In November of last year we downsized our business and made 85 people redundant here in Portland. Obviously, we are dealing with the ongoing social impact in Portland and the surrounding community. I would like you to consider the impact of 85 jobs lost in a town of 10,000 people. We all live here; we all see each other down the street. We have maintained a skeleton crew to restart our business—assuming that industry and government get on board and we have a business going forward. Obviously, if there is no future for that part of the industry, we will be forced to downsize our workforce further, which is not a decision we want to make.

In summary, we are a manufacturing enterprise who have invested heavily in renewables. Our primary focus is to manufacture the tower for the wind turbines. If we are going to have an industry then we need some certainty in government policy and outlook for the industry. We have no doubt investment will follow. We have an opportunity to create a very good manufacturing business here in regional Victoria. We can re-employ the people we have laid off. We have board approval to further invest in our facility here in Portland should we see a viable industry going forward, so there is the opportunity not only to re-employ another 85 people and get our people back but also to employ more people here in regional Victoria—potentially another 50 to 100, jobs depending on where the industry goes.

Essentially, at Keppel Prince we are at the crossroads. We need some certainty in government policy. We need some investment and then we can continue with the business; but, if this is not going to happen, we will be forced to pull out of this part of the business altogether. Thank you.

**Mr Mills:** I have been working at Keppel Prince as a boiler maker for over 30 years now. As you would have read in my submission, my short-term concern is for my family, my workmates and our community, but in the long term the environment also needs to be protected as well. The wind towers have made up the bulk of the work that I have done over the past 15 years, but every year there seems to be less and less work to fill the gaps between the contracts. I fear that, if the wind tower manufacturing stops completely—as it has already done—or moves offshore, we will lose one of the last heavy engineering workshops in Victoria or in Australia. Once the doors close and the skilled tradesmen move away, it is going to be very hard to restart that enterprise. I am very disappointed with the government's attitude towards wind power and manufacturing to boot. This country has the skills and the youth to train, but the government does not seem to have the desire for us to be successful in this area. We are all working and contributing to the success of our country. If we are not working, we are an unnecessary burden. I believe a speedy conclusion to the indecisions around the renewable energy target and a kick-start for the industry is what we need to have happen. Once again we can help contribute to the success of our country. Thank you.

**Miss Diaz:** I would like to draw from my submission a few points I found important. I had stated that I found it heartbreaking seeing many of my peers being made redundant. Not only were these workers made redundant through insufficient work at Keppel Prince Engineering; there was also the fact that looking for work in Portland was going to be an extremely hard task. These are all skilled workers with many years of work experience behind them—skills that are particularly valuable to the production of wind tower sections, hardworking men facing the prospect of either unemployment, minimised chance of gaining full-time employment, relocation, and fly-in fly-out and day-in day-out work, all of which have a huge impact on the mental stability of the family unit.

In the seven years I have worked at Keppel Prince there have been two lots of redundancies, all related to the uncertainty of the renewable energy sector; so, by the time the third lot of redundancies has come around, available jobs have dwindled to a handful—hardly enough to cater for the 85 who have just been let go. As a concerned parent, I have had one son leave town to gain employment elsewhere. The prospect of my daughter and her family, which include my three granddaughters, leaving town is a very real one as my son-in-law was one of the ones made redundant. My stepson, who was also made redundant, is a recent school leaver and so has no real work experience to date. My daughter and her husband, who have always had a firm grip on their own financial independence, now have their house on the market because without employment there is no way they will be able to afford home repayments and meet the usual day-to-day financial commitments of raising a family of five.

There are so many families in Portland with the same story to tell. Families have made their lives here. There is no talk of holidays and things of that nature but far more of getting by with the redundancies that were paid out, making it last on the chance that a firm RET would be established and the hope of being re-employed would be a real one, coupled with the active search for employment.

For those who are still at Keppel Prince, the knowledge of further redundancies is prominent and could very well see the closure of the wind tower section permanently if a decision is not made soon. I believe this would put an extra strain on the already fragile economy of Portland itself and have the morale of its people hit an all-time low. We are using up our annual and long service leave in a bid to, hopefully, see this very hard time through. My partner, who is also employed at Keppel Prince, is using his annual leave at this very moment and worries that he still will not have a job at the end of it. We have all taken pay freezes in an effort to keep costs down—buying time, so to speak.

The future of our town depends on a healthy workforce, but it seems that many of our skilled workers will be forced to leave town in search of viable income. I myself worry endlessly of losing my job, a position that has taken me seven years to achieve and many more future years to perfect, a qualification that is otherwise unneeded in Portland and has rather slim chances within a 300-kilometre radius. It is not only jobs within Portland that are at stake; it is anyone directly or indirectly involved with wind farms, from project managers to suppliers, truck drivers, electricians, farmers and even the kiosk providing food for tea breaks and lunches. It has a huge impact in many employment sectors.

For the sake of Portland and Australia as a whole, keeping the RET as it stands is important not only in terms of employment but also for Australia to take an active and leading role in the world's crusade to combat global warming. Thank you.

**Mr Kelly:** I just want to talk about the job skills, the steel industry and futureproofing of our power industry. Victoria has a very high unemployment rate at the moment. It is around 6.9 per cent. The youth unemployment is around 14.7. As published in August last year, Portland's youth unemployment is around 18 per cent, so I think there is a bit of irony that this hearing is being held at a TAFE building. I parked just outside the metal training centre, which I dare say is probably lacking applicants at the moment.

Each wind tower contributes 22,000 man-hours. Keppel Prince has actually invested in this industry as recently as when the renewable energy target was around 41,000. On the ICN books there were \$2.6 billion worth of towers that were in some form of readiness. For every dollar of project value there is about 10 per cent that represents the wind towers; so, given that they would not get every single wind tower of the \$2.6 billion, there is potential for \$260 million just in this region alone.

Victoria has been hit particularly hard with the collapse of the automotive industry. We saw the demise of Alcoa. The cumulative effects of the automotive industry uncertainty with Keppel Prince's access to building wind towers as well as the importation of steel going up by 1,000 per cent over the last 10 years—we also jeopardise the steel manufacturing industry, which we still have. We risk losing the ability to supply locally manufactured steel. We have two plants in Victoria, and then there are New South Wales and South Australia. The steel industry supports about 43,800 direct jobs and about 100,000 indirect. During the mining boom, they got about 10 per cent of that access to the mining boom construction phase.

Regarding the collapse of the automotive industry, as I said before, whilst I have not got accurate details, I can tell you that just the effect from Toyota will be 70,000 tonnes of uncoated steel at the Western Port mill in Victoria. When you add in Ford, GMH and then the whole component sector, it is really quite a significant impact. So the wind towers are a very big user of local steel. That has been put in jeopardy when we have jobs that have mostly passed the planning stages and they are ready to go. Those jobs have just been shelved because of this uncertainty with the renewable energy target. It is true to say that the AMWU represent members who work in the Morwell area where they burn coal to make power. We build and maintain our gas fired power stations. The world has proven that wind power is a viable energy source. By actually sort of putting that in jeopardy, I just do not see that we are really giving ourselves a fair chance to be as good as we can be.

Regarding the 85 redundancies, dealing with redundancies is the absolute worst job a union official has to do, although we cannot speak to how bad the effects are to the individuals who are made redundant. In an area like Portland, it is felt as significantly worse because the opportunities are not as great as in the metropolitan areas. I think Portland has got everything going for it. It has got the heavy industries here, it has got a deep sea port and it has got wind too. Most of those wind towers were planned to go into this area. To date, I think there is only about \$360 million on three sites. That includes one in South Australia. So, \$360 million from \$2.6 billion in the Victoria region is quite a significant difference. I think it is a testament to the uncertainty that this renewable energy target is having. I will leave my report at that.

**Councillor Wilson:** Thank you for the chance to speak to you today. As a Glenelg Shire councillor and employee of Keppel Prince, I do not and cannot speak on their behalf and I have not sought their views. The views are my own personal opinions. As a fifth generation Portlander, my concern is great for this community and for local businesses, as well as for the shire and for Keppel Prince. I do wish to bring to notice an error in my submission. I apologise for stating that I live close to Cape Sir William Grant wind farm. I have stated it was 700 metres; it is in fact 1,500 metres. I was using the figures that were used for the original planning permit. However, after construction, four towers were taken out, so it is, in fact, 1,500 metres. That was only brought to my notice after I sent in my submission.

The disappointment with yet another Senate inquiry—and you are probably hearing a fair bit of this disappointment from this area—is that of disillusionment with the lack of direction and consistency from federal governments. It is not only from this federal government; it is from previous federal governments. So we are not here to kick you guys. We are just frustrated that every couple of years there seems to be another inquiry. Business closures are continuing. Although it is similar elsewhere, our businesses in Portland have seen the reduction of wages coming into the community through the loss of employees.

As you heard, 85 employees have come from Keppel Prince. We do not know, or I do not know, the numbers of employees that have lost their jobs that work for other businesses who supply Keppel Prince. There are electricians, and there are other businesses like the smoko shop, the cafes, the industrial laundry. I believe that they lost at least two employees. It is one where it has a staggering effect right across the board. It was not that long ago, only a few years ago, that the Vestas blade factory was closed down. There were more than 100 employees lost from that facility. If we go back a couple of years before that, the Dartmoor mill lost 300 employees. This shire has been significantly hit in recent years with employment opportunities. Keppel Prince was a company of over 500 employees not that long ago, and now it has about 265—and is on its knees at present.

We have seen wave generation that has come across the table. However, that industry looks like it is unfinancial at this time due to the technology. Hopefully, the future technology may be able to come forward to harness wave energy in the future. Wind energy, as we know, is being used all over the world. I find it puzzling

that we keep coming back to: should we be doing wind energy? Should we be doing it or not doing it? It certainly puzzles me.

The organisations, sporting clubs—all organisations and groups within the Glenelg Shire—have been affected by the layoffs. We have seen people move from Portland, or the shire, because of work. This means there are less people for the footy clubs, the cricket clubs, the netball clubs. It also means less dollars in the community for those clubs. The businesses are struggling, so they cannot sponsor as much as what they had been in the past in the halcyon years. The money is getting harder not only for businesses but also for clubs and groups.

One of the great disappointments was when we, as a tower section constructor, were sitting idle watching tower sections being shipped into Australia. Boy, did that really come home and hurt not only Keppel Prince, but the Portland community. The company has been encouraged by all levels of government since 2000 when we constructed our first wind farm. It went to Codrington. The investment that has been made is a significant one, as you heard from Mr McKinna. It is significant, and to have that sit idle is putting into jeopardy the viability of Keppel Prince.

I believe that we as a generation right across the world may be looked at in future history as environmental vandals, because we need to be, across the globe, reducing the effects of climate change. I believe that Australia needs to pull its part into this as well. We do not need to use up coal and gas and then worry about what the next generations are going to be using in the future. We should be able to use wind and other technologies to lessen that finite energy.

Wind towers are a clean, effective way of energy provision, I believe. I call on the government to set the renewable target and stop inquiries that stifle investment and cripple manufacturers. If there needs to be an inquiry, so be it; but the RET needs to be set at the right level and the inquiry may need to look at further increasing it. A lot of emphasis is being put on the location of wind towers. In Victoria, I believe it is covered by the state planning law and it has now been reduced to one kilometre, which is probably an increase from the original wind towers when they were first constructed. I am just a simple citizen pleading for the government and this Senate committee to hear our call for common sense and confidence not only for businesses but for communities and individuals across Australia.

**CHAIR:** Thank you. Senator Day.

**Senator DAY:** Mr McKinna, you say you are disappointed about government policy—and I can understand that. But you have heard this morning about the previously unknown potential health impacts of wind turbines. Do you agree that we all—you and us—have a responsibility to ensure that these wind turbines do not pose a serious health risk in areas that were previously unknown?

**Mr McKinna:** I emphasise that we are a manufacturer. We provide the turbine towers. We are not experts in sound. I think we have a social responsibility to make sure we investigate things appropriately. However, we also see a huge opportunity here for a good, solid manufacturing industry. I think that, once you investigate the sound side of things and sort out the planning permits and where the planning should go, there is still an opportunity for a good industry.

**Senator CANAVAN:** How many wind turbines are you manufacturing a year at your peak?

**Mr McKinna:** Our peak was in 2008, when we manufactured 135 towers.

**Senator CANAVAN:** We heard evidence earlier that the Cape Bridgewater wind turbines generate about 110,000 megawatt-hours a year. There are 29 of them, so that works out at about four gigawatt-hours a year per turbine. We have got about 23,000 gigs left to go in the target—we are at 18,000 gigs today and we have got to get to 41,000 gigs in the next five years. So if we are going to build wind turbines of that capacity we will need almost 6,000 more turbines. How are we going to do that in five years?

**Mr McKinna:** With the local industry as it is at the moment, we will not; we will be forced to import towers.

**Senator CANAVAN:** How would we as a country have the capacity to ramp-up in five years to install 6,000 wind turbines? It seems like a fairly large engineering task.

**Mr McKinna:** It is a huge engineering task. Realistically, we will need to expand that out over a longer period of time. That would obviously create an opportunity for more jobs over a greater period of time.

**Senator CANAVAN:** So you think it would be best to push back the target from 2020 given the basic engineering challenges?

**Mr McKinna:** If we want to maximise the opportunities for Australian employees and Australian industry the answer is yes.

**Senator CANAVAN:** I struggle to see how we could even reach 6,000. Another way would just be to import from overseas and fill that requirement more quickly.

**Mr McKinna:** Correct—and that is obviously not in our interests.

**Senator CANAVAN:** So in your view if we do not reform the RET target we are at risk of exporting jobs overseas?

**Mr McKinna:** What we need at the moment is a RET target. We do not even have that. That is why, in my opinion, we are not getting any investment in the industry. We need to formalise a target and then let's look at how we are going to go about maximising the opportunity for Australian business within that.

**Senator CANAVAN:** Fair enough. Mr Kelly, does your union have a formal position on RET reform?

**Mr Kelly:** On that, I think you probably need to include solar in that. You are saying 6,000 wind towers, but renewable energy is not going to all come from wind towers—is it? If it is set at the right level, there is scope for large-scale solar installations as well. That needs to be taken into account. We have heard that wave energy is a bit unviable at the moment. Maybe that might pick it up.

**Senator CANAVAN:** Solar is a very small proportion right now of the renewable energy produced and that is probably not going to change in five years. There is a separate renewable energy target for small-scale solar, you might be aware, for household solar tops, which is a more substantial contributor. But it is a separate target now. I certainly share the concern of some witnesses that we have had an enormous amount of change in this policy area. But, as Mr McKinna said, we are probably going to need more change given the realities of meeting this target in five years time. Mr Kelly, I notice that the Australian Workers Union have called for the renewable energy target reform, particularly the exemption of the aluminium industry and a pushing back of the target to 2022. Does your union have a view on that proposal at all?

**Mr Kelly:** We do not largely represent the aluminium industry like the AWU do. Our union has a progressive view that the target that was set previously at 41,000 actually started the cycle going where we were seeing economic growth and potential being unleashed. Whilst we would advocate for more, I think, we would be happy with 41,000.

**Senator URQUHART:** I have quite a few questions. I will not get through them all, so I hope people are happy for me to put them on notice for you to get back to the committee. Thank you. Mr McKinna, you talked about BlueScope. I think you are their largest customer—is that correct?

**Mr McKinna:** Yes, as far as plate goes. When we are manufacturing wind towers, we are the largest user of BlueScope's plate products.

**Senator URQUHART:** What impact is the downturn having on your trade with BlueScope at the moment?

**Mr McKinna:** Our trade with BlueScope has reduced by approximately 70 per cent.

**Senator URQUHART:** So one would assume then that they have had similar patterns of redundancies and scale-downs as Keppel Prince?

**Mr McKinna:** I would say, yes, there has certainly been an impact on their business.

**Senator URQUHART:** Are they based here in Portland?

**Mr McKinna:** No. We have a local distributor, but we are dealing through BlueScope distribution at Westall Road and then through there to Port Kembla.

**Senator URQUHART:** Has that had any effect on the distributor here in Portland?

**Mr McKinna:** No, not on the distributor in Portland.

**Senator URQUHART:** You have not used that distributor?

**Mr McKinna:** No, we go through BlueScope. The work, if you like, is completed at their Melbourne office.

**Senator URQUHART:** Okay. I think we heard Mr Wilson's frustration at the multiple inquiries into wind turbines. As I understand it, each inquiry has found that the sector is well regulated and delivering significant benefits at low cost to consumers. Do you think that the inquiries that have been taking place over a number of years now have unintended impacts on investors, confidence, the economy and local communities?

**Mr McKinna:** There is absolutely no doubt. Every time there is an inquiry, the investment stops. In 2008, we manufactured 135 towers. Obviously, in 2009 there was the GFC. Basically, when we started talking about the RET again there was no investment. As Trini pointed out, we had a round of redundancies because we lost that part of the business. Then the target was signed off, we had a business again and away we went. Unfortunately, we have ridden a rollercoaster now for the best part of 15 years.

**Senator URQUHART:** During the peak of your manufacturing, did you import towers from anywhere else?

**Mr McKinna:** No.

**Senator URQUHART:** What about domestically? Did you have any other companies that supplied towers from anywhere else?

**Mr McKinna:** I cannot comment on other suppliers, but we manufacture everything; every order we have had we have manufactured here in Portland, and all the steel we have used has come via BlueScope in Port Kembla.

**Senator URQUHART:** Mr Kelly, you talked about the roll-on of other jobs; I think most of you touched on the basis of what it means if you lose one employee. Have you done any work at all on what the flow-on impacts are when you lose a manufacturing job in a regional community? What does that actually mean? What are the numbers? What are the multipliers—

**Mr Kelly:** I have not got specific statistics or numbers with me, but for blue-collar, trade and skilled jobs, the opportunities are limited because, don't forget, these are secure, permanent jobs. People find themselves in casualised labour where the wages are significantly less. The effect that is most noticeable is: people structure their lives around what their current situation is, and when that changes—it is either fly-in fly-out work if you want to maintain that standard, and then the social impact of that is quite significant. But generally there are limits, and it is hard to quantify but the overall effect has been from the fact that people have not been able to find similar or significantly similar roles.

**Senator URQUHART:** Mr Mills, I think you are an employee at the works; you are a supervisor. What has been the effect on the work colleagues you know who have had redundancies? Are they still in the Portland area? Do you know if some of them have had to sell up and move to get jobs elsewhere?

**Mr Mills:** I know that quite a few have started to move away. Some of their families are still here. Some of them have taken their families with them. A few I know have picked up local work, but there are quite a few out there who are still just sitting at home hoping for the best, really. I think some of them are hoping that a contract will come up before they run out of money and before they end up on the dole. But the impact has been great on them, and also on the people who are still at work who have lost those people—the friendships and those colleagues have all gone. So it is a fairly depressing place at the moment.

**Senator URQUHART:** The chair is giving me the wind-up. I am sorry; I had questions for everyone, but I will just put them on notice.

**CHAIR:** Senator Back?

**Senator BACK:** I will also have to put other questions on notice. Thank you very much all of you for your submissions and your presentation here today. Mr McKinna, you mentioned Keppel Prince. I know the Singaporeans well. I knew Nelson Yeo, the managing director of Keppel, very well. But what is the corporate structure of Keppel Prince here? What is the shareholding? Who are your shareholders?

**Mr McKinna:** We are wholly owned by the Keppel group of Singapore.

**Senator BACK:** So there is no local shareholding—

**Mr McKinna:** No.

**Senator BACK:** and there is no capacity to have shares. As to Pacific Hydro, I think the previous witness told us IFM investors were, if you like, the substantive owners of Pacific Hydro; IFM or Pacific Hydro do not have any equity in Keppel Prince?

**Mr McKinna:** No.

**Senator BACK:** You have mentioned solar and wind and wave, and I say, very proudly, as a Western Australian of course, that Carnegie Wave Energy has now commenced commercially. They are not only generating electricity for HMAS *Leeuwin* on Garden Island but also desalinating water from its generators—

**Mr McKinna:** Can I say that we provided the piles for the Carnegie project.

**Senator BACK:** I am aware of that. I was just getting to that point, as a matter of fact, Mr McKinna; that was exactly where I was going. And I am very, very hopeful of Carnegie and its future. Can you just help me out. My recollection is that you had about 362 employees in December 2012, of which I think you said 72 were employed in the production of wind towers. What are the other employees of Keppel Prince engaged in?

**Mr McKinna:** We are currently the maintenance provider to the Alcoa smelter here in Portland, so we provide all the mechanical and electrical, refrigeration, maintenance. We have permanent staff out at the smelter.

**Senator BACK:** So you would have an interest in the aluminium industry being exempted from the RET of course.

**Mr McKinna:** Yes. You think of the impact on our town, given where we are—

**Senator BACK:** I am sure we are all kicking hard on that one. You mentioned solar. What role, if any—

**Mr McKinna:** We provide residential and also commercial solar systems, which we have been doing through Portland, Hamilton, Warrnambool and also up in Shepparton.

**Senator BACK:** Can I ask you, lastly, since I think hydroelectricity is obviously going to be part of the ongoing mix: do you have any involvement at all with the provision of equipment or technical—

**Mr McKinna:** Not at this point in time—

**Senator BACK:** Do you have that capacity?

**Mr McKinna:** We do have that capacity, yes. We did bid on some work for the Bogong project many years ago—about 2008.

**Senator BACK:** I would like to ask questions of others but time is against me, so thank you.

**CHAIR:** I note in your contribution earlier where you spoke about the lower renewable energy target. I believe a claim that it cost 100 jobs at Keppel Prince was published in the Australian on 23 October 2014. It reported a statement from Keppel Prince as follows:

The continuing uncertainty over large-scale renewables (including the Renewable Energy Target) and related wind tower fabrication projects, together with the significant losses sustained from such activities over the past several years, have forced Keppel Prince Engineering to review this aspect of its business ...

AMWU Assistant Secretary, Mr Kelly, earlier spoke to the committee and blamed federal and state governments for the job losses. He blamed planning restrictions on wind tower construction. I note that former Premier of Victoria Denis Napthine, however, blamed the wind energy industry, calling it a disgrace that they were using imported wind towers rather than locally produced towers manufactured at Keppel Prince, adding:

They ought to hang their heads in shame for importing towers and costing jobs.

Dr Napthine also told *The Age*:

This is significant for those people who have lost their jobs and for Portland but those people would be employed today if the wind energy companies kept their promise and used local production for wind towers.

Is it fair to say that Keppel Prince has experienced hardship as a consequence of wind tower dumping and price cutting of wind towers over a number of years and that these hardships and significant losses therefore occurred independently and regardless of the RET or any RET uncertainty?

**Mr McKinna:** There is no doubt that there were a number of towers imported to do with the Mount Mercer project and the Bald Hills project here in Victoria. Unfortunately, we were not successful. We built, I think, 10 towers for the Bald Hills project. At that stage when the industry was running there was certainly an opportunity where we were not successful and you could say it was independent of the RET. However, we are now in a situation where we are still talking about the RET. There is no target and there is absolutely no industry whatsoever. That is certainly having an ongoing impact on our business. We have gone through that process with Customs and we do have anti-dumping tariffs in place. Obviously, changes in the value of the Australian dollar have also increased our competitiveness significantly against imported towers.

**CHAIR:** I note that you spoke about the renewable energy target and that you quoted the 41,000 figure. Are you aware of what the 41,000 figure was based on, what percentage of power it was based on and the year to which it was based?

**Mr McKinna:** I am not in a position to comment on that. My understanding is that that was based on the electricity consumption at the time—20 per cent. Back then, there was a significant manufacturing sector within Australia. Obviously that has been carved up. So my understanding at this point in time would be that 20 per cent reflects about 26,000 or 27,000 gigawatt hours. Obviously for us, for the industry here, we need a target. If you want to settle on 30,000 or you want to settle on 35,000 do so, but settle, make a decision, get a target in place. Let us have an industry. That is what we need.

**CHAIR:** So you acknowledge that it was 20 per cent by 2020, that power consumption has dropped and that 41,000 is not 20 per cent of consumption?

**Mr McKinna:** That would be correct. Power consumption has dropped because we no longer have a manufacturing industry, which is very large part of it.

**Mr Kelly:** We do. We are trying to hang on to a manufacturing industry, and I suppose that is why I am here today in my role—to come out and speak on behalf of this industry. I think you hit the nail on the head before about local content. There was a sore point with Premier Napthine, with the redundancies at Keppel Prince in his

electorate. He probably had the ability to mandate local content in his role as Premier at the time, but he failed to do so. In fact, he was a little bit sensitive to the fact of the Webb Dock pylons, for which they imported 127,000 tonnes of Korean steel, which Keppel Prince tendered for, and they were going to use Australian steel. They were able to tender but they were never going to get it, if you know what I mean. He was a little bit sensitive to that. That is another dimension to that comment of his.

**CHAIR:** It may concern you to know that fossil fuels are burnt constantly and peaking plants operate on stand-by when we rely on wind energy. I believe this is necessary in order to balance the grid when the wind invariably stops blowing. I note that you mentioned pollution. I am sure that there is nobody in this room who is not concerned about this. It has been said by some that a wind turbine uses 250 tonnes of coking coal in its manufacture.

The problem we have here is that, in everything, there is consumption of energy. Some people would argue that the process of manufacturing and installing wind turbines does not come under this inquiry's terms of reference. I empathise with the effects on employment in rural and regional Australia, especially in towns like Portland, and I have noted that you are very concerned about the workers and their families in the town. But are you collectively concerned about the health impacts that are claimed by people who live near these turbines?

**Mr Kelly:** Of course, if there are any proven health impacts, I think it is human nature that they would be taken into account. I was up in the Latrobe Valley last week, and they are still reeling from the effects of the Hazelwood fire. I think the health effects from that particular type of power generation in the La Trobe Valley are far worse. We heard from acoustic experts previously. I am not across those details, nor will I attempt to be, but I think it is quite clear that there are proven health impacts from burning coal. What we are here advocating for is renewable energy, and CO<sub>2</sub> emissions and the potential for a Hazelwood mine fire are just not there with wind energy.

**Senator CANAVAN:** Could I ask a follow-up question, Chair?

**CHAIR:** Yes.

**Senator CANAVAN:** Mr Kelly, are you aware of the case in 2007 at Laverton involving a gas fired power station and infrasound?

**Mr Kelly:** I worked on that project.

**Senator CANAVAN:** That was a case where the union took Snowy Hydro to court for potential noise impacts of vibration and high-frequency sound. Is that correct?

**Mr Kelly:** What I am aware of is that the particular power station you refer to was a peak load power station, which would come on in the hottest days of summer. There were some quite large gas turbines, and when they were fired up they caused a vibration, which made people in close proximity feel a bit crook and nauseous.

**Senator CANAVAN:** Was that workers or residents in the area as well?

**Mr Kelly:** I believe there were some office buildings across the road, and this particular site was chosen because of its proximity to a substation.

**Senator CANAVAN:** In your role now and in Cape Bridgewater, for instance, you haven't looked at the low-sound frequency or vibration issues associated with wind turbines?

**Mr Kelly:** That is not an area that we are qualified in and we would not seek to be.

**CHAIR:** Thank you for your submission this morning.

**BERRY, Mr Matthew, Planning Manager, Glenelg Shire Council**

**BURGOYNE, Mr Greg, Chief Executive Officer, Glenelg Shire Council**

**HALL, Mr Christopher, Senior Town Planner, Pyrenees Shire Council**

**HOOVER, Councillor Paul, Mayor, Ararat Rural City Council**

**KERRIGAN, Mr Stephen, Group Manager, Planning and Economic Development, Glenelg Shire Council**

**NOLAN, Mr James, Chief Executive Officer, Pyrenees Shire Council**

[11:32]

**CHAIR:** Welcome. Information on parliamentary privilege and the protection of witnesses and evidence has been provided to you and copies are available from the secretariat. The committee has before it submissions from all three councils. I now invite you to make a short opening presentation and, at the conclusion of your remarks, I will invite members of the committee to put questions to you.

**Mr Burgoyne:** I am happy to go first. Thank you for the opportunity to make a submission to the Senate Select Committee on Wind Turbines. Previously, Glenelg Shire Council made a submission to the Senate inquiry into the social and economic impact of rural wind farms. Glenelg Shire Council, together with Pyrenees Shire Council and Moyne Shire Council, jointly addressed that Senate inquiry on 28 March 2011.

Issues raised in that submission, as recorded by the Hansard transcript on pages CA32 to CA46, are still relevant issues for our council today. We would recommend that the Senate select committee review and take on board the comments made previously. Since the address to the Senate inquiry in March 2011, the following relevant events have taken place around Victorian legislation on wind turbines.

During 2011-12, the former Minister for Planning employed enforcement officers to address compliance issues for wind energy facilities. Changes to the Planning and Environment Act 1987 on 22 July 2013 altered section 97H of the act to specify that all permits issued by the Minister for Planning are to be administered and enforced by councils. On 24 February 2015, the Municipal Association of Victoria and the Environment and Protection Authority of Victoria brokered an agreement to conduct independent wind energy noise assessments. Finally, the current Minister for Planning announced changes to Victorian planning provisions for wind farms. Details are yet to be released.

In this context, there are three areas that we wish to expand upon from council's submission. The first point is compliance of wind energy facilities. Issues relating to industrial regulation and compliance remain a concern, as highlighted in council's written submission. Portland's wind energy facility is governed by an incorporated document in the Glenelg planning scheme. The wind farm includes Cape Bridgewater, Cape Nelson South, Cape Nelson North and Cape Sir William Grant. While similar to a planning permit, the incorporated document is different and forms part of the Glenelg planning scheme; thus it was not affected by changes made to the legislation on 22 July 2013 which applies only to planning permits.

The Cape Bridgewater wind farm in the Glenelg shire has been the source of ongoing complaints from three residents. The conditions on that incorporated document direct them to the operator but also state that overall compliance is the responsibility of the Minister for Planning. Previously, from 2011 to early 2013, enforcement officers from the state government planning department undertook compliance activities. This resulted in repairs to a number of turbines at the Cape Bridgewater wind farm. The operator also allowed residents who complained an acoustician of their choice to be appointed to conduct noise assessment. This study has been recently completed by Steven Cooper, whom this committee heard from earlier today.

When legislative changes were made by the former Minister for Planning in 2013 enforcement ceased. The state government department officers advised residents that compliance was no longer the state's responsibility and advised residents to contact council or the operator. As the Cape Bridgewater wind farm did not operate under a ministerial permit and instead an incorporated document, the legislative changes did not impact who is responsible for compliance of the facility. The incorporated document clearly states the Minister for Planning is responsible for ongoing operations—operation issues such as noise compliance. Its state government officers now direct residents to council or the operator; thus, residents complaints are pushed in circles as council and the Minister for Planning are at odds over who is responsible.

The recent work by the Municipal Association of Victoria, the MAV, to allow the Environment and Protection Authority to be involved to assist in auditing is a step in the right direction, but there are no details on who pays. Further, there is still no certainty over who would take enforcement action if there was a breach. In summary,

council and residents are in a difficult position over both costs and uncertainty with monitoring and compliance of wind turbines under the Victorian planning legislation.

The second point: Steven Cooper's study of the Cape Bridgewater wind farm and health impacts. As previously mentioned, this study arose due to the compliance issues raised over the Cape Bridgewater wind farm. As senators would have already heard, the study made a correlation of wind turbine signature and adverse disturbances recorded. To address this concern, council would like to see the National Health and Medical Research Council undertake an expedited authoritative study into the human impacts of wind farms. This would be to determine if there is an adverse health impact and to develop national guidelines to determine how to monitor and address health impacts, if adverse health impacts are identified. Having national guidelines would assist councils in both monitoring and addressing complaints against state legislation. This would provide consistency for industry, residents and responsible authorities in developing and operating wind energy facilities.

Point three: Keppel Prince has made a submission to the committee regarding challenges and job losses recently experienced and the flow-on effects to the economy. The lack of certainty over a national renewable energy target has posed difficulties in the attraction of clean energy projects and the creation of jobs within the Glenelg shire and the region. The local port is a nationally significant asset that both imports and exports renewable energy products. Certainty on this matter, including certainty for the industry over compliance, will assist investment in local manufacturing jobs.

In conclusion, Glenelg Shire Council supports policies and processes which promote renewable energy projects, attraction of clean energy investment and the creation of jobs within the shire whilst having certainty that they do not pose undue risk to the health and wellbeing of its residents.

**Councillor Hooper:** I am speaking on behalf of the Ararat Rural City Council. We have had an operating wind farm since 2003 in our municipality. It has contributed enormously to the economic development of our town and of neighbouring farmers who host the farms. There is a proposed Ararat wind farm which will hopefully start commencing with infrastructure in the last quarter of this year. It will have a combined economic impact in the order of \$115 million in our economy over the life of the farm. This is a vital component of our growth and our future in small rural municipalities such as ours. We do not often get opportunities for economic multipliers of this form. I would hope that our submission would expand on that.

**Mr Nolan:** Our submission essentially reflects items C, D and E of the terms of reference. I might first reflect the comments made by the mayor of the Ararat council in respect to economic benefits, which do not stop at municipal boundaries, and reinforce the economic benefits associated with wind turbine construction and operation.

Pyrenees Shire Council is a small rural council with a population of about 6,700 people, an annual budget of about \$20 million and a town planning unit of one town planner, Chris Hall, who is here and who will speak in a little more detail around some of the issues. The size of the council is significant in respect of the issues under the planning process and enforcement.

**Mr Hall:** Thank you for the opportunity to present to you today. I would like to start by giving an overview of the context and the projects currently in place for planning approvals within our shire, which comprise of over 340 turbines across four separate projects. The only released project that is currently operational is the 128-turbine Waubra wind farm. Council requests that the previous joint submission we made to the Senate inquiry on the social and economic impacts of rural wind farms in 2011 be considered. We believe the matters raised there are still relevant.

Until the gazetting of C78 in 2011, the minister for planning was responsible for enforcing all planning permits for wind farm exceeding 30 megawatts in capacity. Since that amendment was passed, that responsibility now rests with local councils. This change was made without broad consultation being undertaken with local councils. It is important, I believe, to note that this has placed significant resourcing pressures on small rural councils that have limited access to planners with the relevant levels of knowledge and technical expertise required to assess the range of issues involved. The newly elected Labor government announced they intend to change these regulations to allow the minister to take over the assessment of a future applications. However, the details are yet to be released but council, in principle, supports this change.

Council supports the minister taking back the responsibility for determining applications. There is also a need to review the current planning application fee schedule as we do not believe it is adequate or that it fully represents the costs incurred by responsible authorities in determining planning applications which involve the engagement of technical experts attending panel hearings and the like and the officer time involved.

As was highlighted earlier, the planning enforcement changes made in July 2011 to the planning and environment act specified that all permits previously issued by the minister, which covers most major wind farm projects in this state, would now be the enforcement responsibility of councils—with the exception of those matters as specified in the permit conditions to be signed off by the Minister for Planning, which includes a lot of the key requirements around the noise testing both preconstruction and post construction. This change has led to a great deal of uncertainty within the local government and within the community as no clear direction has been provided on these changes to make our job easier or to deal with resident complaints as they come through.

Who would take enforcement action if a breach is identified? The costs in time required for investigation, engaging consultants to test any potential breaches, directing wind farm operators as required and undertaking legal actions through channels such as VCAT in a potential legal dispute would be considerably significant and beyond the scope and capacity of rural shires to manage.

That key point I would like to make on this issue is there is an urgent need for certainty around the responsibility and ongoing enforcement of planning permits and this needs to come from the state government. The minister needs to provide a statement to councils affirming the responsibilities between state and councils and where they lie with the currently issued permits. The Victorian government needs to adequately resource the department to add the capacity to undertake its resourcing enforcement responsibilities with adequate access to technical expertise as required.

For the matters council is required to enforce, it would be beneficial if a regional coordinator or coordinators be provided as a resource—as trialled through that 2011-12 period. We found this to be excellent support and something we could draw upon as required when determining matters for the relevant permits. We would support and advocate through the MAB for the reinstatement of coordinators and would be happy to work with the state government on a workable model.

Most of the permits issued were prior to the 2011 period, which included standards in the conditions and requirements to comply with the New Zealand standard 6808, 1988, which does have a fairly limited scope and direction on how to assess issues such as special aural characteristics. This has created difficulties and issues for those responsible for enforcing the permits and, in a lot of cases, in determining compliance in that marginal range around the low 30s to 40 DVA noise contour.

I believe there is a need for an authority like the EPA to provide some guidance around how to assess special aural characteristics under that standard back to the state government and for the EPA to be charged and suitably resourced with the capacity to have a role in the enforcement for breaches of noise standards and assessing noise compliance reports as provided by the operator. Given the independent status of that agency, I believe it would be the most suitable body to be charged with undertaking that work.

There is a matter to consider for future development applications. Beyond the post compliance testing period for wind farms, there is no onus or requirement on the operators to provide ongoing audit reports certifying that they are still operationally compliant with the noise standards. Given the size of these projects and the extended length of time what they can run, which could be 20 or 30 years, and given the size of the infrastructure we are talking about and the potential for mechanical wear and factors such as that coming into play, I believe with future permits it would be prudent for consideration to be given for conditions requiring independent noise orders to be provided over a five-year specified time period certifying that the wind farm is still operationally compliant. It is a matter for future consideration as all the permits I am aware of in the state of Victoria do not include any requirements of that nature at this point in time.

**Senator CANAVAN:** Could you clarify that?

**Mr Hall:** I recommended a five-year interval noise compliance audit report required to be provided by the operator. The issue of noise complaints is not going to go away for local councils once that post compliance period is over. Particularly from those residents within close proximity of wind farms and in that marginal noise range, there are going to be ongoing complaints that will need to be investigated and they will get worse as the mechanical wear factors come into play.

I would like to request that the state consider retaining the two-kilometre buffer distance pending the findings of the National Health and Medical Research Council work that is scheduled to be undertaken. The Labor government recently announced it was intending to drop that back to a one-kilometre buffer.

I would like the National Health and Medical Research Council to have the ability to provide direction and guidance to state authorities for appropriate minimum setbacks from dwellings and for guidance to come from the national level on that. I think that would greatly assist authorities in having consistent standards on that issue. A 1½-kilometre to 2-kilometre buffer has been identified previously.

**Senator BACK:** Listening to the evidence of each of you, it seems to me that you are all in a position that the state government planning organisation takes over when it suits it and then it passes back the responsibility to yourselves. Is that a fair summary? You are left holding the baby. Would that be a quick summary of what you have said?

**Mr Berry:** Yes, that is correct.

**Senator BACK:** It is interesting from our point of view but, constitutionally, approvals under land management—and this is where it falls—is a state responsibility. As a federalist and as a West Australian senator, I have no intention or desire to take away from states any rights you have got.

The only involvement the federal government has is in the issuing of renewable energy certificates. That is where we represent the Australian taxpayer in the millions of dollars that get paid out. You made the point yourself, Mr Hall, in terms of the timing. How would it impact on you if, indeed, it was a requirement by the clean energy regulator that there was annual certification that each wind farm is compliant? That is not for the purpose of running the wind farm or for your responsibility at local or state level, but for the ongoing allocation of renewable energy certificates from the federal government? What impact would that have? Because presumably the state would say to you, we have now hand balled the ball to you so, therefore, you would be having to feed up at state level before the state minister for planning could write to the clean energy regulator to say, 'Yes we know that there is compliance.' And, of course, there is legal responsibility for compliance. How would that impact on you?

**Mr Nolan:** If it was of matter of determining compliance for the issuing of the certificates then there is a cost associated with that.

**Senator BACK:** That is right.

**Mr Nolan:** From a municipality's point of view, if there is a cost associated with that, it has got to be born by the rate payers and that is an unreasonable burden. We would reasonably hold that position.

**Senator BACK:** Again, you have made the point on compliance. Mr Hall, you spoke last. You spoke about the New Zealand standards. If there is anything that has come out of Mr Cooper's work—and I complimented Pacific Hydro this morning on promoting that work in the first place—it is the total irrelevance of the New Zealand standards which go to audible sound. Mr Cooper's work is there now to be validated or invalidated within Australia and internationally. But if, indeed, it is infrasound and not audible sound that is the indicator of these sensations then all of the approvals that have been given on the basis of audible sound become irrelevant, yes?

**Mr Berry:** How can councils or anyone govern if the controls on approvals are not relevant?

**Senator BACK:** That is right.

**Mr Berry:** That is pretty obvious point.

**Senator BACK:** The basis on which an approval is given—and Mr Burgoyne read this out to us and we have it here—is that there is not 'undue risk to health and wellbeing of residents and ratepayers'. Those are your words and I compliment you for them. But this means the whole ball game changes, doesn't it? I make that observation.

I want to ask you a question, Mr Kerrigan, on the Sustainable Communities Fund within your council area. I understand Pacific Hydro is a very generous contributor. Was the figure of \$650,000 mentioned in the submission?

**Mr Kerrigan:** Yes.

**Senator BACK:** This is my last question. I want to draw this to your attention. In Pacific Hydro's *Sustainable Communities Fund: application guidelines 2014*, in No. 10 item (j) under the heading 'terms and conditions'—I will read it out and ask for your response—it says:

The Recipient shall not do or say anything or cause anyone to do or say anything that may prejudice or cause damage to the name and reputation of Pacific Hydro or its affiliated companies.

What if any limitation has that caused for you or your council or, indeed, anyone who becomes a recipient of the funds under the Sustainable Communities Fund when making any comment about Pacific Hydro?

**Mr Kerrigan:** I am not aware that there has been any at the moment.

**Senator BACK:** Are you aware of the actual clause?

**Mr Kerrigan:** I was not aware of that clause, no. I have only been in the role for a short time.

**Senator BACK:** Mr Berry and Mr Burgoyne, were you aware of that clause?

**Mr Burgoyne:** I was aware of the clause.

**Mr Berry:** I was also aware of the clause.

**Senator BACK:** Would it have precluded the council in your advice to the Sustainable Communities Fund from accepting funding on that basis, knowing that they can gag you? I suppose that is the term—'gag'.

**Mr Burgoyne:** That is your term.

**Senator BACK:** Okay, that is my term. Would you have given any advice to someone who put their hands up to be a recipient under the fund that in so accepting funds they would be subject to subclause 10(j)?

**Mr Burgoyne:** I was aware of it.

**Senator BACK:** But would you have given that advice to anyone who sought to become a recipient of the funding?

**Mr Burgoyne:** I would have to take that on notice.

**Senator BACK:** Okay, thanks.

**Senator DAY:** I have a question for Mr Kerrigan or Mr Berry. It goes to jurisdiction. You mentioned that wind farms do not come under federal jurisdiction, but I beg to differ. I put this to you: the High Court has pretty much established that under the corporations power the federal government can pretty well do anything with respect to corporations. I presume Pacific Hydro is a corporation. So have you explored the possibility of going down that avenue—that the federal government could quite easily regulate wind farms under the corporations power?

**Mr Berry:** No, we have not explored that.

**Mr Kerrigan:** No.

**Senator URQUHART:** I have some questions which I will put on notice to all of you about rates income et cetera. I might pick you out, Mr Hooper. You have not made too much noise so far, so I will give you a go!

**Councillor Hooper:** I thank you in anticipation!

**Senator URQUHART:** All the research I have read found that the vast majority of Australians in rural communities have no problems co-existing with wind farms. Do you find that that is borne out in the experience of your council?

**Councillor Hooper:** I can only speak on behalf of our council.

**Senator URQUHART:** That is what I am asking you, yes.

**Councillor Hooper:** We have obviously had Challicum in operation since 2003. There were zero complaints raised in the planning process of that, which we ran as well. I understand the RIS application was run with nil complaints raised. So in our municipality there are no issues.

**Senator URQUHART:** In your municipality, what was the process that was undertaken prior to the establishment of the wind farm?

**Councillor Hooper:** In terms of public consultation?

**Senator URQUHART:** Yes.

**Councillor Hooper:** Pacific Hydro ran the first one and they engaged the community very, very positively, even to the extent that when components were being brought in from Portland they engaged with local primary schools so that students could look at the tower and the components associated with it. They had many public meetings. They engaged various parts of our community and focused primarily where the actual tower is located, which is not far from Ararat itself. I think it would be fair to say that the way they undertook public consultation was exemplary.

RES, which is the current proponent that is about to start, learnt a lot from the way Pacific Hydro dealt with our community and, again, have worked extensively with all parts of our community to put their development out in the open. They have not hidden anything. They have tried to actively engage with the various local contractors and trades and benefit the economy as best they can. From Ararat's perspective, both these proponents have consulted widely and very well.

**Senator URQUHART:** In the media we continue to read about the negatives. Given the report you have just given about your community, do you think we are getting a distorted perception of the reality of wind farms from the media coverage?

**Councillor Hooper:** I am not sure that I am qualified to answer that. I have made the comment to many people over the journey—and I have been involved with these things for a decade—that: 'Form your own view. Come up and talk to the landowners who are currently hosting Challicum. Talk to members of our community

and make your own assessment. 'That is probably the only truly accurate way that you can perceive how our community acknowledges and co-exists with a wind farm.'

**Senator URQUHART:** Along that same line, what has been the media coverage in relation to it? You talked about the process of consultation and how that was positive from your point of view. What was the media coverage of that example you provided?

**Councillor Hooper:** In Ararat?

**Senator URQUHART:** Yes.

**Councillor Hooper:** Very positive.

**Senator URQUHART:** I will put the rest of my questions on notice.

**Senator LEYONHJELM:** There are two avenues I want to pursue. First of all, just to follow up on the Ararat example, you said there had been no complaints about it. Is there a different separation between residents and the tower in Ararat from anywhere else that you know of?

**Councillor Hooper:** By 'separation' you mean—

**Senator LEYONHJELM:** The gap between the tower and the residences.

**Councillor Hooper:** In the Challicum instance, there are at least two houses in fairly close proximity to the tower.

**Senator LEYONHJELM:** And the residents have not complained?

**Councillor Hooper:** No. In fact, I see that one of those residents intends to speak later today.

**Senator LEYONHJELM:** What is the experience of Pyrenees?

**Mr Hall:** A number of complaints have been received around both audible noise and potential health effects from a number of residents around that development.

**Senator LEYONHJELM:** So we are seeing variations. I want to come back to this issue of who is in charge which several of you raised. I am not going to address this question to anyone in particular, so you can decide who should respond to it. It seems to me—I am setting this out to you as a question so you can say whether I have got it wrong—that the first thing is the rules themselves. At the moment, the rules relate to noise. Subject to further validation, as Senator Back alluded to, perhaps it is not noise but infra-sound—if you do not want to call that 'noise'—and that is not even in the rules. So there is rule setting. Then there is the application of the rules at the planning stage—plus all the other things. Then there is a stage of compliance during the life of the project—and somebody talked about noise audits and so forth being a part of that. And then, of course, there is the overarching issue of who pays for all this. Have I summarised it correctly?

**Mr Berry:** Yes.

**Senator LEYONHJELM:** From a small rural council's point of view, I am very sympathetic to the obligations loaded on you guys with your limited budgets—and I have experience with that. How would you like these things to be managed? Would you like them to be off your plate—for the state or Commonwealth government to deal with—or would you like more resources?

**Mr Nolan:** I think Mr Hall made mention of the resourcing requirement—that they could best be done through a state resource pool that would be available to provide consistency of approach rather than relying on individual councils to get it right consistently. So that is the approach that we would reasonably see as appropriate.

**Senator LEYONHJELM:** Not out of it entirely?

**Mr Nolan:** Not out of it entirely. We would expect to be consulted and involved in the process in some way but not necessarily to be expected to possess the relevant expertise and the consistent approach that might be necessary when dealing with this.

**Senator LEYONHJELM:** My thought when I was listening to you was that there are local factors that you are likely to be aware of and a central planning organisation in Melbourne or Canberra is not likely to know about that. Would I be right there?

**Mr Nolan:** That is correct.

**Senator DAY:** If, for example, there was a proposal to build a nuclear power plant in your council area, you would say it is bigger than you can handle and you would like someone else to be involved in the planning process.

**Mr Nolan:** Correct. Council has the capacity under the Planning and Environment Act to request the minister to call in a planning application for a range of reasons—and that is one we would reasonably be looking to have the minister call in and deal with.

**Senator DAY:** So you would not oppose it or push back if there was some federal involvement in this process?

**Mr Nolan:** No.

**CHAIR:** Councillor Hooper, what is the capacity and height of the wind towers at Challicum Hills?

**Councillor Hooper:** There are 35 turbines generating 52½ megawatts power. I do not know the specific capacity of each individual turbine. They are relatively small in comparison to the ones of today. This one has been operating for 12 years, so it was probably designed 15 years ago. The towers are below 100 metres high—from memory, they are 80 metres high—and the blade length is about 60 metres.

**CHAIR:** So it is a lot smaller than what we are dealing with at Cape Bridgewater?

**Councillor Hooper:** As I understand it, yes.

**CHAIR:** It is a smaller turbine?

**Councillor Hooper:** As I understand it, yes.

**CHAIR:** So we are not comparing apples with apples, are we?

**Councillor Hooper:** That is correct.

**CHAIR:** The ones at Challicum Hills are a lot smaller than the ones that have subsequently been built in other shires such as at Waubra and here at Cape Bridgewater?

**Councillor Hooper:** Yes.

**CHAIR:** I was having a look at section 58 of the Public Health and Wellbeing Act. It makes it clear that, when considering nuisance, regard is not to be had to the amount of people impacted but to the severity of the nuisance itself. Will the Glenelg council undertake to make an application to VCAT for an enforcement order on behalf of its residents and ratepayers who remain impacted by the operational nuisance of the Cape Bridgewater wind farm?

**Mr Burgoyne:** Senator, I will ask Mr Berry to answer that.

**Mr Berry:** We would have to take the question on notice, but what I can say is that the council, when enforcing the Public Health and Wellbeing Act, does look to peak bodies such as the National Health and Medical Research Council for specific advice and guidance on directing how to respond to complaints about nuisance to establish where there are adverse health effects. That is why we did put in our submission to the Senate that we would like to see an authoritative study done on it so that, if there is one, the council could identify it and be able to know how to determine and monitor it to achieve compliance.

**CHAIR:** Finally, have any of your councils—whether it be the Pyrenees, Ararat or Glenelg—had a definitive ruling from the minister to state that the wind farms constructed in your shires are compliant? Have you got a definitive statement of compliance or non compliance?

**Mr Hall:** We recently received correspondence from the minister confirming that the Waubra Wind Farm noise testing post-construction requirements had been completed and signed off. That was received three or four weeks ago, under the minister's signature.

**CHAIR:** They have signed off on post construction?

**Mr Hall:** Yes. There is a post commissioning of the wind farm. There is a compliance testing process that is required to be followed, which generally lasts between 12 and 18 months. It is variable depending on the permit.

**CHAIR:** The question I asked was: have you got a definitive statement from the minister?

**Mr Hall:** We have received correspondence with his signature—which we can provide you—confirming that.

**CHAIR:** Pyrenees has, and that is pertaining to the Waubra Wind Farm?

**Mr Nolan:** The advice was as follows: 'I write to advise that I am satisfied the sound level from the operation of the Waubra wind energy facility currently complies with condition 14 of the planning permit.' He quotes the permit number. He goes on to write: 'My decision takes into account the noise assessment undertaken by Marshall Day Acoustics and the subjective assessment of special audible characteristics undertaken by ACCON. If you have any further inquiries'—and it goes on. Essentially, it was in respect of condition 14 of the planning permit.

**Senator CANAVAN:** Can you describe how that post-compliance monitoring happens? Mr Hall, you say there should be a five-year audit. What happens right now?

**Mr Hall:** At the moment, following commissioning of the wind farm period, the operators are required to undertake a period of post-construction compliance testing, at the completion of which they are required to provide a report prepared by an acoustic consultant, usually back to the minister for planning to sign off, demonstrating that the noise levels at all receptor dwellings can satisfy the requirements.

**Senator CANAVAN:** What sort of area does that testing and monitoring cover?

**Mr Hall:** There are no specified limits. It could be any property within about the 45-decibel noise contour, from memory, which can be up to 1,500 to 1,800 metres to two kilometres.

**Senator CANAVAN:** Does anyone want to make any different comments about what happens?

**Mr Berry:** It is a similar process. You have your post-compliance testing and once that is done you have another year, which, again, the minister for planning checks off and then the councils get given a copy of that after it has all happened.

**Senator CANAVAN:** Does any of that monitoring pick up infrasound, or is it all just audible sound?

**Mr Hall:** It is all audible noise and associated with the New Zealand standard.

**CHAIR:** Thank you. Could you make a copy of that letter on notice and provide the committee with a copy of the minister's determination there. I thank you for your attendance here.

**ANDREOU, Mr Andrew, Executive Manager, Community Infrastructure, Country Fire Authority (CFA)**

**BROWNLIE, Mr Craig, Operations Officer, Specialist Response, Country Fire Authority (CFA)**

[12:16]

*Evidence was taken via teleconference—*

**CHAIR:** I welcome Mr Craig Brownlie and Mr Andrew Andreou from the Victorian Country Fire Authority to the hearing via teleconference. Information on parliamentary privilege and the protection of witnesses and evidence has been provided to you and copies are available from the secretariat. The committee has before it submission 14 from the Victorian Country Fire Authority. I now invite you to make a short opening presentation. At the conclusion of your remarks, I will invite members of the committee to put questions to you.

**Mr Andreou:** I would like to make a short presentation, as a bit of a background of CFA. We were appointed by Governor in Council under the Country Fire Authority Act 1958. We cover land known as the country area of Victoria, which lies outside of the metropolitan fire district and does not include any forest, natural park or protected public land. Section 20 of the CFA act outlines general duties of the authority, which include the duty of taking, superintending and enforcing all necessary steps for the prevention and suppression of fires, the protection of life and property in case of fires and the general control of all stations, brigades and groups of brigades which are subject to the provisions of the CFA. In addition to these responsibilities, for prevention and suppression of fires, we undertake a number of special response activities that are not limited to: rescue, including at heights; and hazardous chemical incidents, known as hazmat.

CFA utilises a region, district and group brigade structure. We are comprised of five regions, 20 districts, 401 groups and 1,218 brigades. We have in excess of 59,000 members, who are mainly volunteers, who are supported by paid staff. CFA operates within the prevention, preparedness, response and recovery continuum of emergency management. CFA are involved in wind farms in a number of ways. Under the CFA act, we have an oversight for the administration of ignition controls. As such, we declare fire danger periods, where people need to take certain precautions in lighting fires in the open, and total fire ban days that prohibit the lighting of fires in the open. Fires and/or flame include welding, grinding in the open air, as well as restrictions on the use of certain vehicles, such as flame arrestors for the exhaust of a vehicle.

In relation to wind farms, we could be involved, either through invitation from the owner or occupier or operator of the farm, through direct interaction of the local brigade and/or local district, with the site, or formal notification under the Planning and Environment Act. It is known as a section 52 referral. It is not a mandated referral to CFA; however, CFA, through local government, may be asked for either advice or opinion in relation to a planning permit application. CFA has developed the Emergency Management Guidelines for Wind Energy Facilities, which cover consideration for owner-operators to consider—things like the need to engage and consult with CFA, potential siting of turbines, access recommendations, the provision of firefighting water, other on-site infrastructure, considerations for rescue, considerations to be undertaken during construction, operating and maintenance and general awareness for brigades.

In relation to existing sites, CFA may undertake preplanning activities, where our local brigade and district consider the hazard and the risk and then they give themselves documented actions for consideration, as well as advice to the owner-operators. We may undertake site familiarisation visits, where we go and visit a site to become familiar, or we may undertake formal exercises with the facility. In relation to proposed or planned facilities, as mentioned earlier, we may receive a formal request from local government, where CFA will assess the application on its merits and will use the Emergency Management Guideline for Wind Energy Facilities as a document for consideration.

In relation to the emergency response perspective, I might ask Craig to add a bit here.

**Mr Brownlie:** From an emergency response perspective, CFA undertake a dynamic risk assessment for all incidents that we attend. That is on a 'safe person approach', so we will assess risk based on the incident that we are confronted with and then make appropriate operational decisions, ensuring the safety of both firefighters and the public are maintained as far as practical.

**Mr Andreou:** Thank you very much. That is our presentation. We welcome any questions that you may have.

**Senator URQUHART:** You talked about access. When roads are built for access to wind farms, does that assist the CFA with firefighting efforts?

**Mr Andreou:** We have general guidance in relation to the width of roads. Is this leading to the facility or within the facility?

**Senator URQUHART:** Both, really, particularly within the facility; but leading to it is important as well, I guess.

**Mr Andreou:** From our point of view, we have a roadside risk assessment process, where we work with local government and other road owners—so a VicRoads road or a council road. Based on the hazards adjoining the road, we undertake a risk assessment at a what is called a municipal fire management planning committee. Based on that, we determine the level of clearance, vegetation management et cetera. So, from a bushfire point of view, the road has treatments to address the fire hazard. We do that at local government level. Craig, did you want to say something about on-site access?

**Mr Brownlie:** Yes. Part of the *Emergency Management Guidelines For Wind Energy Facilities*—part 3, Access—indicates a range of preferred gradients and levels for access for CFA vehicles. That is based on the types of vehicles that we have, and also the understanding of what gradients those vehicles best perform under. It also has information on, if there are disturbances within that, entry and exit angles for our vehicles, to ensure that we have good access around the site. I think 3.5 indicates:

Passing bays should be located every 200m on access tracks.

Again, that is to ensure that vehicles can effectively manage any incident on that site.

**Senator URQUHART:** Obviously, as firefighters, particularly CFA firefighters, you face lots of obstructions and different hazards that you have to deal with—things like television towers, trees themselves and all sorts of things that are probably more prone to be out in the country, rather than tall buildings. Would you single out turbines—particularly the towers—as being particularly problematic?

**Mr Brownlie:** No. We have done an investigation of fire and incident reporting data over the last 17 years—so, back to 1998—and we have had 289 incidents in areas surrounding wind farms, none of them involving the wind farm facility as such. As you say, there are a lot of other risks within the natural environment rather than the towers themselves. From my perspective, from an operational perspective, we would rate trees themselves as being one of the highest risks to firefighters for injury and death over wind farms or wind towers.

**Mr Andreou:** And from a fire prevention and preparedness perspective, the key thing for our brigade is to be familiar with the site so that, if there should be an incident at the site, we take the appropriate precautions. That is why we recommend to our brigades—and they do that—to undertake site familiarisation visits and to have a pre-incident response plan to help inform any decisions that are made should an incident occur.

**Senator URQUHART:** In your submission, I note that you have included a photo of some planes that are flying right next to wind farm turbines. Can you just describe what is happening in those pictures?

**Mr Andreou:** Bear with me for a moment.

**Senator URQUHART:** It is on pages 53 to 55 of your submission.

**Mr Andreou:** Sorry—bear with me for a moment more. I cannot seem to find those photographs.

**CHAIR:** Senator Urquhart, that is the Corio Fire Station. It is not the CFA.

**Senator URQUHART:** It is in their submission, though.

**CHAIR:** It is in the Corio Fire Station submission.

**Mr Andreou:** They sent a different submission. I apologise for that.

**Senator URQUHART:** Sorry, yes—it is the Corio Fire Station. It was part of the VCFA one.

**Mr Andreou:** I apologise for that; I was unaware that Corio Fire Station provided a submission. However, we spoke with our aviation folk in relation to wind turbines. I might ask Craig to elaborate a bit more, but we do not have any significant concerns. Craig, do you mind?

**Mr Brownlie:** Operations Officer Wayne Rigg is the CFA manager for the aerial work that we do. Basically, the air fleet that we use operates under visual flight rules. That means that they will not operate in low light or after light, or through cloud or smoke. Wayne has indicated that there are a lot of other, higher-risk areas, like power lines and the like, over wind towers. They are quite visible and they do not cause the aircraft any concern in aviation operations for CFA.

**Senator URQUHART:** There have been a number of concerns raised about there being no information on the location of wind turbines. Is that true? Do you actually have information on where they are for firefighting services?

**Mr Brownlie:** There are probably two answers to that. One is it would be covered within the municipal emergency management plan. That would indicate where the farms were. Because we are such a large organisation broken up into so many parts, brigades, districts and regions would have a clear understanding and

are involved in attending and viewing these facilities on a very regular basis. Andrew, do you have anything to add?

**Mr Andreou:** Sustainability Victoria has a list of locations and, from what we are aware, there are approximately 14 operating wind farms in Victoria as at October 2014 and there are another 20 proposed—they are approved but not yet operational. It is quite possible, as Craig indicated, that an individual within the CFA or an individual in the community may not be aware of where to get the information but should we need to get the information we are aware of where and how we can get that information.

**Senator URQUHART:** Okay, so it is actually there.

**Mr Andreou:** Yes, we believe so.

**Senator URQUHART:** The chair is winding me up, but I have another question that I will place on notice if that is okay.

**Mr Andreou:** Thank you.

**Senator LEYONHJELM:** Good afternoon. Can you tell me the cause of the East Kilmore fire on Black Saturday and how many people died in it?

**Mr Brownlie:** I would be unable to provide you that information at this time.

**Mr Andreou:** Can we take that on notice because we were not expecting that question and I would not like to—

**Senator LEYONHJELM:** All right.

**Mr Andreou:** Sorry, sir.

**Senator LEYONHJELM:** No problem. It is just a lead-in to a question, just to place it in context. I will get onto specifically wind turbines. Do local brigades in western Victoria have the capability to extinguish a fire in the nacelle of a large, modern wind turbine?

**Mr Brownlie:** As you would no doubt know, these are very high structures. CFA fights fires under a dynamic risk assessment, so it would depend on the type of fire that we were confronted with at the time. In a principal sense, for a large fire in the nacelle of the wind tower my view would be that we would not be committing firefighting resources to the extinguishment of the nacelle. We would be more protecting the surrounding area and extinguishing any fire that may come off that in relation to sparks or embers into the grassland area. The CFA would not have firefighting resources capable of applying water to the top of the tower. The CFA would not have firefighting resources for that activity.

**Senator LEYONHJELM:** There have been wind farms in western Victoria now for a decade. Do you have a specific plan to extinguish fires that might start in wind turbines?

**Mr Brownlie:** As I said, the general principle would be about ensuring that the fire does not spread outside of the farm area and extinguishing any embers that come up in regard to the grasslands. We would be trying to contain the incident to the environment it is in. Putting firefighters inside the turbine area would have to be assessed on an incident basis. It is very hard to give you a clear yes/no about whether we would do it without going through that dynamic risk assessment process at that time. We do have pre-incident response plans that have been developed for a number of incidents. The Mount Mercer wind farm I think has been included in the presentation—and we can make it available—which goes through a range of considerations that incident controllers should go through.

**Senator LEYONHJELM:** Thank you.

**Senator BACK:** During periods of extreme fire risk and/or when harvesting bans are on, is it a requirement that the operators of the wind turbine farms turn off the wind turbines?

**Mr Brownlie:** No, not during those days. However, there are restrictions on associated activities. For instance, if maintenance needs to occur and they need to use a grinder or a welder then there may be restrictions, depending on whether it is a total fire ban day or a fire danger period. There are permits if one wants to undertake an activity. Industry use these permits all the time. They apply to CFA for a permit, which has a series of conditions so that they can operate in a safe environment. Energy Safe Victoria require electricity manufacturers, for want of a better phrase, to develop a bushfire mitigation plan, which would have a whole lot of strategies in there in relation to what precautions they should take during the fire danger period.

**Senator BACK:** Therefore, do each of the operators have to put to you a fire plan and do they have firefighting equipment themselves or do they rely on rural brigades?

**Mr Brownlie:** The fire plan needs to go to Energy Safe Victoria and they will determine whether CFA needs to be engaged.

**Senator BACK:** Are there any turbines on Crown land, shire owned land, presumably not in national parks; therefore land over which CFA does not have jurisdiction or responsibility?

**Mr Brownlie:** I do not believe that there are any on protected public land or Crown land or forest land, but I cannot categorically say that that is the case. But I am led to believe that the 14 that are currently operating are all in the country area of Victoria.

**Senator BACK:** How do the operators of the wind turbines make some form of payment annually to the CFA? Is there a levy on land rates in this state? Is that how it works?

**Mr Brownlie:** The fire service is levied. All landowners in Victoria are required to pay the fire service as a levy. Without knowing specifics about any additional payment to CFA, that is not my area of expertise, I would be aware that the fire service levy would be payable.

**Senator BACK:** That would be based on land value?

**Mr Andreou:** Yes, we believe it is. We can provide you the legislative instrument if you require.

**Senator BACK:** Yes, I would be interested. I am more interested in knowing, over and above the value of the land itself, just whether there is any assessment of the capital value of any assets on the land. If you could provide that I would appreciate that.

**Mr Andreou:** We can provide that to your administrative arm. Is that okay?

**Senator BACK:** Yes, thank you.

**Senator DAY:** On catastrophic bushfire days when we have high winds and high temperatures, do you have any information regarding embers or sparks? I have seen photos of a wind turbine on fire during a 40-degree, high wind day. What is the risk assessment there? What distance can embers or sparks travel that emanate from a turbine fire?

**Mr Andreou:** That would be quite speculative for us to answer. Embers have been known to travel kilometres in the worse-case scenario. It could be possible for a turbine on fire to pose a potential bushfire risk off-site. Embers are cellulosic material that stay ignited in a wind environment. There is a huge surface area on an ember. I am not sure if you have ever used a charcoal barbecue, but wind often helps keep the fire alight. In relation to plastic, I am unaware, if plastic is on fire, of how long it will remain on fire, or whether it will just be molten, and, secondly, if the action of wind will help to cool down the heat of the plastic and/or the metal. Potentially, if it was to land on-site, which might be a greater likelihood for fire occurring, we would recommend that the vegetation is managed to a level so that fire travels along the grass at a slow enough rate for the on-site personnel in the first instance to put out that fire. Secondly, we recommend a 10-metre mineral earth break as a boundary, which should stop fire from leaving the site. That is the best that I can answer the question. Craig, I do not know what you wanted to add.

**Mr Brownlie:** From a CFA perspective, we have very good research and analysis in how embers are affected in a bushfire environment. We are quite well versed in regard to how far on different days bark, stringy bark or leaf litter will create embers. In regard to the wind tower size question, we do not see very many instances within that environment. There is not the research available to give you an exact distance, which is dependent on the conditions, on how far those embers may travel. With the information that we have on the different types of material that is combusted, we would not expect it to be off-site. However, depending on the day and severity of the conditions, we could not confirm whether that would be the case or not.

**Mr Andreou:** Sorry, just one final comment on that. As Craig indicated at the beginning of this conversation, from 1998 up until Friday, of the 289 incidents of fire that have occurred in the vicinity of a wind farm, none have been caused by the wind farm itself. They are incidents that CFA has responded to. There was one which happened on-site that CFA were not responding to. However, we were asked to go and investigate that afterwards. It happened in the nacelle. It did not impact outside of that piece of equipment.

**CHAIR:** Earlier you were speaking about firefighting aircraft. Can you inform the committee as to the exclusion zone for aircraft around a wind farm turbine. Is there an exclusion zone?

**Mr Brownlie:** I am not aware of any. We would have to refer that to the aviation department or to CASA for clearer determination. Any of the pilots that CFA use have to comply with all CASA legislation. If there is anything that is determined by CASA about an exclusion zone, they would need to comply with it. From a firefighting perspective, it is visual flight rules. If they can see it and manage the risks, then they are able to operate in that environment.

**CHAIR:** To be crystal clear, the CFA, in the event of a fire near a wind farm, does not have a defined distance that a plane can go within a wind farm?

**Mr Andreou:** We would have to seek that clarity for you from our aviation department. I am not aware of anything, as I sit today. But we can find that information out for you fairly quickly.

**CHAIR:** If you could take that on notice and provide that information to the committee, that would be appreciated.

**Mr Andreou:** No problem.

**Senator BACK:** Do you have any idea of what the volume of oil would be up in the top of the wind turbines? It is probably the oil more than plastics that are likely to burn.

**Mr Andreou:** I am aware that non-combustible oils are generally used these days for lubricant, hydraulics and the like. That is the type. I could not give you exact figures on the quantities. I know that they are significant quantities, but, no, I could not provide you with the detail of the exact quantities.

**CHAIR:** You said that the oil is non-combustible. Would you be able to take on notice what that statement is based on, gentlemen? What information do you have to rely on that it is not combustible oil used in the gearboxes of the turbines?

**Mr Andreou:** We have been reliant on the information provided by the facility managers or owners.

**CHAIR:** Would you take that on notice and come back to the committee with where that information has been obtained from?

**Mr Andreou:** That is fine; we will do that.

**CHAIR:** Thank you, gentlemen, for your testimony.

**Mr Andreou:** Thank you very much and have a good afternoon.

**Proceedings suspended from 12:46 to 13:33**

**CUMMING, Mr Hamish, Private capacity**

**EZARD, Ms Catherine, Private capacity**

**GARDNER, Mrs Ann, Private capacity**

**HETHERINGTON, Mrs Janet, Private capacity**

**POLLARD, Mrs Robin, Private capacity**

**POLLARD, Mr John, Private capacity**

**ROGERSON, Mr Bill, Private capacity**

**ROGERSON, Mrs Sandy, Private capacity**

**STAFF, Mr Keith, President, Southern Grampians Landscape Guardians**

[13:33]

**CHAIR:** I welcome Mr Bill and Mrs Sandy Rogerson, Mr John and Mrs Robin Pollard, Mr Keith Staff, Mrs Jan Hetherington, Mr Hamish Cumming, Ms Cathy Ezard and Mrs Ann Gardner to the hearing. Thank you for your submissions. The committee has a copy of these before them. Before we begin, can I again remind everyone that, in giving evidence to a parliamentary committee, witnesses are protected by parliamentary privilege. It is a contempt of the Senate for a witness to be threatened or disadvantaged on the basis of their evidence to a parliamentary committee. Privilege resolutions 6.11 and 6.12 clearly state that interference with or molestation of witnesses may constitute a criminal offence under section 12 of the Parliamentary Privileges Act.

I want to repeat the following advice from the Clerk of the Senate that was provided to this Senate Community Affairs References Committee inquiry into wind farms in 2011:

If a person who is covered by a confidentiality provision in an agreement gave evidence to a parliamentary committee about the contents of that agreement, they could not be sued for breaching that confidentiality agreement.

I also remind everyone here today that a person who is adversely named in evidence to a parliamentary committee has a right of reply. A right of reply has been afforded to those people who have been adversely named in written submissions to this inquiry. For the purposes of the public hearings, where a witness adversely reflects on another person, I will interrupt the witness and may suspend proceedings. It is the committee's intention to gather evidence that is directly relevant to the terms of reference for this inquiry. While adverse reflections on third parties may be a matter of related interest, they do not assist the committee in responding directly and objectively to the terms of reference.

Information on parliamentary privilege and the protection of witnesses and evidence has been provided to you and copies are available from the secretariat. I now invite you to make a short opening presentation, and at the conclusion of your remarks I will invite members of the committee to put questions to you. Who would like to make a brief opening statement?

**Mr Rogerson:** Good afternoon, Senator Madigan and panel members. My wife and I are third-generation farmers and live adjacent to the 32-turbine Oaklands Hill Wind Farm at Glenthompson, Victoria, operated by AGL. Our home is 2.5 kilometres and our woolshed, where we work almost every day, is 1.7 kilometres from the nearest turbine, in an area deemed as an extreme fire risk through its location relative to the Grampians National Park. The Oaklands Hill Wind Farm, which is sited over the ridge lines of rolling hills in a saline, tunnel-erodible area, on a breached volcano, began operating in August 2011.

By September 2011, one of our sheepdogs became severely affected. Soon after, we both started to experience physical changes. I began to wake suddenly at night with heart palpitations, and my wife started to experience humming and vibration in her ears and waking up frequently at night. We notified AGL, and they conducted noise testing at our woolshed and home. AGL identified what they termed a tonality problem at three to five minutes per second wind speed. They replicated our dog kennels at the woolshed, moving the dogs to the house. By 14 March 2012, nine turbines west of the Caramut-Glenthompson road were turned off between 8 pm and 7 am Australian Eastern Standard Time. In April 2012, we found deformed lambs, something we had never seen before in all our years of farming. By marking time, we found the mob closest to the turbines had lambed at the rate of only 37 per cent, down from a normal average of 85 per cent for our merinos.

AGL told us: 'We are going to fit dampeners to the gearboxes of the turbines to fix the tonality problem and return operations to full capacity by November 2013.' However, this did not happen at that time. But last Wednesday night, 25 March 2015, the turbines were all turned back on at night, after being off for three years.

With the turbines off at night, we had been able to survive and work our farm. Whilst my wife's ear problems persist, my palpitations have subsided. Our sheepdogs, however, have never fully recovered; there is a marked alteration in their personalities and their ability to work. And, despite our best efforts to reduce the effects by moving our lambing ewes from the paddocks closest to the wind farm, there are still deformities evident.

There is a huge problem between wind farms and life. The effects are debilitating. The National Health and Medical Research Council must investigate our concerns and do something about the problems we have to endure. In fact, there is a real need for all wind turbines, Australia wide, to be turned off at night to ensure life's essential—sleep. The current guidelines for wind farms are based on outdated and inappropriate standards, with measurement of infra-sound, low-frequency noise and vibration non-existent. The siting of wind farms is incomprehensible where human and animal detriment, geological and environmental affliction—including fire risk—are precariously reconciled as net gain. Thank you.

**CHAIR:** Is there anybody else who wishes to make a brief statement? Just so that people are clear: the committee does want to ask questions of all of you, and it is very easy for us to chew up the time allocated for your presentations. That is just so you are conscious of it. So you are welcome to make a statement, but can we just keep them condensed so that we can get time to ask questions of you.

**Mrs Pollard:** Good afternoon. My message is short. Most aspects will be covered by others and are already in our submission. I did not believe for one moment that I would be affected by low-frequency infra-sound. Three to four months after the wind farm commenced, I realised I was badly affected. It was still extremely difficult but I managed to cope when the turbines were turned off at night. It varies with climatic conditions and is worst when the wind drops in the late afternoon but there is still wind turning the turbines on the hill. Infra-sound is more severe in various parts of the house. I could only cope because I knew I had a few more hours before they ceased for the night. The turbines were off for three years but were turned on again five days ago, and for two nights since it has been impossible to sleep. I appeal again to the Senate for help. Thank you.

**CHAIR:** Thank you.

**Mrs Gardner:** Thank you very much to all the senators for instigating this inquiry and allowing me the opportunity to speak. The suffering at Cape Bridgewater has been appalling. Steven Cooper has done a great job with his studies, and the residents must be commended for their cooperation during this groundbreaking investigation.

It is well known that the larger the turbines the larger the noise emissions. I would like to point out to the committee that at Macarthur we are forced to live with 140 three-megawatt turbines as close as 90 metres from our fence. In August 2013, a preliminary health survey was conducted around the wind farm. Sixty-six per cent of responding households reported acoustic impact; 96 per cent of those reported disturbance during the day; 100 per cent reported disturbance from turbines at night. Twenty-three households were affected, with 62 people being affected—out to eight to nine kilometres.

In January 2014 Piper Alderman acted on behalf of 42 residents, issuing Moyne Shire with a claim of nuisance under the Victorian Public Health and Wellbeing Act. This was denied, with reference to the NHMRC statement: 'No consistent or reliable evidence of health impacts.' My family have made nearly 200 health complaints to AGL and government agencies, and AGL has received hundreds more complaints from other impacted residents. AGL denies responsibility for our health symptoms. They refer to the NHMRC statement, the AMA and Victoria health department's two reports, and then recommend we visit our doctor—the same district doctors who had received AGL's letter mischievously informing them that there is no infra-sound from turbines. AGL breached the doctor-patient relationship with this action. I received a letter from AGL asking permission for them to contact my doctor, no doubt to inform him that my complaints of infrasound were not due to their turbines. AGL has treated us very shabbily.

We were offered turbines in 2005. We refused. Several years later we were offered a relocation package by Meridian Energy, which we also refused. Not long after being awarded second prize in the Zegna of Italy prize for the finest fleece in the world, our ultrafine sheep enterprise was destroyed by dust inundation, contaminating drinking water over months and poisoning the sheep. We were one of only 10 producers in the world producing this wool. We lost a projected income of several million over the next 10 to 20 years. This business was 80 per cent of our farm income.

Despite ongoing complaints to AGL, they denied responsibility even though they were forced to clean our house several times. We had fraudulent compliance noise testing carried on at our property not according to the New Zealand standard. Moyne Shire and the Victorian department of planning ignored this and deemed the Macarthur Wind Farm compliant. We have comprehensive acoustic evidence proving noncompliance all around

the wind farm. AGL wrote to us saying that, if infrasound testing takes place at our home, I must make a public statement claiming the Macarthur Wind Farm is compliant.

Nobody has ever visited our property to investigate our complaints of pain and suffering. My husband and I are forced to leave our farm for two nights every week to get some sleep. We cannot see or necessarily hear the turbines from our home, but we are being hammered with infrasound low-frequency noise. There is every indication that the New Zealand standard does not protect sleep as it does not measure the infrasound low-frequency noise inside homes. Thirty years ago, NASA research confirmed wind turbine infrasound and low-frequency noise directly cause sleep disturbance. Why is this crucial evidence from the US Department of Energy and NASA led by Dr Neil Kelley still being ignored, in particular by the NHMRC?

My husband experienced bolts of pressure which tallied up with pressure peaks measured by Les Huson 86 per cent of the time while my husband was blind to the acoustic measurements of the time. Refer to his VCAT statement. I suffer day and night from headaches, nose and ear pressure, nausea, heart palpitations and chest burning from vibrations through the floor, couch, chair and in bed all night.

Lack of accountability for all health authorities is a scandal. We cannot guarantee a safe working place for employees. I can no longer work in the paddocks. The current standards are just a joke. The New Zealand standard does not protect sleep as it does not measure infrasound inside homes. Infrasound is a real problem, and Steven Cooper's results have demonstrated what Dr Neil Kelley's study discovered 30 years ago. There are real safety issues on our farms.

Ongoing sleep deprivation is particularly dangerous when driving or operating farm machinery. I refer the committee to the case of Mr Peter Jelbart who has a huge problem driving his truck. He is exhausted. He has discovered he cannot continue his trucking business and live at his home at the same time due to severe sleep deprivation. Moyne Shire has refused to accept our peer reviewed assessment report by Les Houston. The shire has failed to protect us from noise nuisance despite hundreds of complaints. One councillor even suggested that residents may have tampered with noise-testing equipment. At a meeting in 2014, I along with one other neighbour was verbally abused by a representative of the Ararat Shire Council when we attempted to discuss health issues. Needless to say, we left that meeting in tears. There is no transparency in the authorship of the two Victorian department of health reports released in May 2013. Many peer reviewed reports were ignored, and my FOI request for information regarding authors and correspondence was refused. My appeal was upheld and now this case has been going on for nearly two years already. What does the Victorian department of health have to hide?

This is not about money, as you will have realised from our refusal of AGL's offer to us. We just want to be able to live in our own home and work on our property the way we had for 32 years before the Macarthur Wind Farm began to create a nuisance and to trespass on our property rights with acoustic emissions from turbines 1.7 kilometres from our home. Please do not ignore our pain and suffering. These same symptoms were reported in 2004 by Dr David Iser at the Toora wind farm.

We need thorough compliance investigation and proper enforcement. We need thorough multidisciplinary health research in the field. Infrasound measurements must take place both inside and outside people's homes. It is essential that Steven Cooper is employed at the Macarthur Wind Farm, as the symptoms are exactly the same to those in Cape Bridgewater. We need the turbines turned off at night so we can sleep in our own homes, which is our common law right.

Instead of moving to rectify this public health disaster, all levels of government and the wind industry are hiding behind the smokescreen of the NHMRC's statements when in fact Professor Anderson recently admitted at, I believe, a Senate estimates hearing that there are health effects from turbines. To continue to ignore our pain and suffering is pure wilful blindness. Once again, I invite the committee to visit the Macarthur Wind Farm to speak to the impacted residents. Thank you very much.

**Mrs Hetherington:** My name is Jan Hetherington. I am an artist, I am a widow, I live three kilometres from the Macarthur wind facility and I am heavily impacted on by the low-frequency and infrasound emitted by the 140 three-megawatt turbines. The Macarthur wind facility was accredited in September 2012 before it was fully operational. In late January 2013 AGL was receiving recs for the wind facility which was not necessarily compliant and was not deemed compliant until the Moyne Shire voted in September 2014, ignoring residents' pleas for council to view their independent acoustic report showing ample evidence that the Macarthur wind facility was not compliant. Residents have done independent noise testing for two years at their own expense where they have proved that there is infrasound, but no-one seems to want to listen to the truth. There is no-one looking out for us. The Victorian planning department and the Victorian health department take no responsibility for us. The system is broken. It has failed us, all because money and profits are the priority.

My business has suffered as I find it hard to work solidly in my studio for any length of time because of a vibration which feels like an electrical charge running through my body and noise nuisance. My ability to earn a living has diminished. My family no longer enjoy lengthy holidays with me on the farm for fear for their health and their children's health from the damaging infrasound and noise nuisance. I have now become sensitised. After a recent procedure in hospital in Melbourne I experienced the same sensations of vibration, palpitation and tinnitus as I experience at home. I have become permanently damaged through the exposure to infrasound from the Macarthur wind facility.

At my farm, I experience severe adverse health effects such as vibration, heart palpitations, tinnitus, head pressure, headaches, sleep deprivation, anxiety, night sweats, nausea, itchy skin, cramps, and ear, nose and throat pain. Twice now I have experienced horrendous pain in my chest stabbing through to my backbone in between my shoulder blades. I contemplated calling an ambulance both times but could not move to do so because of the severity of the pain. Ten minutes later it had dissipated, leaving me with great stress and anxiety and feeling washed out. All these sensations leave me drained in the morning. I find it very hard to start work that day.

When I make a formal complaint to AGL they respond in the most contemptuous manner, with references from the NHMRC statement saying there is no reliable or consistent evidence that proximity to wind farms or wind farm noise directly causes health effects. The wind industry uses this statement to deny claims of health impacts; therefore, they refuse to do anything about it. Warwick Anderson from the NHMRC admitted in a Senate estimates hearing that there are health impacts from wind farms. What is going on?

AGL's objectionable letter to the doctors at 12 medical clinics in the western district made my blood boil. I had a perfectly healthy, happy and trusting relationship with my doctor before AGL started meddling with my doctor-patient relationship. Many times I spoke to him about my health complaints due to the Macarthur wind facility and he was caring and wanted to help me. But one day during a consultation he turned to me and told me that infrasound will not hurt me and that I will just have to get used to it. I was gobsmacked and could not believe my ears. I asked him where he got his information from. He rifled through some paperwork on his desk and, as he did so, I noticed a letter with an AGL letterhead. I asked him to explain himself. That is when he told me that this information came from AGL, asking doctors to refer patients to the AGL website if they presented themselves with complaints due to the wind farm. This interference is outrageous. AGL have no medical expertise and have no right to interfere in a doctor-patient relationship. In my opinion, it should be a criminal offence to interfere in a doctor's medical assessment of a patient.

We need comprehensive, multidisciplinary research into the health impacts from this noise nuisance. This research has to be carried out in the field and not behind a desk in downtown Melbourne. We need to have the same research carried out at Macarthur wind farm by Stephen Cooper as he did with Cape Bridgewater wind farm, where he found ground-breaking evidence that there is infrasound. I have pleaded with AGL to turn the turbines off at night between 7 pm and 7 am so I can get a good night's sleep, but they simply ignore my pleas and refer me to the NHMRC statement. What a crock! AGL's Glenthompson wind farm is turned off at night because of the health impacts and noise nuisance on residents. Why can AGL not do the same at Macarthur? Lord knows we continually request that, and the answer is still no.

**Mr Pollard:** My name is John Pollard. I am a retired station manager and we live on a lifestyle property of approximately 80 acres. Firstly, I would say that Robin and I find it very difficult to appear here today as a number of our friends have turbines on their land. It is such a serious problem for us and many others that we felt compelled to be heard. Too many people have had to leave their homes. One family near us left their home almost 3½ years ago, and they are here today—Adrian and Helen Lyon.

The wind farm guidelines on health issues of this very serious problem have to be assessed. They will not acknowledge infrasound. I will relate one incident that happened in our home one night. My wife was sleeping in the chair beside me and I was watching television. This is after they had turned the turbines off. She was dead to the world and I was just watching the television. All of a sudden she woke up, completely startled and disorientated, and I was really worried about her because I thought she had had a stroke or something. Eventually she came to her senses and she said the turbines must be on. I said, 'No, they're not. It's 10.30. They turn off at nine o'clock.' I went outside and they were still running. So I thought that next day I would ring AGL. When I was about to ring, they rang me and said, 'I'm sorry, John. We forgot to turn the turbines off last night.' This is before it was computerised.

It really is a problem, and there are people further away from the turbines than us who are badly affected. One property is 3.5 kilometres away and she has got exactly the same symptoms that Rob has. Our property is on the bottom of a volcanic breach and it is the end of the lava flow and the turbines are well above us. Whether there is a seismic effect I would not know, and there have been queries about that. Mr Rapley in New Zealand said that

they are tuning forks on hills. I do not know whether that applies to us, but we are certainly suffering from infrasound very badly.

**Mr Cumming:** I have tabled my opening statement in lieu of time. It just talks about the destructive impact of wind farms on brolgas and raptors and how greenhouse gases are not being abated. If you are happy with that, I would prefer to take the time in questions.

**Mr Staff:** I have lived in Peshurst for the last seven years plus. My wife and myself, after 30 years of living and working in Melbourne, decided that it was time for retirement, and what better part of the world could we retire to but the Southern Grampians. It was beautiful, quiet and rural. Were we wrong! After two years or so of making the big move, or tree change, we found out by accident about a proposal for an industrial wind energy facility of 223 turbines 175 metres tall to be located three kilometres from the edge of our historic property and the Peshurst township. This proposal would adjoin the Macarthur facility. The implications are horrendous.

If I could backtrack, at first I had an open mind about wind farms when we found out about this proposal. However, being a fairly independent minded sort of person, I decided that I would do some of my own research into the whole topic and question. This included visiting some impacted residents at Waubra. I had heard of Waubra but I had never visited. People said to me, 'If you want to find out a little bit about this wind farm, visit these people.' So we did. I was horrified. For the first time, I got up close and personal to a gigantic wind turbine—several of them. I heard the noise. These people were badly impacted—their health. That was the first indication to me that all is not what the proponents say. Secondly, we visited people at Glenthompson—and you have just heard some comments. There were the same repercussions, the same problems, the same impact. Then there was Macarthur. We visited Macarthur and we know people at Macarthur. To all of our quiet questions, our inquiries, the same message came back. Cape Bridgewater was the same. I visited the residents. I know how badly they are impacted. So we packed away a lot of personal experience and meeting people over a period of maybe two years.

So then I decided to get active. I changed from being non-committal and open minded to being anti industrial wind farms—and I am proud to use the word 'anti'. Rather than just complain, I did one or two things. I formed a group. I am president of the Southern Grampians Landscape Guardians. Also I am an active member of the Australian Industrial Wind Turbine Awareness Network—a bit of a mouthful but there is such a group. We estimate that we have over 3,000 members in that network nationally. So it is not just a few people complaining in a few isolated rural areas; this is happening nationally. I am a committee member of the recently formed group in Victoria called Wind Industry Reform Victoria. Also I am a committee member of the Broлга Recovery Group—and that is a whole different situation. The broлга is a threatened species and an iconic bird in the south-west. Wind farms are the natural enemy of brolgas—they leave.

I sometimes have to justify my position to people. Locally, the town is bitterly divided. Families are divided. I do not have to justify my position—I am perfectly comfortable with my position and my knowledge—but I sometimes have to state the obvious facts. When people—and maybe the media—infer that I have connections I have to tell them that I do not receive any funding from the fossil fuel industry, I do not belong to any political party and I do not belong to a religious organisation; all of this is formed from my own contacts, knowledge and travel, including to the previous Senate inquiry in Canberra two or three years ago.

I will not go into the detail of my submission but it is based on my informed view that the whole industrial wind power business is a catastrophe on every level—environmental, social, fiscal and economic. The whole industry is characterised by exaggerated claims and false propaganda put out by the wind industry. I will finish with some comments about planning issues, the full text of which is in my submission. The planning issues are many and varied, and there is a strong case of fraud to be levelled at wind proponents and their paid consultants. If anybody wants clarification about what fraud means, it is easy. Fraud is an individual, a company, an organisation or a business supplying incorrect and misleading information in the pursuit of making a financial gain—and that is the wind industry.

Proponents' consultants are paid large amounts of money to produce reports and assessments with one aim in mind, and that is to ensure that their clients gain a planning permit approval. These same consultants are then retained to make expert witness submissions at planning hearings, such as the VCAT scheme in Victoria. Individual community members making submissions at the panel hearings—and we have attended some in Melbourne—are effectively closed down by lawyers and barristers acting on behalf of the proponents. The common phrase is that you are not regarded as an expert witness. These are people who have lived and worked on their properties in rural areas for ages, and they are told: 'You really don't know what you are talking about; you are not an expert witness.'

Finally, the same misleading and inaccurate assessments by the consultants are then presented to planning and environment ministers and shire councils, with no independent experts appointed to check on the assessments. Shire councils, I believe, sometimes act with vested interests. Their first priority should be the health and wellbeing of their residents and their ratepayers, not to make it easy for wind proponents to gain planning permit approvals. Shire councils can be accused of wilful blindness; you have already heard some comments. Openness, honesty and transparency are a joke, as are shire councils' community consultation processes. They are simply a 'tick the box' exercise run by slick city-based PR organisations acting on behalf of proponents. Thank you.

**Ms Ezard:** My statement is very short. I wish to thank the committee for taking on this important debate. The wind turbines at Cape Bridgewater have impacted on my enjoyment of my area. We are currently trying to sell our property so we can relocate away from the turbines in retirement. At the time the turbines were proposed for the Portland area, there was talk of 5,000 turbines for Victoria, a very small state. Where do you relocate to in order to get away from the impact of turbines? Some people have relocated, only to find another proposal for a wind factory in their new area.

Climate change is spruiked as the reason for the necessity of wind factories; it is said that, if we do not act, we leave a burden on future generations. Wind turbines will also cause a burden, with compromised landscapes even when turbines are decommissioned. Many companies, or wind factories, may no longer exist in 20 to 25 years, so who will be responsible for removing these monstrosities and rehabilitating the landscapes? Advances in technology will also cause the wind industry to become obsolete. Thank you.

**Senator LEYONHJELM:** I have a question for Ann Gardner. I think you said AGL has written to you, saying that you are not to say anything about infrasound.

**Mrs Gardner:** No. I had been complaining about the infrasound and wanting them to carry out testing on our property, because we have our own evidence anyway. They wrote to me—and I have a copy of the letter in my submission—informing me that, should the infrasound testing take place at our property, if this resulted in not breaking the rules or whatever, I had to make a public statement claiming the Macarthur Wind Farm is compliant. Compliance has nothing to do with infrasound anyway. I have the letter.

**Senator LEYONHJELM:** That is in your submission?

**Mrs Gardner:** Yes.

**Senator BACK:** We would like you to table that letter, if you would.

**Senator LEYONHJELM:** You put it in your submission, did you?

**Mrs Gardner:** It is in my submission.

**Senator LEYONHJELM:** I have not got to that bit. There are 330 pages to read for today, and so I haven't got to that.

**Mrs Gardner:** I am sorry about that, but it is in there.

**Senator LEYONHJELM:** It is page 201, is it?

**Mrs Gardner:** It is a copy of the email.

**Senator LEYONHJELM:** Thank you. I have a couple more questions, and then I will give someone else a go. Mr Cumming, in your submission you say that the Loy Yang A power station annual report shows a rising carbon intensity, which is increasing proportionally to the increase in wind turbine output. Why is this so?

**Mr Cumming:** If you look through the annual reports from 2005 report through to about 2013 you will see that carbon intensity has continued to rise. Off the top of my head, it was something like 1.14 tonnes of carbon per megawatt and it is currently running at about 1.35. If you look at all the power stations, you will see where you can get the information—it is very hard to get some of it—and you will see that it is happening across the board, even in Queensland. The Queensland power stations are the same. It is all to do with backing up wind farms and making the grid safe so that it will not blackout. The more wind farms that come on, the higher the backup has to be. In 2005, it was something like 600 megawatts and now it is over 1,000. Nothing has changed in the grid. In fact, demand is less. The reasons for having it should be less. Industry is less. And it is all in line with wind farms coming on line.

**Senator LEYONHJELM:** So you think Loy Yang, Yallourn and Hazelwood burn more coal now than prior to the penetration of wind energy capacity into the grid?

**Mr Cumming:** Very much so. The data for Loy Yang is very clear and very public—much to their horror when I point it out to them. Now they have even changed the way they do their carbon intensity calculation. They have removed a third of the input data to try and make it look smaller, but it is very public for Loy Yang. If you

look at the savings that they have made in thermal efficiency and other in-house savings of performance of the plant and then you look at the coal-led burning, there is a gap for Loy Yang of six million tonnes of coal a year today versus 2005.

**Senator LEYONHJELM:** Did you hear the evidence of Pacific Hydro this morning?

**Mr Cumming:** No. I was not here for that, sorry.

**Senator LEYONHJELM:** They basically put a completely alternative point of view to us on that.

**Mr Cumming:** Did he use Loy Yang's annual reports and public data?

**Senator LEYONHJELM:** He did not provide any data. The view was simply that there was no increase in spinning capacity.

**Mr Cumming:** That is incorrect. You have to look at the documents that the industry runs on. There is a guy called Hugh Saddler, who works for Pitt & Sherry. He does what are called CEDEX reports, ACIL Tasman reports. That is what the industry is always based on. All the emissions, all the RECs—everything—is based on that. It is all reverse calculated. It is all calculated from what power is sold through theoretical thermal efficiency and data. It has a number of errors in it, including a seven per cent error for the Yallourn power station. When I highlighted this to them, they said, yes, they know. It is the closest thing they have got, whereas carbon intensity is actual fuel burnt. You cannot get away from it.

**Senator LEYONHJELM:** Do you think the Clean Energy Regulator's reports of emissions reductions are accurate?

**Mr Cumming:** No, not at all.

**Senator LEYONHJELM:** Why is that?

**Mr Cumming:** Because they are relying on the CEDEX reports and the ACIL Tasman reports and those are all based on reverse calculation. None of it is based on fact. The fact has to come from the actual carbon, the actual fuel burnt—

**Senator LEYONHJELM:** The actual fuel burnt?

**Mr Cumming:** The actual fuel burnt. If you have actual fuel burnt for a half-hour period and then you use the AEMO data for the same half-hour period, you can see exactly what is happening. And this was highlighted in my submission on 4 July 2013, when McArthur, Lake Bonney and another one went off line at the same time. The power was instantly picked up, without a flicker of a light bulb, without down time of any industry. It was picked up by New South Wales and Queensland coal-fired power stations—450 megawatts. That is a massive amount of power. It is bigger than the largest Victorian single generating plant, and it was picked up instantly. The only way they can do that is if they are burning the coal already and venting for steam as backup. None of that is covered in the reports that are used officially by government.

**Senator LEYONHJELM:** Do you have a view on how effectively the Clean Energy Regulator is performing its legislated responsibilities?

**Mr Cumming:** My personal belief is that they cannot perform their responsibilities if they are not using facts. If they are using reverse calculated data estimates, they cannot perform their responsibilities. They have got to get the facts.

**Senator LEYONHJELM:** What would you do? Would you broaden their responsibilities or change the way they calculate what they are supposed to calculate already?

**Mr Cumming:** I would change the rules so that they have to use base data from the entire power industry. That will force the generators to provide the hourly coal feed, gas feed, fuel feed data. At the moment there is no regulation to enforce those companies to provide the data—and it is not in their interests to because it affects how they get paid. If they tell the truth about what they are doing then the investors are not going to allow AGL to buy more wind farms or build more wind farms when AGL owns Loy Yang A. It is the same with the other power stations. They all own wind farms, power stations and coal seam gas. It is in none of their interests to tell the truth.

**Senator LEYONHJELM:** Do you have some data on raptors and brolgas in relation to turbines?

**Mr Cumming:** Yes.

**Senator LEYONHJELM:** Could you quickly summarise that for us?

**Mr Cumming:** Raptors are being killed at an alarming rate by wind turbines. At one of the first Portland plants to start up at Codrington one turbine was killing 11 falcons every two weeks. Turbines in Woolnorth in

Tasmania were killing at such an alarming rate that they were stopped. They come in from outside areas to feed on the dead birds and get killed themselves. AGL Macarthur employed consultants to look at it and they are estimating that the Macarthur wind farm is killing 10 birds per turbine per year, 30 per cent of which are raptors. That is 10 times what their planning permit has said they would do, yet the responsible authorities have done nothing about stopping it, limiting it or making them abide by their permit conditions.

With broilgas you have a separate issue. You have got displacement. Studies have been done in America and Australia that show that the turbines are displacing cranes—and broilgas are a crane—for a distance of up to 14 kilometres but regularly a distance of six kilometres. Since the Macarthur wind farm started—and I try to use all these people's own reports; they are the best thing to use—their reports have said that 45 wetlands were abandoned in the first 12 months, and 25 of them were potential breeding wetlands, and no broilgas have successfully nested within six kilometres of turbines.

Three attempts at nesting were made during the first year of operation when the wind turbines were stopped. I have the whole year's data from the AEMO from Macarthur and from other means through DSE. There were three attempts at nesting and as soon as the turbines hit 30 per cent capacity they abandoned their nests. On the first attempt they stuck it out for a few days, on the second attempt they stuck it out for one day and on the third attempt they did not stick it out—they just took off. That is what the American studies have found. The problem is getting worse over time. The displacement is greater and the time is shorter. They are a disaster for broilgas and raptors.

**Senator LEYONHJELM:** It is the equivalent of habitat loss, is it?

**Mr Cumming:** Yes, it is forcing them out of habitat. For broilgas there is very little habitat left. I am trying to stop RES at Peshurst and Trustpower at Dundonnell. Half of the remaining broilga habitat is going to be destroyed by those two wind farms if they are allowed to go ahead. They have to be stopped.

**Senator CANAVAN:** What would happen if you went out into the backyard and shot a few raptors in Victoria? Are you allowed to do that?

**Mr Cumming:** If you shot a raptor in Victoria it would be a \$5,000 fine and potentially two years in jail. Macarthur's own estimates is they killed 500 in the first year of operation. That is their own estimate and there was no penalty. They are not even told to try to prevent it.

**Senator DAY:** I know we have a veterinarian on our committee here.

**CHAIR:** Two of them.

**Senator DAY:** Are there any veterinarian studies you are aware of into the effects on animals of these wind turbines?

**Mr Rogerson:** None that I am aware of. We actually had one sent to the Werribee research place just out of Melbourne. They did not find any results. They could not pin down what caused anything to the lamb we sent down. He was badly deformed. Like I said in my thing this is the first time we have had deformities and I have been on the farm all of my life.

**Senator DAY:** You are not aware of any studies that have been undertaken?

**Mr Rogerson:** No, none whatsoever.

**Senator BACK:** No chemicals used?

**Mr Rogerson:** No.

**Mr Cumming:** If I can just very briefly jump in there. When touring Gippsland there was a dairy farmer who lost 30 per cent of his dairy calves that were born. When he moved them a distance away from the turbines the following year there were no losses. That is just a very strange possible coincidence.

**Senator LEYONHJELM:** Not exactly strange. I can understand the conception, the low fertility, but it is very hard to equate that with what Mr Rogerson is arguing about with deformities. I cannot think of any reason.

**Senator URQUHART:** Was there any evidence, any veterinary studies, on that one?

**Mr Cumming:** They based it on a study on goats that was done in Thailand, where half of a goat herd died.

**Senator URQUHART:** No, particular to the farm you were talking about.

**Mr Cumming:** No. They based their study on the Thailand one. There was no direct study on it. The Thailand one was a proper study.

**Senator URQUHART:** You were talking about studies in relation to the raptors and cranes.

**Mr Cumming:** In America, it was done by a person called—

**Senator URQUHART:** What about here, in relation to the comments you made about AGL?

**Mr Cumming:** The AGL one was done by consultants paid for by AGL. It was their own report and their own consultant.

**Senator URQUHART:** Can you direct us to that? Maybe not now, if you can provide it on notice.

**Mr Cumming:** I think I sent it as an attachment, and I attached my own analysis of it. Also, there was another study done, for Codrington-Yambuk by Biosis, again paid for by Pacific Hydro, that said the same thing: within five kilometres half of the native bird population had disappeared in the first year and it got worse in the second year and in the third year.

**Senator URQUHART:** Senator Leyonhjelm was asking about your claims that wind farms result in an increase rather than a decrease in greenhouse gas emissions. I think you have also claimed that coal is burnt without generating power as a result of wind turbines, so it is all sort of wrapped up.

**Mr Cumming:** As backup spinning reserve, yes.

**Senator URQUHART:** I understand that you sent a letter recently which was printed in the *Mortlake Dispatch*, the local paper.

**Mr Cumming:** Yes.

**Senator URQUHART:** Is that a regular daily?

**Mr Cumming:** It is a weekly.

**Senator URQUHART:** Is that all around this region?

**Mr Cumming:** It would be Mortlake, Camperdown, that sort of area.

**Senator URQUHART:** So it has a fairly broad reach. I have a letter from AGL who are the owners of Loy Yang A power station, on which you based your claims. It was sent to the *Mortlake Dispatch*. AGL sent this letter to the editor of the newspaper last Friday, as I understand. I am happy to table the letter for the committee. I will take you through it. Referring to the letter you had published in the paper, it says, 'In a letter dated 19th March, Hamish Cumming claimed that wind farms operating in the electricity grid have resulted in an increase rather than a decrease in greenhouse gas emissions from the electricity sector.' That was what was in your letter. Their comment then goes on to say, 'This is completely untrue.' It also states: 'On average, the amount of emissions produced per unit of electricity sold into the network has gone down by over eight per cent since 2006, according to the national greenhouse accounts.' The letter goes on to say that you also claimed: 'Over this period the emissions intensities of coal power stations, including AGL's Loy Yang A power station, have increased substantially because they necessarily burn a lot of coal without generating power so that they can be on standby to back up the intermittent power generated by wind farms.' AGL say in their letter that this also is untrue: 'Over the past six years the emissions intensity of AGL's Loy Yang A power station has not substantially changed. In financial year 2009 it was 1.27 tonnes of greenhouse gas emissions per megawatt-hour of electricity sent into the network. In financial year 2014 it was 1.28 tonnes and the average tonnes of coal burnt to produce each unit of electricity sold also has not changed significantly. Over the same period, wind generation in the network has increased dramatically, with numerous wind farms built in Victoria and other states. If Mr Cumming's claims were true both the emissions intensity and the tonnes of coal burnt per megawatt-hour of power sold would have increased during this period as additional wind power came into the market, but this has simply not occurred.' In light of that information from AGL, would you agree that your arguments have been revealed as being incorrect?

**Mr Cumming:** No, not at all. What AGL are saying there is totally incorrect. I can prove that very easily, and have provided you—

**Senator URQUHART:** Just to clarify, you have put the letter in and they have responded to the paper, and you are saying that what they are saying is wrong—

**Mr Cumming:** Correct.

**Senator URQUHART:** that they are actually lying.

**Mr Cumming:** Correct, as they did when we put in the paper their report that they refused to give us for several weeks about the brologas and raptors. They said that I was wrong as well, but it was their report I was quoting. It is the same now. I am quoting AGL's annual report and Loy Yang A's annual reports for 10 years. The data I am quoting is out of their annual reports. They have not said there that for last year's figure, which has gone from 1.35 down to 1.29, they have changed the calculation of carbon intensity to reflect that. They have not gone back and changed the calculation for the last 10 years to show that the graph has gone up. In my submission there

is a graph, which I did not create. It is their graph out of their own annual report that they put on the Australian Stock Exchange. They cannot argue with that.

**Senator URQUHART:** I am not arguing; I am just trying to get the facts, that is all.

**Mr Cumming:** The facts are that they are lying through their teeth.

**Senator URQUHART:** So, basically, what you are saying is that they are lying.

**Senator BACK:** To assist the committee—this is very important point—was that a letter to you, Senator Urquhart?

**Senator URQUHART:** It was a letter to the editor.

**Senator BACK:** I ask, through the chair, Mr Cumming if you would be kind enough, when you have seen the text of the AGL letter, to respond to the secretariat and explain to the committee through the secretariat where you believe AGL's response to your correspondence is wrong so that the committee can understand completely.

**Mr Cumming:** I will not see that until Thursday unless you give it to me.

**Senator URQUHART:** The secretariat might be able to get copies. I will table it with the secretariat.

**Mr Cumming:** It will not be published in the paper until Thursday.

**Senator BACK:** We do not need it in five minutes; we just need to get your response to it.

**Mr Cumming:** And the community will also get my response in next week's paper!

**Senator URQUHART:** Mr Staff, you said you are anti-wind and proud of it. I think those were your words.

**Mr Staff:** I said 'industrial wind'.

**Senator URQUHART:** Industrial wind, sorry. I understand that one of the most prominent anti-wind campaigns in Australia seems to be the website [stopthesethings.com](http://stopthesethings.com), which proudly states:

We're not here to debate the wind industry—we're here to destroy it.

The site has also been known to use abusive language and to attack individuals who support wind. I could not find any contact information from the owners of the site on any of its pages. The contact details were also removed from a domain name own research. Did you know about the site I am referring to?

**Mr Staff:** STT? No. There must be some very committed, knowledgeable people who put that together. I am not involved with it and do not do not know of anybody who is, but they have access to a lot of factual information, including from overseas. They tend to put over their point of view in a tongue-in-cheek, rather cynical way in order to make a point. It is very well researched. I have no idea who is behind STT.

**Senator URQUHART:** In 2013, there was an anti-wind rally at Parliament House. You were interviewed by the ABC is the co-organiser of the stopthesethings anti-wind rally.

**Mr Staff:** Excuse me? The ABC said I was the co-author?

**Senator URQUHART:** You were interviewed by the ABC as the co-organiser of the stopthesethings anti-wind rally. That is not correct?

**Mr Staff:** Wrong! I never said that. They never asked me that. It is completely wrong.

**Senator URQUHART:** Were you interviewed by the ABC at that stage about the rally?

**Mr Staff:** I was asked some questions, but not whether I was an organiser.

**Senator URQUHART:** But you were interviewed by the ABC at the time?

**Mr Staff:** Can I tell you what the ABC said?

**Senator URQUHART:** Certainly.

**Mr Staff:** They said, 'Mr Staff, it appears to us that you,' meaning the large group of protesters who were there in front of Parliament House, 'have reached critical mass,' which in media speak means you can no longer be ignored—your group, supporters, the people. It was nothing to do with STT.

**Senator URQUHART:** I am happy to throw this open to anybody else who feels like they want to have a say: some of you have mentioned in your statements, and in your submissions as well, that you are genuinely concerned about the health impacts of wind farms, and I think we have heard from a number of you today outlining that. A 2011 article in the *Medical Journal of Australia*, by four Australian doctors, cited studies showing that the risk of premature death for people living within 30 miles of coal-burning power plants is three to four times that of people living at a greater distance. In that context, I would be interested in whether you would be more concerned about living near a coal plant than a wind plant.

**Mr Cumming:** What about solar? What is wrong with solar? We do not need to do wind turbines. What is wrong with thermal molten salt solar, which is baseload, does work, does not displace broilgas, does reduce greenhouse gas and does not make people sick? Why not use that? Why are we entertaining the idea of trying to keep something supported and alive that has so many things against when there are technologies there that do work and do not have these issues?

**Senator URQUHART:** Anybody else?

**Mr Staff:** Could I just add that all of the pictures and the visuals that ABC in particular like to throw up on their news items showing coal fired power stations have cooling towers—everybody knows the cooling towers—and all the apparent smoke and pollution billowing out. It is not pollution; it is water vapour. But there are certain people—political parties and others—with vested interests in trying to indicate that that is actual pollution coming out of those cooling towers. It is not; it is water vapour.

**Senator URQUHART:** I just want to go the issue of birds and bats. I think, Mr Cumming, you outlined this in some of your answers. There was a 2007 study by the government of South Australia—I am not sure whether you are aware of that—that showed that one domestic cat kills more birds in a year than one wind turbine.

**Mr Cumming:** Next time I see a cat take down an eagle or a broilga, I will let you know.

**Senator URQUHART:** That is a very good point. I am just wondering whether you are aware of that report.

**Mr Cumming:** I am also aware of a report that says more birds fly into windows in Melbourne as well, but they are talking about sparrows, starlings and other small birds, not iconic birds that are protected and carry a \$5,000 fine; if you killed one, you would be charged \$5,000.

**Senator URQUHART:** Yes, that is what the 2007 report is referring to, not the bigger birds. I am just trying to get to the bottom of what you are referencing in terms of the big birds versus the other birds.

**Mr Cumming:** It is not relevant to wind turbines.

**Senator URQUHART:** I think I will leave mine there and give someone else a go. I might come back if I have some time.

**Senator BACK:** Mrs Gardner, we cannot find the correspondence, so would you be kind enough to provide the correspondence.

**Senator CANAVAN:** Sorry, we have. It is being sent through.

**Senator BACK:** No worries. Okay. Mr Rogerson, I will be interested—and Senator Leyonhjelm might also be interested—in whether we can actually see some records going back over time of lambing percentages et cetera in different paddocks. We cannot advance it here, but I would be interested to have a look at that.

**Mr Rogerson:** Yes, no worries.

**Senator BACK:** I have actually never spoken at all publicly about any issues associated with animals but, because I am a veterinarian, I suppose advice has come to me over time from France, Italy and other places of foetal abnormalities in different species, including a well-documented case in thoroughbred foals. I do not want to spend the time here, but I am just saying to you I am interested, and I am sure other colleagues would be.

Mr Cumming, the net greenhouse gas beneficial effect of industrial wind turbines has often been discussed, when you take into account the manufacturing of the steel and obviously the engineering work associated with the fabrication of the steel, the concrete that is poured et cetera. Do you have any advice for the committee as to what length of time—in terms of days, weeks, months or years—an industrial turbine would have to operate for before you would reverse that greenhouse gas negative from its construction and actually start seeing some benefit to the environment? Are these figures, or estimates, available?

**Mr Cumming:** I did a study some years ago now for a planning panel regarding this sort of thing. I used as much information as I could glean for the construction, maintenance and other associated greenhouse gas costs for the wind farm. I then used their manufacturer's up time of the 30 per cent generation. I was then very conservative in favour of the wind farm company's backup requirements. I used gas fired power stations. I used open cycle power stations, the most cost effective for the wind farm, making it look good for them as much as I could, so to speak. It came out with a 20-year life return payback of greenhouse gas.

**Senator BACK:** Could you explain what you mean by 20-year return?

**Mr Cumming:** It would mean it would take the wind farm 20 years running 30 per cent of its time generating into the grid to pay back those emissions.

**Senator BACK:** Before it would get back to equality.

**Mr Cumming:** That is right.

**Senator BACK:** Before it would start making a beneficial effect.

**Mr Cumming:** Yes. Without any major catastrophic bearing failure or anything like that, it would take 20 years. The industry claims four or five months, and I question those numbers quite seriously.

**Senator BACK:** You have also been quoted at different times—and even in today's discussion you have been giving us the benefit of your advice—in terms of calculations, real versus apparent, et cetera. Can you tell us what data is needed from power stations to accurately determine what greenhouse gas impact wind farms are having on the grid? I am only talking about grid based industrial wind turbines now. I am not talking about those standing apart from the grid.

**Mr Cumming:** If they were genuine in wanting to show how good they were they would have provided this already. What you need to do it accurately is at least hourly actual fuel feed generation data—and preferably five minute, because AEMO data is every five minutes for generation and sales—from each of the power stations. Then you could crossmatch that against the AEMO's data and you would see instantly who is burning coal and not producing power, if they are venting steam to the atmosphere waiting to back up, if they are spinning in reserve, if they are shut down, You will see that instantly. At the moment, the companies are not willing to give that willingly because it highlights too many problems on their side.

**Senator BACK:** A core concern of this committee, given the fact that we represent, at the federal level, expenditure by taxpayers, is that all these other issues, as I said earlier in the day, are interesting, but they are constitutionally the role of the states and territories and, through them, local government. But where this body—and where the Senate—has a direct involvement is in defending and justifying to taxpayers where their money is being spent. In view of the Clean Energy Regulator and renewable energy certificates, which the Clean Energy Regulator has responsibility for, what is the basis upon which the companies running industrial wind turbines should be, in your view, paid the renewable energy certificates?

**Mr Cumming:** In my view, if you have a transparent view of the entire grid and the inputs to the grid, the wind farm companies should only be paid for a net reduction of greenhouse gas. At the moment they have got open slather. Whatever they put into the grid is accepted, and coal is put offline. There is no saving in that. If it was a net saving then companies like AGL would think twice about burning an extra 6 million tonnes of coal to back it up, because there is no net gain for them between their wind farms and their power station if they have to declare that.

**Senator BACK:** If I am wrong my committee member colleagues will tell me, but I understood Mr Richards to say that the Australian Energy Market Operator, the AEMO, can predict out, with a high degree of accuracy—as in the high 90s percentage accuracy—some time into the future what the contribution will be from a wind farm. Therefore, the AEMO can make adjustments. In your view, is that correct?

**Mr Cumming:** In my view, it is bordering on some correctness. Yes, they can say, 'We expect the demand to be this. We expect the power stations to do that. We expect the wind to be available for this period of time.' But it cannot predict accurately enough how much capacity the turbines are going to generate, because they will not generate under 40 kilometres per hour and they will not generate over 90 kilometres per hour. Do not quote me on that, but there is a band where their generation is not efficient. They are relying on Bureau of Meteorology weather forecasts, wind directions and other things to come up with that number. If that was the case and it was able to predicted, on 4 July 2013, when Macarthur and so on went off line, it was a fault. When they went off line, there should have been a blackout because, if they were predicting and running the grid in such a finetuned way as was claimed—

**Senator BACK:** It was a sudden fault, was it?

**Mr Cumming:** It was an unplanned fall off the line. They lost an interconnector—

**Senator BACK:** Without advance notice?

**Mr Cumming:** Yes, 450 megawatts fell off the line and was picked up from Queensland and New South Wales. If that was, supposedly, such a super finetuned grid and they were predicting all this, you would have had a blackout then, and we did not have a blackout. For those power stations to be able to deliver, you are talking coal fired power stations that take eight hours to ramp up from zero to full capacity. They can do about 10 to 15 per cent in half an hour; they cannot instantly respond in less than a second unless that power was available—

**Senator BACK:** Whereas, by contrast, would it be your argument that solar—and certainly those who promote wave energy can say that they can tell with a high degree of accuracy 48 to 72 hours out what the wave action is going to be and the amplitude of the waves—is an equivalent? Can people predict with a high degree of accuracy what it is going to be like on Wednesday afternoon in the peak demand time on the Melbourne-Sydney-Hobart-Brisbane grid?

**Mr Cumming:** You are talking about two different sorts of solar here: one is the household—

**Senator BACK:** I am talking about the large-scale; not the household.

**Mr Cumming:** With large-scale molten salt solar, yes, you can predict it well because their ability to store molten salt means that they can have a capacity of X megawatts up their sleeve ready to flash water onto the heat exchanger to produce steam. So the prediction ability is great, but the responsibility is even greater. It is almost like having your own little nuclear power plant running off the sun.

**Senator BACK:** And hydroelectricity, again, has the same degree of predictive accuracy.

**Mr Cumming:** Yes. I have been arguing with the Victorian government for 10 years now that we should be using the backup coal that is being wasted and the wind off-peak that is being sold for 1c a megawatt hour because no-one wants it in the middle of the night. We should be pumping the water back up the mountain—the hydro. We have the technology and the ability; they do it in other countries. The Victorian government will not entertain that at all.

**Mr Staff:** If I could make one comment which I think is really pertinent with Mr Cumming's comments, these are our official figures. I think behind many of the questions and comments today is: just how efficient are industrial wind farms? These official figures are produced from the National Electricity Market board. Figures as of Saturday in Victoria for electricity generation in Victoria by category are very pertinent. For brown coal, which is obviously in the Latrobe Valley, Yallourn, capacity produced generation for Saturday was 5,714 megawatts. This is one day: Saturday just passed. Next is gas, which was 30 megawatts. Hydro was 245 megawatts. Wind was 29 megawatts. These are official figures. Large solar capacity was zero. The smaller solar capacity, which is obviously rooftop panels, was 194 megawatts. That is the total electricity generated in Victoria last Saturday.

**Senator BACK:** Large solar was zero?

**Mr Staff:** Large solar was zero.

**Senator CANAVAN:** Ms Ezard, I believe in your submission you raise the issue of the impact on land values or your ability to sell your property. Would you expand a little on your experience of the impact of wind turbines in that regard.

**Ms Ezard:** We have had the property on the market for four years. A lot more people have come in. Not long ago one came all the way from Western Australia to have a look at the property, and she was very upset when she got there and saw the wind turbines and with the fact that we had not mentioned that there were wind turbines in the area. It was just a wasted trip, as far as she was concerned. We also had the issue of using an agent in Melbourne. He was trying to sell the property for us and he brought the issue up with a client. He said: 'There are wind turbines in that area. If the client is prepared to drop the price down, we'll negotiate from a lower figure'—which means downwards again. So it is definitely having an impact.

**Mr Pollard:** We are in a similar position. We have 80 acres and we have wind turbines beside us. We have been devalued. If anybody wanted to buy our place, we would have to say, 'You could be impacted by the turbines.' Some people are affected and some are not—you know, Rob is badly affected but I am not so badly affected. You just have to explain to them that there could be an impact.

**Senator CANAVAN:** You are not going to know until you live there, of course, and it is too late then. Have you estimated a figure for the devaluation?

**Mr Pollard:** It has been quoted as 30 to 40 per cent. I do not know whether that is a figure that has been bandied around a lot and how true it would be.

**Senator CANAVAN:** Is anyone aware of sales that have occurred post wind turbine construction that might give a market valuation?

**Mr Pollard:** Not really, no.

**Senator CANAVAN:** You can't properly say?

**Mr Pollard:** No.

**Senator URQUHART:** Has there been any valuation done since then?

**Mr Staff:** A study is being done at the moment by the University of Melbourne. Two or three people visited the Penshurst-Macarthur area 18 months ago and they were specifically studying the possible impact on rural property values—related obviously to wind turbine facilities. I have not heard the result of that report. It was sponsored by the University of Melbourne.

**Senator CANAVAN:** It was done by the University of Melbourne or by some researchers there?

**Mr Staff:** Researchers from the University of Melbourne.

**Senator CANAVAN:** If you can provide any more detail on that to the committee it might be worthwhile.

**Senator URQUHART:** Do you know who the researchers were?

**Mr Staff:** I have the names and I can supply them.

**Senator URQUHART:** That would be great. Ms Ezard, you spoke about the real estate agent. Have you had a property valuation done?

**Ms Ezard:** Not personally, but the council has had one done. According to the council, our property value has actually gone up.

**Senator URQUHART:** I do not know how it works in Victoria. Is that a government valuation? Government valuers come around every couple of years and do that. Is that what they are basing that on?

**Ms Ezard:** Yes.

**Senator CANAVAN:** Presumably those valuations are for a broad area, not for individual properties.

**Ms Ezard:** They apparently drive around and value each individual property.

**Senator CANAVAN:** I have a couple more questions for the Rogersons. Senator Day was asking about the lambing percentages. Senator Back, you have already asked for more detail on that.

**Senator BACK:** I have.

**Senator CANAVAN:** Mr Rogerson, have you had any more discussions with AGL? Is that the company you are impacted by?

**Mr Rogerson:** Yes.

**Mrs Rogerson:** They took videos of the lamb.

**Senator CANAVAN:** Have you broached the topic of compensation for the impact on your business?

**Mr Rogerson:** No.

**Senator CANAVAN:** You have not had any discussions about it at all? They do not accept there is a direct link between the turbines and the lambing percentage?

**Mrs Rogerson:** No, they do not. But they still have the video; they actually took it themselves.

**Senator CANAVAN:** What is it a video of?

**Mrs Rogerson:** Of the deformed lambs.

**Senator CANAVAN:** Can I just clarify this. In your view, there is an impact on percentages as well as the deformities?

**Mr Rogerson:** Yes.

**Senator CANAVAN:** Can you give us a ballpark figure on the percentages? Is that lambing percentage just straight births regardless of whether they are deformed?

**Mrs Rogerson:** Regardless of deformities.

**Senator CANAVAN:** That has reduced? And after you have taken account of that reduction there is also the impact on lambs not being able to live?

**Mr Rogerson:** We take our percentages from when we mark the lamb.

**Senator BACK:** And these are paddocks that you have used over the years?

**Mr Rogerson:** Yes, that is right.

**Senator BACK:** You have not suddenly changed and put the lambing ewe flock over there under the wind turbines?

**Mr Rogerson:** No, that is right. What we have to do now is: we have to take our flock, our lambing ewes, away from that area and put them in another part of the property. And that is what we have tried to do.

**Senator CANAVAN:** And Mrs Gardner, you had a similar—

**Mrs Gardner:** We have had the same experience. In the paddock of ours, which is 90 metres from a turbine, where we had always lambed 85 per cent, we had between five per cent and seven per cent the first year of operation. Needless to say, we do not lamb in that paddock anymore.

**Senator BACK:** Down by five or seven?

**Mrs Gardner:** No, no; it was only five per cent.

**Senator BACK:** Lambs marked?

**Mrs Gardner:** Absolutely. I was talking to a neighbour on the other side of the wind farm and he said, 'Hey—that's exactly the same as happened to me.' He had less than 10 per cent. But of course there is no control. We are not going to keep lambing in that paddock, because it was such an enormous financial loss that we have just abandoned that paddock for lambing.

**Senator CANAVAN:** I think you are saying you have moved your lambing operation.

**Mrs Gardner:** Yes.

**Senator CANAVAN:** What sort of buffer zone do you think that it has an impact over?

**Mrs Gardner:** I do not know. It is a bit hard to tell, because we do not know. There are other factors for our other lambing or whatever.

**Senator CANAVAN:** So you have moved the lambs. Where are they now? How far away are they now—the lambing ewes?

**Mrs Gardner:** One or two paddocks over, and there is nowhere near the impact of that. That was just unbelievable.

**Senator CANAVAN:** So you are getting good lambing percentages—

**Mrs Gardner:** Yes—the same as normal; up and down 10 per cent a year.

**Senator CANAVAN:** So a couple of paddocks over, but you were saying that 90 metres was the proximity?

**Mrs Gardner:** Yes. I cannot even go into that paddock; the noise, the vibration—just the roar—

**Senator CANAVAN:** But you were not hosting the turbines then at 90 metres; they were just that close, on someone else's property?

**Mrs Gardner:** They are right next to our fence. If they fell over they would fall into our property. We were told by AGL that the closest turbine to our fence would be 130 metres and now it is 90, if not fewer, metres.

**Senator CANAVAN:** And likewise, Mrs Gardner, you are not offered compensation at all for that impact?

**Mrs Gardner:** No. AGL denied anything, totally.

**Senator CANAVAN:** Can I ask a broader question that is related to that. Has anyone here spoken to lawyers or legal firms about the impact? I would be interested to hear. Anyone can comment, but I will go to Mr Staff to start with.

**Mr Staff:** Our group, the Southern Grampians Landscape Guardians group, and its supporters retained the services of a lawyer and barrister some two years ago. They sent—can I call it this—a warning letter to landholders south of us where the proposed turbines would go—'proposed'—and essentially it was a warning letter to say that there was a danger that they could be sued under that small but very important word 'nuisance' if they caused noise and problems to a neighbour who has not signed up. That is law. That is legal. Every person has a legal right to live in peace and quiet in their own home.

**Mrs Gardner:** Thirty families around the Macarthur wind farm also employed, several years ago, a barrister and solicitor to represent them.

**Senator CANAVAN:** Can I ask what the status of these engagements is at the moment? Is there court action that you—

**Mrs Gardner:** Not as yet, because none of us can afford it. And we are fighting AGL, probably the most powerful and wealthy power company in Australia. Everything we say they deny. The media will not put our case over. It is David and Goliath, and Goliath at this stage, particularly with the media, has precedence over the people, who are literally just collateral damage. It is ongoing.

**Mr Rogerson:** Just going back to the bit in this paper that I read out to you about our dogs: we have been compensated for the dogs. They did shift our dog kennels from our woolshed—they were up there all the time—to our house. As I said, the woolshed is 1.7 kilometres away and the house is 2.5 kilometres away. That cost AGL \$20,000.

**Senator CANAVAN:** What did they do? Was it compensation or was it being paid for something?

**Mr Rogerson:** No, it paid for something—to shift the dog kennels. They relocated the dog kennels, for 20 grand.

**Senator CANAVAN:** Have there been other examples where AGL have, if you like, admitted an issue?

**Mr Rogerson:** There is a house being done not far from us, on the northern edge of the wind farm at Oaklands Hill. That was double-glazed.

**Senator CANAVAN:** In the same vein, I was interested in the operation at night. I think, Mrs Pollard, you might have mentioned they had switched them off at night. Why did they do that? Did they accept at the time that there were issues with running them at night?

**Mrs Pollard:** We just found it impossible, and we appealed to them.

**Senator CANAVAN:** Did they accept that there was an issue?

**Mrs Pollard:** Yes, they did.

**Mr Pollard:** They did testing out in our paddock, and they said there was a tonality problem. They were blaming the gearboxes and, as we said, they put dampeners on the gearboxes. They did that over at Hallett with no effect at all. They came one Sunday morning with their computer and showed us what was happening on the thing. I think they did realise there was a problem there, but they could not put their finger on it, so they kindly turned the turbines off each night for us. That lasted for three years, which we were very grateful for. Otherwise it would have been absolute hell to stay there.

**Senator CANAVAN:** But they are back on now.

**Mr Pollard:** They are on now. When there is wind on the hill and it is calm where we are, that is when we get the worst effect. If it is blowing a gale, it does not worry you so much, but, if the turbines are turning on the hill and it is calm where our house is, that is when the infrasound is at its worst. They are east of us, so an easterly wind would make it worse, but with other directions you feel it. Rob feels it too. If there is a gale blowing, it does not affect us all that much.

**Senator LEYONHJELM:** Could I ask a follow-up to that. On this issue about the tonality, were you able to identify yourself what they thought was a tonality issue?

**Mr Pollard:** No, we could not. They had it on the computer, and I could not identify it.

**Senator LEYONHJELM:** Did you try to compare what you felt with what they were finding?

**Mrs Pollard:** There was no correlation.

**Mr Pollard:** No correlation. Robin is affected badly. I can hear them, but I do not feel them. Rob feels them but cannot hear them, but I can hear it; it sounds like a train coming over the hill.

**Mrs Pollard:** It is pressure to the body, the temples and the ears and down my spine. But we were tested three years ago by Steven Cooper.

**Mr Pollard:** Steven Cooper tested our house three years ago, yes.

**Senator LEYONHJELM:** Has there been any attempt to compare what he found with what AGL conceded was a tonality issue?

**Mr Pollard:** I do not know. I do not think so.

**Mrs Pollard:** No.

**Senator LEYONHJELM:** You are not aware of anything? Okay, thank you.

**Senator URQUHART:** Mrs Pollard, have you sought medical treatment and advice about what is happening with you?

**Mrs Pollard:** Absolutely, with an ENT specialist. Yes.

**Senator URQUHART:** What are they saying is the cause of your problem?

**Mrs Pollard:** They agree that there is a problem with infrasound and it is very serious.

**Senator URQUHART:** So that is your ear, nose and throat specialist?

**Mrs Pollard:** Yes.

**Senator URQUHART:** Do you have a report or something that verifies that?

**Mrs Pollard:** No, I have not.

**CHAIR:** Mrs Gardner, I was just going through this letter from AGL that you tabled with the committee, where they say, in response to your comments on infrasound, that there have been multiple scientific, thorough, peer-reviewed studies on wind farm noise that have found that infrasound from wind farms is not problematic. It goes on to say, 'AGL will soon be publishing the results of its own infrasound studies at the Macarthur Wind Farm, which we will send to you.' This letter is dated 20 June 2013. Have you received a copy of the infrasound studies that they said here that they would be sending to you?

**Mrs Gardner:** I am not sure, actually. I possibly have. I would have to check on that.

**CHAIR:** Would it be possible for you to take on notice and, if you have received a copy of this infrasound study that AGL claimed to be doing, for you to provide the committee with a copy of that infrasound report?

**Mrs Gardner:** I am sure it was just their general infrasound report that was released.

**Senator LEYONHJELM:** It says that is a result of its own infrasound studies at Macarthur Wind Farm. I was thinking that it was probably another thing in the submission which I had missed. But, if you cannot think of it, then perhaps it was not. If you have it, that would be interesting to see.

**Mrs Gardner:** I will see. Whether I was sent it personally, I am not sure.

**Senator LEYONHJELM:** Yes, exactly.

**Mrs Gardner:** I am sorry. I cannot quite remember that one.

**CHAIR:** Ladies and gentlemen, with your experience with the wind farm operators in your areas and the complaints procedure that you are asked to follow with them, how would you rate that and the wind farm proponents' response to you?

**Mrs Gardner:** I would say it is absolutely appalling. It is total denial, as I said in my statement. All they do is respond to us giving that one particular pet phrase, which I think the whole wind industry uses, of the NHMRC statement saying there is no consistent and reliable evidence of health impacts due to proximity of wind turbines. Then they quote—and I could read this to you:

Thank you for your email recorded on our database. Your reference number is ... The health and wellbeing of the communities in which we operate remains a priority for AGL. To date we have carried out extensive noise monitoring at various locations around the wind farm. Over 40,000 hours of data has been captured, well above our permit obligations. All the information from our noise monitoring program shows that the wind farm remains compliant with the noise levels outlined in the planning permit. Independent infrasound monitoring also confirms that there has been no change in infrasound levels from before the turbines started to current operations today. In February 2014 Australia's medical and scientific research body, the National Health and Medical Research Council, published a study titled—

And this is in blue—

*Evidence on Wind Farms and Human Health*, which concludes 'there is no reliable or consistent evidence that proximity to wind farms or wind farm noise directly causes health effects.'

Again in blue—

The Australian Medical Association has concluded that 'the infrasound and low-frequency sound generated by modern wind farms in Australia is well below the level where known health effects occur.' The Victorian department of health have also released a report on wind turbines and infrasound which can be found here. ... The South Australian Environmental Protection Agency has also released a report on wind turbines and infrasound which can be found here. ... We encourage you to seek medical attention for any health-related matters.

Regards

Community Engagement Manager.

That is the response we receive every single time we put in a report, a complaint, as from 2014 when the NHMRC report came out. Prior to that, they were a little different, depending on what studies were out, but this is what we get every single time.

**CHAIR:** The monitoring that AGL referred you to that they say they are continuing—I think you said it was 40,000 hours.

**Mrs Gardner:** Yes, at two homes. Two homes apparently, neither of whom had complained of any health impacts as far as I am aware.

**CHAIR:** Do you know if the research that they have conducted is publicly available for public scrutiny?

**Mrs Hetherington:** I asked them to send me that report, and they declined.

**Senator BACK:** Perhaps the committee might ask for it. As a follow on, Mrs Gardner, I refer to the letter from Ms Frances Duffy of June 2013. Did you comply with the requirements that AGL had?

**Mrs Gardner:** No, we did not.

**Senator BACK:** I imagine you did not.

**Mrs Gardner:** We did not proceed at all. That was just appalling.

**Senator CANAVAN:** That was just to clarify and put on the record that that request was to require a public statement from yourself to say that AGL were compliant with existing standards.

**Mrs Gardner:** Yes, because I am the one who has been complaining. I had to get out there and make it.

**Senator BACK:** Had it gone ahead, regardless of what the outcome of the infrasound testing would have been, this document still required you to make a public statement to acknowledge that compliance with the standards required by the permit have been established?

**Mrs Gardner:** Correct.

**Senator BACK:** Regardless of what the outcome of the infrasound might have been, because the infrasound did not form part of the original compliance requirement.

**Mrs Gardner:** It is not part of the planning permit obligations.

**Mr Staff:** On the point of complaints, I attended in Canberra the Senate Community Affairs References Committee on the Social and Economic Impacts of Rural Wind Farms. Recommendation 2 was:

The Committee recommends that the responsible authorities should ensure that complaints are dealt with expeditiously and that the complaints processes should involve an independent arbitrator. State and local government agencies responsible for ensuring compliance with planning permissions should be adequately resourced for this activity

My comment is: I do not believe anything is happened.

**Mr Pollard:** Your previous question was about AGL; we had numerous meetings with AGL. They have come to see us. We have always been polite to them but we have had quite a few aggressive meetings. The second last meeting we had with them, she was very rude to Rob and upset Rob for about a month afterwards. The next time she came she apologised. I am in my 80s. We are too old for that sort of treatment. We are past that. We just want to live quietly on our block and do not need that sort of thing.

**Ms Ezard:** Can I table this for the committee? It is the latest response from Pacific Hydro when we requested a guarantee that wind farms do not cause health impacts, a guarantee that there is no devaluation of property as a result of the wind farm and a response to Pacific Hydro regarding trees that were removed from our property.

**CHAIR:** Thank you for your submissions today.

**Mr Cumming:** Cranes and brolgas do not have any land values to worry about. They are not nimbys and have no vested interests but they cannot live next to a wind farm. In America the crane studies showed that within two kilometres of a wind farm, when they fed cranes to see the reaction, they could not eat enough food as was needed to offset the stress they were under. They lost weight and in some cases were deemed to be about to die. A crane has no vested interests. When these people say they cannot live there, I would tend to believe them—when you see what the cranes do.

**CHAIR:** Thank you for appearing today.

**BARRETT, Mr Wayne, Private capacity**

**BOATMAN, Mr Bernard, Private capacity**

**DARBYSHIRE, Mrs Helen, Private capacity**

**MACONACHIE, Mr Graeme, Private capacity**

**OFFICER, Mr Hamish, Private capacity**

[15:10]

**CHAIR:** Welcome. Information on parliamentary privilege and the protection of witnesses and evidence has been provided to you and copies are available from the secretariat. I will invite each of you to make a short opening presentation, and at the conclusion of your remarks I will invite members of the committee to put questions to you. Please feel free to make a brief opening statement on the capacity in which you appear.

**Mr Maconachie:** I live 800 metres from the Challicum Hills Wind Farm. I want to discuss this business about noise. People seem to be giving you senators an impression that there is a constant noise emitting from the wind farms, and it is just not true. The only time that you actually hear the turbines is when the wind is blowing at a certain velocity directly through them, directly to where you are. I keep a diary, and because of the controversy about noise I decided a couple of years ago to write in the corner of my diary every day when I could actually hear the wind farms in operation from my front lawn. I put only 28 days in my diary for the whole year when I could hear the Challicum Hills Wind Farm from 800 metres away. That is an interesting thought in itself.

The other thing is the misnomer about how wind farms kill hundreds and hundreds of birds. I have an eagle's nest not 300 metres from a wind turbine on the wind farm. The eagles have been using that nest all my life, and I am 64 years old. The wind farm has been in operation for 12 years. The eagles have not stopped nesting in that nest and there is no evidence of them being scared in any way, shape or form of the operation of the wind farm. They are nesting there at the moment.

**Senator CANAVAN:** Can I just clarify which wind farm.

**Mr Maconachie:** The Challicum Hills Wind Farm. I also have a Kelpie stud and a quarter horse stud and I lamb down 2,000 merinos on my place. None of the ewes would be further than a kilometre way from the wind farm. I mark between 98 and 95 per cent lambs every year. In relation to my quarter horse stud, all the mares foal every year. I have no abnormalities in the foals whatsoever. Everything goes along quite normally. When I go up to where the wind towers are in operation, I often see sheep sleeping underneath the wind towers with absolutely no regard to any of the noise created or anything. They have plenty of shelter elsewhere on the property. There are plenty of trees for them to sleep under or whatever, but quite often they seem to choose to sleep underneath the towers.

**Senator BACK:** What is the size of the Challicum Hills towers? We understand from the Ararat rural city that there are 35 turbines, but can you tell us the size of the actual turbines?

**Mr Machonachie:** They are 70 metres high.

**Senator BACK:** Do you know what their capacity is?

**Mr Machonachie:** 1.5 megawatts. I was also disappointed in the fire brigade, who you were talking to before lunch. There is one very important thing that the erection of a wind farm on my property has done. If there is a fire up in my hills I reckon it would take fire trucks—and they would have to be good four-wheel drive fire trucks—at least an hour to access that fire. Now there is a magnificent track linking the wind farm—it comes right off the Geelong Road—and you can get a fire truck in there in about 10 minutes. Also, because it is right along the top of the hills, it makes a fantastic firebreak. Farmers all realise that fires burn rapidly uphill and slowly downhill, so if the fire was coming from the north and hit the wind farm track I think it would probably effectively put the fire out anyway. So they have a double whammy there: it increases the access and it is a fantastic firebreak. That is about all I have to say.

**CHAIR:** Would anybody else like to make a brief opening statement?

**Mr Barrett:** I am a local businessperson. I own several businesses, including a real estate business. I have been in business since 1980 in Portland. My submission is not really to do with all the things that go with wind farms—labour markets, pollution and medical or mental health issues—I am simply here to put the view that currently renewable energy is one of the few opportunities some of our rural communities have to generate real ongoing jobs. The reason I was asked and spoke before about my support of wind farms in Australia or renewable

energy is that I am quite concerned about the idea that we will somehow make our fortune, if you like, by driving raw materials to the wharf.

We employ about a dozen people in our couple of businesses and that is far less than we did in the 1980s and 1990s, because of the current financial circumstances. My future looks quite well. We have lived through some very prosperous times and I am well placed to retire, although that is not likely to happen any time soon. I am concerned about the impact that this will have on our community and the Glenelg shire in particular if these jobs in the wind industry or the renewable energy industry are not supported. Various governments and politicians have great regard for rural communities but we need support so young people can get jobs. That is where I am coming from.

I am a real estate agent and people from the cities in particular show real interest in rural communities. They are looking for cheap housing. We have promoted Portland and the region through the regional living expo. To get a balance of people in our community—that is, all ages and families—we need jobs. The first thing that they will ask me in Melbourne when we are at the Regional Victoria Living Expo is what jobs are available. If they have got kids, it is what education facilities are there and what prospects are there for work. One of the best businesses in town at the moment—and I thank god it is there—is driving trucks. That is carting raw materials to the wharf and shipping them overseas for us to buy back. It is just as well that we have that as a major business in town, and I am really pleased that it is there. But, for the young people who were looking to go to the mines in Western Australia and Queensland, a lot of that work is gone now. Every time we seem to look for more efficient ways of doing things, it is at the expense of jobs. All I am asking is that that factor is taken into account when you are considering it, and I appreciate the opportunity to say that.

**Mrs Darbyshire:** My concern is wind energy, global emissions, climate change and the RET. My family have been in the district since 1870 and my husband's since 1856, and never have we heard or seen any evidence of the weather patterns we now experience. I fear for our great-grandchildren growing up and what their future will be. I have always been a supporter of wind energy. Our hills are extremely steep, and a considerable amount of good management and hard work goes into our hills. In 2004 we became one of the landholders associated with Pacific Hydro and the Crowlands wind farm project that maybe we will be part of one day. It has been an exciting time for us. My husband and I are not concerned regarding the noise issues, having friends living on wind farms. We believe in climate change, so the idea of helping to reduce the emissions appeals to us.

I believe we need wind energy to help provide clean, green energy, along with solar and other methods of supplying clean, green energy. The financial gains to us, of course, would be wonderful for planning our retirement. There are three wind farms with planning permits in our area: the Crowlands wind farm, the Ararat wind farm and the Bulgana wind farm. They have just received a permit from council permitting the wind farm. Three different shires will benefit from the extra rates, and you can all imagine the benefits to our district. We live in an area with very little opposition to wind farms, and the financial gain would just be enormous. With this present climate, we are experiencing tough times like we have never experienced before. The odd drought, yes. But the beautiful Wimmera River that runs through our farm is a few waterholes. Please help us build our wind farms.

**Mr Boatman:** I have farmed in the Crowlands area, which is just north of Ararat, just north of the Great Dividing Range, since 1957. I want to talk about the changes that I have observed in the climate during this time. Up until the mid-nineties, our rainfall pattern was fairly predictable. There was reasonably heavy rain in June, July and August during the winter months, enough to saturate paddocks to the extent that it would be easy enough to get bogged and also fill dams. Spring rainfall would, in most years, be sufficient to produce excess pasture growth. I could cut hay almost every year. However, since the mid-1990s, insidious change has taken place. Our winter rain has reduced to the extent that dams are not filling and are drying out by midsummer. Spring rainfall has become unreliable and I have cut hay in only about two or three years in the last 16 years. I have had to purchase tanks and troughs and cart water from the Wimmera River which, fortunately, is not far away. I have also had to buy hay in most of these dry years.

Concerning the Wimmera River, two of its tributaries, which enter not far from Crowlands—the Mount Cole Creek and the Glenlofty Creek—used to flow most of the year and had excellent fishing holes along their length. But they no longer do so and fish are no longer in either creek. The Wimmera River no longer flows year round as it did once.

These observations coincide with the findings of climate scientists who are warning us of the effect of noxious gases which are being emitted into the atmosphere by various human activities, the most significant being electricity generation. I believe that urgent action to reduce these emissions of polluting gases must be addressed. As our population increases, we need to replace coal fired power generation with alternative sources of energy.

We are told that in 50 years time the world's population will have doubled. That means Australia's population will have doubled. We may not need 100 per cent more power, but we will certainly need a lot more electricity than we have at the moment. As I said, we have an abundance of wind, sunlight and tidal activity, and these must be utilised in increasing quantities.

Talking of Pacific Hydro, which we have an association with, following the completion of the Challicum Hills Wind Farm it became obvious to several farmers in the Crowlands district who owned hilly country that they might be potential hosts to another wind farm. My thoughts were that hills, which in the past have been little more than rabbit breeding grounds—in my case I had spent the best years of my life trying to control them—might at last be of some productive use if we could host some wind turbines. In fact, Pac Hydro did show some interest and began feasibility studies in the district. My farm was originally to be involved but, as plans progressed, the tower numbers were reduced and my farm was no longer involved. However, this made no difference to my keenness to see the development go ahead.

From what I have heard this afternoon, it is obvious that there are the right places and the wrong places to put these developments. Obviously there are quite a few wrong places to put a wind farm, but there are also very good places to put wind farms. In the case of Crowlands, we have a range of hills which is 30 kilometres from Ararat, 15 kilometres from Elmhurst and the same distance from Landsborough. It is an isolated site, and obviously there are many such sites in Victoria. I believe that perhaps the wind developers should be a little more particular about choosing their sites, but there are obviously plenty of sites for the other power generation sources, and we definitely must go ahead right now to seek out as much alternative power generation as we possibly can. Thank you.

**Mr Officer:** I am from Macarthur and have lived there my whole life, as my father did, and his father before him started the farm here. I am here today because I host a wind farm. That process started well over 10 years ago, when a neighbour and I went and actively tried to find companies to come and develop a wind farm at our site. It has been an interesting process all the way through to Macarthur being built in the end. I am here today just to give you my experience of what that has all been like.

I have written a submission; I will not go into that in too much detail. I am open to any questions that you might have as to what that experience has been like and what it is like now to live on that farm. I am here to do that—to give some balance. Not a lot of people are in my position. There are not a lot of people who actually live and work in amongst wind turbines, so that is why I am here today.

My experiences so far have been very positive. There has been no effect on my livestock. I run a cattle enterprise these days. They are rotationally grazed over large numbers of paddocks. I see them once a day. I get to know them pretty well. I spend a lot of time with them. I study how they behave. I watch them closely, because that is how you make money out of livestock. Our calving percentages have, if anything, improved in the last couple of years. But I would put that down to management; I definitely would not say it is because of the wind farm. Having said that, we operate on some pretty rough barrier country on the top of the place and there is absolutely no doubt that the access that we have gained from the tracks that have been built up through that country have helped us to manage our farm.

**Senator CANAVAN:** Which wind farm do you host?

**Mr Officer:** Macarthur

**Senator URQUHART:** Some of you have travelled quite a long way today. Thank you very much for coming. Mr Barrett, you have indicated your passion. You have been here for a long time. You have been a resident for over 40 years. You talked specifically about jobs and employment and how important that was—and I get the gist of that. But I think you are also a licensed real estate agent—Portland Seaview real estate.

**Mr Barrett:** Yes.

**Senator URQUHART:** We heard from some previous witnesses about the value of property, particularly in the areas where the wind farms are. Can you talk about that from your experience as a real estate agent.

**Mr Barrett:** I did have a discussion at our office this morning with the sales people—and the officer effectively in control is my son, Alan—about what sorts of discussions we have had. Generally, the furthest properties are around Dartmoor, Merino and Digby and obviously there are a lot of properties in this area. We do not often get into a discussion about the wind turbines. I recently took someone to a rental property that looked out over the top of the South Portland Cemetery. They said they could not live there because there was a tower—which was some kilometres away. However, between them and the tower is the main power line going to Portland Aluminium, and they did not even see it because they were so focused on the towers. To the best of my

knowledge, there has not been a lot of discussion about the wind farms having an impact on the sale of properties that we have had to deal with.

**Senator URQUHART:** What about property values?

**Mr Barrett:** Property values have come off a lot in recent years. They went through the roof; they were quite high for a long period because of the blue gums in particular. The shine came off them pretty quickly.

**Senator URQUHART:** You are referring to the plantations?

**Mr Barrett:** Yes—and there was the cost of refurbishing the land after the trees had gone. It is not unusual for properties to spend a long time on the market. You would have to look at individual properties, prices and locations to say what that might be.

**Senator URQUHART:** So it is fair to say that there are a lot of factors involved?

**Mr Barrett:** Yes, there are a lot of factors involved.

**Mr Machonachie:** I had my farm revalued about 12 months after the construction of the wind farm at Challicum Hills. It was a private valuer who valued it, and he actually put a valuation of 30 per cent extra on the property because of the wind farm.

**Senator BACK:** Is that because any potential buyer would enjoy the benefit of the annual rental?

**Mr Machonachie:** Yes, exactly.

**Senator BACK:** Okay, so that is the reason for the 30 per cent increase. Thank you.

**Mr Barrett:** In a sense it is about wind turbines and power towers—anything that adds income to properties in this area—because in a lot of cases the farms are on a small blocks and it is hard to make a living from them. Even with the high lambing percentages we get around here, it is still hard to get cash flow. That is why so many people used the blue gum plantations as a way of generating income.

**Senator URQUHART:** Mr Officer, you spoke about living on a property with wind farms around it and working that property.

**Mr Officer:** Yes.

**Senator URQUHART:** You gave us a little bit of a picture. I do not know whether you heard earlier evidence. You did? I am interested in your experience of the process of the towers coming onto your property, what effect that has had, if any. Could you step me through that quickly?

**Mr Officer:** Yes, I am happy to do that.

**Senator URQUHART:** Could you also tell me what impact you feel the turbines have had on your community. What does it mean to the community that you live in?

**Mr Officer:** The Macarthur area?

**Senator URQUHART:** Yes.

**Mr Officer:** If I may, I would like to make a quick comment about land values, since we were on that, before I go on.

**Senator URQUHART:** Yes, absolutely.

**Mr Officer:** Before we started looking at wind farms, I did a bit of investigation on it down around Codrington and spoke to a couple of agents. This would be going back nearly 10 years ago now. Their view on it was that there had been two sales at that stage of the land down there that bordered Codrington, and it had had no effect. But it of course depends on the land type and what it is being used for, I would presume. Since the wind farm has been built at home, I have a block that is separate from the wind farm that I have had three offers on, which, in the current environment, surprised even me.

**Senator URQUHART:** Is it for sale?

**Mr Officer:** Yes, people are wanting to buy it. So it is a difficult time for agricultural land as an asset class. There has been a spike put in the market by the blue gum industry, which, as we all know, was tax driven, not production driven. Because of the asset class that land is, it is very slow to come back off, because people do not want to sell for less than what it was worth last year, so they do not sell and they hold. We are still seeing a downward trend, I believe, from the back end of the blue gums. That is just a comment that I want to put out there, because quite a few of the submissions had discussion about what land values are doing. I think, generally, Western Victoria wide, they are coming off, unfortunately—for everyone, really.

Getting back to what it is like to live and work on the farm, as I say, I have been back there since 1992. I came home because my father had failing health, and I basically took over operations. We used to run sheep and cattle.

We have dabbled in cropping. I suppose half our property, or a little bit more than half, is what you would describe as non-arable country. It is rocky barrier country; it is lava flow. The other part of it is open country, which is suitable for cropping, but it has high rainfall, so there are some risks there. It is probably best suited to livestock, like most of our area is around Macarthur.

We decided that we wanted to be involved in wind as a diversification. I feel that I did due diligence into what I was getting into. I can sit here now and say that there have not really been any surprises as far as I am concerned. I visited a few wind farms. I spoke to farmers who lived beside wind farms at Challicum Hills and down at Codrington. I spoke to guys that owned land that had towers on it. I got comfortable with the idea long before it even looked like it was ever going to happen. It is a long process. There is a lot of money being invested by people in building these things. I think Macarthur cost \$1 billion to build. These kinds of things do not happen overnight. So it was always something that I believed was a good thing for us and for the area.

It created a lot of jobs during construction. Construction was a very busy period and was probably the challenging time as far as running a farm business went. We managed it by moving stock around the construction. They struck the wettest year that we have had probably almost ever. It was almost the first green summer that I can recall. So there was a bit of mess made. But, all in all, the construction stage was fine. We managed our way through it.

I happened to be with my cattle when one branch of turbines was turned on for the first time. I walked a mob of roughly 700 cows and calves into a paddock. There was a clunking noise and whirring noise and away they went. I thought, 'This will be interesting.' Bearing in mind that these cattle had been living on a construction site for nearly two years and were used to the sound of reversing beepers and trucks and everything else, I still was expecting something of a reaction. It was funny—about half of them looked up at it and then put their heads down and kept on eating. I thought, 'Well, that's that. That is their take on it at this stage.' We have not seen anything since. As I said before, there has not been any real change to production levels on our farm, if anything, and management has been made easier because of the tracks that we have now got. I have now got tracks now so that I can go out to back paddocks, areas of the farm that I can access that would have taken easily 40 minutes on a four-wheeler going very slowly, if you want to be safe—we all want to be safe—but I can now drive a two-wheeled vehicle out there and be there in five minutes. Obviously, if you are rotating large mobs of cattle, that is a massive time saving.

I have two young children and a wife. Our house is situated not quite in the middle, but we have got turbines on virtually three-quarters of our sides—on the north, the east and the south. There is not a lot out to the west, but there are a few out in the south-west. We signed a waiver. Five of them are within 800 metres. Day to day, there are 20 guys out there doing maintenance on these things. They work there full-time. It makes them the biggest employer in our area by a long way. Once again, I get very confused sometimes when people start to talk about how it has affected your community, because it depends where you draw the circle around what you call your community. They are the biggest employer in our area. You could probably take that out to Macarthur and Hawkesdale. I do not know how many people are employed in Nields, a fertiliser company. They would probably be the next biggest business in our area. I do not know whether they employ 20 people, but they are a significant employer.

Obviously, at construction there were up to 600 blokes out there doing stuff for two years. That was a considerable boost to Ripponhurst. If you are getting really local, that is our little area, where there are basically a few farms. When my father came over in the 1950s I think our farm employed eight people. When I came home it was employing two, and now we are back to one. That is just a progression, which I think you have seen on all farms in our area, of efficiency gains and the fact that there just is not the money in agriculture to employ large numbers of people anymore. It is just a reflection of that fact.

**Senator URQUHART:** Mrs Darbyshire, you indicated in your opening statement that you were a supporter of wind farms.

**Mrs Darbyshire:** Yes.

**Senator URQUHART:** Can you tell me why you are such a great supporter?

**Mrs Darbyshire:** I have always loved windmills and I just think that the turbines are majestic. I just always have.

**Senator URQUHART:** Do you live near one?

**Mrs Darbyshire:** No, we do not. If Pacific Hydro go ahead and erect the Crowlands wind farm, yes, we would be.

**Senator URQUHART:** But you do not know yet whether that is going to happen?

**Mrs Darbyshire:** No, we do not.

**CHAIR:** Thank you, Senator Urquhart. We will now go to Senator Leyonhjelm for questions.

**Senator LEYONHJELM:** Mr Boatman, your submission has a heading 'Stop the attacks on wind farms'. Did you listen to the witnesses we heard from earlier today, who relayed the adverse health impacts from the wind farms in their proximity?

**Mr Boatman:** I did not quite catch that.

**Senator LEYONHJELM:** Did you listen to the witnesses we heard from earlier today?

**Mr Boatman:** No.

**Senator LEYONHJELM:** We heard from people who say that they are very adversely affected, that their health is adversely affected, from their proximity to wind farms. Do you discount what they are telling us?

**Mr Boatman:** Well, I would almost have to say that I cannot, because I have been listening today to what people are saying—

**Senator LEYONHJELM:** Yes, that is what I just asked you about, so you heard what they had to say today?

**Mr Boatman:** Yes. I am a great believer in psychology. I believe that people can be persuaded by various things. They can believe in certain things that maybe are not there. I have listened to both sides of the argument concerning wind farms. This is why I said there is a right place and a wrong place to site a wind farm. I think it is very important after hearing what has been said today. It looks to me as though some of these wind farms have been poorly sited. There is another question I ask, and that is: what wind farm goes 24 hours a day? I pass by the Waubra wind farm fairly often and, if it is early in the morning, especially during winter mornings, there are 120 wind towers not moving. I looked at Chalicum this morning; no movement. And another wind farm as we came down: not a movement. I said, 'Goodness me, this isn't a good day to have this sort of a meeting!' It would appear from what I have heard today that wind farms go 24 hours a day and people are never able to get a good sleep. I do not believe that.

Yes, I do believe there are some effects there that we cannot explain. Infrasound is something that I certainly cannot explain. I have heard a wind tower moving. I have stood underneath a high-voltage power line. We have one going through our property. That is what the Crowlands wind farm and the Ararat wind farm will be connected into, and the Waubra wind farm is also connected into it. When there is a windy day, there is quite a loud noise being emitted from those high-voltage line.

**Senator LEYONHJELM:** Do you understand the complaint is about sound that cannot be heard?

**Mr Boatman:** Okay, perhaps I do not believe in that.

**Senator CANAVAN:** Do you put sun cream on on a cloudy day?

**Mr Boatman:** Not usually.

**Senator CANAVAN:** My mum always tells me to do that; you can't see it, but it still hurts you!

Mr Officer, you host wind turbines and you are compensated for that? Is that correct? I am not going to ask you how much. Presumably you would not have them on your property for nothing; you would want some compensation.

**Mr Officer:** It is a commercial reality. It is part of the reason why I got into it. It is such a great diversification. It uses up less than one per cent of my land area and allows me to keep doing what I enjoy doing, which is farming.

**Senator CANAVAN:** So there are impacts on you and your business that require that compensation in your view? Is it just pure rent?

**Mr Officer:** They are paying for the use of the wind that blows over my farm. They are not compensating me for anything.

**Senator CANAVAN:** But it is not the noise, the disruption and construction? There was nothing associated with that that you think you deserved compensation for?

**Mr Boatman:** No, because it is a 25-year agreement that they will pay me to be on my farm and run their business. It is no different from leasing an office building to someone.

**Senator CANAVAN:** At the moment, of course, it is only people with the turbines on their property—well, except for that buffer zone that Victoria had. Do you think there is any justification for neighbours to also be compensated for loss of amenity, noise impacts or other issues?

**Mr Officer:** I think it is a very interesting area, a very tricky area. Once you start saying to someone, 'I want you to compensate someone for what you are doing on your property having an effect on them'—what we do as farmers on our land affects our neighbours all the time, so I cannot answer that. It is not that simple. When you start looking at it, it gets very difficult to work out how you would do that.

**Senator CANAVAN:** Okay, I will leave it.

**Senator BACK:** I will stay with Mr Officer for a moment. You were saying the closest turbine is about 800 metres from your homestead. What about your neighbours? What would be the closest distance any of your neighbours would be from them?

**Mr Officer:** I think the end layout ended up being 1½ kilometres.

**Senator BACK:** And none of your neighbours have ever complained to Macarthur about the adverse impacts on them?

**Mr Officer:** There are neighbours here that you have just been listening to.

**Senator BACK:** They do?

**Mr Officer:** Yes, you were just talking to them.

**Senator BACK:** I understand that, but we do not know the geography of the area. They are in that distance from your property?

**Mr Officer:** Yes. The tower that Ann Gardner was referring to that near her boundary is on our property.

**Senator BACK:** Okay. Thanks for helping with that. As an aside—coming from a farming district—are many people building homes on their properties, be they on properties with or without wind turbines? In other words, are people investing in residences on properties in the district?

**Mr Officer:** That is a very interesting point and actually something I have taken further interest in lately. I think what is happening in Australia is a bit of a mirror of what is happening in America. You see it happening a lot in Queensland, where people out west have moved into Toowoomba and are flying out to their farm nowadays. I think it is a reflection of the fact that—and this is only my view on it—the cost of living in an isolated area is going up all the time. You are sending your kids to boarding school because you cannot get schooling. Obviously, in our area it is a lot closer, so that is not quite the consideration, but yes. I think you struggle to find many new farmhouses out there.

**Senator BACK:** I think it is a fair comment—certainly in WA it is the same.

I will ask you and Mr Machonachie. Obviously, both of you have signed some form of landlords contract. It is consistent with what we see provided to us in terms of the New Zealand standards? Are they the clauses in them? I do not want you to break your confidentiality on what else is in them, but are they the sort of standard clauses you find yourselves with?

**Mr Machonachie:** Pretty much so, yes.

**Senator BACK:** Okay. You made the comment about valuation on your property having gone up, which I expect it would—if there is rental income from a non-farm source, you would hope it would—but can you make any comment or provide us with any advice about agricultural land values for any of your neighbours who do not enjoy an annual rental income from turbines?

**Mr Machonachie:** I live in a pretty well held area. There have not been any recent land sales that I can think of. There are a few farms on the market at the moment that have not been sold. But, no, there is no evidence of negative impact on surrounding land values that I can find.

**Senator BACK:** Finally, Mr Barrett, comment was made earlier that there is an independent study being undertaken at the moment about real estate values. I do not know if they are just residential, just agricultural or a mixture of all, but are you aware of that study being undertaken? If you are, is your real estate company participating in it?

**Mr Barrett:** No, I am not aware of it. Obviously, all local real estate agents monitor information that is in the market and the companies that quite often sell it. I would have to agree with Mr Officer about the fact that the spike in the price when some people bought into blue gums was unsustainable over the long term through this tax driven pricing. That is one of the issues we have at the moment. A lot of properties spend a lot of time on the market because the hectare prices are here—

**Senator BACK:** Artificially high as a result, yes.

**Mr Barrett:** Yes, based on what you can get from a normal farming operation currently.

**Senator BACK:** In Victoria, is it the case that, for any land or any property that sells, the sale itself and the value for which it is sold is recorded on some publicly available document?

**Mr Barrett:** Five minutes after I conduct an auction I generally have DataSearch or one of the other organisations ringing to find out whether the property has sold or otherwise. There are a multitude of places—PriceFinder and all sorts of places—where information is stored.

**Senator BACK:** If someone decided they wanted to buy a property and not make publicly available the fact that they had bought it or how much they had bought it for, is that possible in Victoria? It is not in WA; in WA, by law all sales must be recorded. What about Victoria?

**Mr Barrett:** All sales are recorded. Whether it is going to end up on the internet for general access depends on where that—

**Senator BACK:** So there is not a state government—

**Mr Barrett:** No, not that I am aware of.

**Senator BACK:** Thank you.

**CHAIR:** We have come to the end of this session. Thank you for your input today and for your submissions.

**ALLGOOD, Mrs Gwenda, Private capacity**

**GABB, Mr Andrew, Past President, Stockyard Hill Community Guardians**

**DENNIS, Mrs Susan, Private capacity**

**JELBART, Mr Peter, Private capacity**

**JELBART, Mr Ron, Private capacity**

**LYON, Mr Adrian, Private capacity**

**MARKULEV, Ms Christine, Private capacity**

**McMAHON, Mr John, President, Wind Industry Reform Victoria**

**MORTIMER, Mr David, Private capacity**

**NICHOLSON, Mr Rikki, Private capacity**

**SAUNDERS, Mr Steven, Traditional Owner, Cape Bridgewater**

[16:01]

**CHAIR:** We now have an opportunity for the nine people listed to give a short statement to the committee. This session will run for 30 minutes and there will be a strict three-minute time limit on the statements. I remind all present here today that in giving evidence to a parliamentary committee witnesses are protected by parliamentary privilege. It is a contempt of the Senate for a witness to be threatened or disadvantaged on the basis of their evidence to a parliamentary committee.

**Mr Mortimer:** My name is David Mortimer. I am a wind turbine host—or I was, until a couple of months ago. My wife and I have been hosting turbines for the last 10 years. For the first eight years of that 10 years we both suffered the effects of classic wind turbine syndrome conditions. I am sorry—I had a fade.

**Senator BACK:** Mr Mortimer, are you the person who worked in the Royal Australian Navy?

**Mr Mortimer:** Yes, and the sort of situation I am in now is becoming more and more frequent. I get lost in the middle of a sentence. The stupid thing about it is that when we go away from wind farms—and we have to be at least 35 kilometres away—we have absolutely none of the problems. When we came across here for this meeting, two nights ago, we stopped at Dartmoor on the way across. We thought it was going to be lovely and quiet. It is about 40 or 50 kilometres from here, and we had exactly the same problems that we get at home: the low, drumming, pulsing sensation. We can go 70 kilometres up the coast to Robe and we sleep peacefully next to the ocean. We can go to Piccaninnie Ponds down near Nelson and we sleep absolutely peacefully. If we go anywhere in between that, 35 kilometres and less, and we are stuck with the problems of not being able to get to sleep and then waking up in the middle of the night in a blind panic because of the noise. It gets me particularly that way; my wife does not. It took her four years before she was affected.

We consulted our doctors. The doctor could find absolutely nothing wrong with us. This was all before we heard of Waubra Foundation, nocebo had not been invented yet and wind turbine syndrome was an unknown thing.

**Senator LEYONHJELM:** What happened a few months ago? You have moved, have you?

**Mr Mortimer:** No, we have not moved.

**Senator LEYONHJELM:** What happened a few months ago?

**Mr Mortimer:** A few months ago we sold our farm. The people who bought the farm had been living there for four years—rent free, but that was a choice of ours—and we had built our own farm about five kilometres from the farm, because we could still manage the farm. We thought that at five kilometres away we would be absolutely safe. We were not. In fact, it got worse.

**CHAIR:** Mr Mortimer, for the *Hansard* record, whereabouts are you?

**Mr Mortimer:** We are at Lake Bonney wind farm in Millicent, down the bottom of South Australia.

**Mr P Jelbart:** I am the son of Ron and Chris Jelbart. They have a farm on the east of the Macarthur wind farm. I have been lucky enough to work away for the majority of the time over the last few years. I have not lived at home since I was probably 19. While I was working in Western Australia I used to do three weeks on, one week off and come home for a week. Over in Western Australia I was sleeping at times on the sides of busy

highways and in the back of trucks with ice packs running. If it was not with an ice pack on a truck it was in an air-conditioned room.

It used to vary, in industrialised situations up there. In Wedgefield, you could hear trains going through in the night-time and scrap-metal ships getting loaded. Down at Newman you could walk outside the house and hear them draining the mines at Mount Whaleback and Orbody 24, not far from Newman. They are within five kays. I would sleep fine up there. At home, I noticed pretty much from day one that there is a serious problem there. Something is completely different when sleeping. I would wake up after a couple of hours of sleep—at times, not even after a couple of hours—and have disrupted sleep that I have had nowhere else. There is a proper problem.

We are being told it is the 'nocebo effect' and whatever else—that is in your head, that it is a problem because you are jealous, uptight or worried or whatever. It is simply a problem with something that goes on when you are near the wind farm. Whether it is low-frequency noise and the infrasound combining with it, it seems worse when it is quiet. Around our house the yard is pretty well protected by trees. When it is relatively quiet around the house yard there is still a really soft drone that comes through and just gets into you. It is pretty hard to explain. There are probably a lot of people going through the same thing who will have the same trouble trying to explain it, especially to people who have not experienced it. The problem with it is, it also seems to affect different people over different periods of time.

**Senator BACK:** How long after you go back to the west does the sensation disappear?

**Mr P Jelbart:** When I stay at home for a few nights and then go to Hamilton I will suffer tinnitus and have a bit of a ringing in the ear. Generally, I sleep well as soon as I get away from it. I am happy to leave it at that. I think I have said enough.

**Mrs Allgood:** I am not here on behalf of the council; this is my own submission. I would like to state that to start with. I was the mayor of Ararat when the first discussions began about Pacific Hydro. They planned to build a wind farm in our municipality. My reason for being here today is to talk about that.

That happened in 2002. It took nine months to build that particular wind farm. We went out for public consultation. First of all we went to the Buangor community, where most of the turbines were being built. We were significantly pleased with the amount of interest we had from people. We walked the land with the Aboriginal people to make sure we were not disturbing any of that. That was very important. We engaged the community. They were interested in whether there would be jobs, whether they would get a tower—and about all the sorts of things that everybody has talked about today.

One of the things that impressed me was the fact that Pacific Hydro contacted the businesses and explained to the business association what was going on. They then went to the Ararat agricultural show. They talked to farmers there about what the advantages were, if they wanted to talk about that sort of thing. They then pulled a tower into the main street of Ararat and said to the schoolchildren and the community: 'Have a look at the size of it.' I have got the sizes; I know people have been asking today how big the turbines and such things are. So we did all that. The whole community was absolutely engaged in the process.

It was interesting the day they opened. It was a shocking day. If you had tried to stand on the hill it probably would have blown you off, because it was so windy, cold and wet. They came in their thousands. We were the biggest wind farm in the southern hemisphere at that time. We were the envy of a lot of other municipalities, because of the income that was happening. Some of the towers, as Graeme Maconachie has mentioned, are fairly close to the houses, which does not faze anybody. I listened to the story about the brolgas and found that really interesting. If you look on the internet—and I look at those sorts of things all the time, when I hear this—you will notice there are only certain land types they will go to. I found that interesting.

I would like to finish by saying, according to Pacific Hydro, we have 35 generators. The owner, as I said, is Pacific Hydro. The electricity retailer is Origin Energy. The capacity is 52.5 megawatts. The output is 25,000 homes. The carbon dioxide abatement is 180,000 tonnes per year. The height is 100 metres. Their approximate weight is 202 tonnes and they were built here in Portland—and I am very proud to be here for these people today. There are three blades. And the list goes on. I just want to say that I am very supportive of wind energy and Pacific Hydro and what they have done for Ararat.

**Mr R Jelbart:** My name is Ron Jelbart. We are on the east side of the Macarthur wind farm, halfway down. Once it cranked up, badly disrupted sleep has been our biggest problem. I go into Hamilton once a week with another son to try to have a decent sleep, and it is automatic—as soon as I am away I sleep like I used to sleep. My mother is in Queenscliff and it is the same thing. I sleep well when I am away. It is endless. I will get four or five hours if I am lucky. I keep a diary and it is just repetitive—the ears ringing and the chest tightness. It is impossible to try to explain it unless you experience it. It gets into you. It upsets. Every time I send a complaint

in, AGL send back, 'Talk to your doctor.' We have found that they emailed 12 medical clinics in our area—and in our submission there is a copy of the letter. If we mention it to the doctor, they just go, 'They don't want to know about it.'

In hindsight we should have cashed in the minute the wind farm was mentioned. The effects from the emissions from the wind farm—the noise, and I do not know whether it is low frequency, infrasound or whatever—is damning when it gets into your house and into you. It is considerably worse than we ever imagined. While everyone talks about how good they are, I am probably not allowed to ask in summing up: is Hamish Officer building close to Hamilton and will soon be moving away from the wind farm? I cannot ask that, can I?

**CHAIR:** We will take that as a comment.

**Mr Lyon:** I am Adrian Lyon from Glenthompson. That is where Oaklands Hill wind farm owned by AGL is. I decided to step up and talk about testing for low-frequency noise. Yes, we have had a lot of testing done in and around our house. The low-frequency was put as 'for special characteristics' on a lot of the data in the reports. As per the submission I put in, I think I explained in quite simple terms why if the report does not find something that is obvious there has to be something wrong with the report. I hope you have read my submission.

Back to the testing: we were the only house that this testing was done in but the turbines were turned off on the other side of the wind farm. The main beneficiaries as I can see—the closest people to the turbines which were turned off—were the hosts. There were people I believe that complained that were double the distance we were from it. I think that sort of smacks at us. We rented quite quickly a house off farm because of the impact. We have all been impacted by it in the long run. It is a bit like everything you have been told.

I do have most of the data of their recording, including the initial data I got sort of for approval. I do not believe our wind farm is compliant if you use that data but, as AGL said, they are not compliant if they use the original data even when the wind turbines are turned off. That just highlights how much Australian background sound changes and you can manipulate that by taking measurements at a particular time of the year—for example, springtime when it is noisy. They made the mistake in our time of doing it in 2006 when it was a very dry year and there were not frogs and crickets, so they had to get indicative measurements to be compliant now.

Back to the testing of the special low-frequency, which is obviously what the problem is, I have a lot of data but I have not got anything in that on short-term. You will notice in the report that their machines recorded short-term data over near Bill's shed, so one wonders whether it was available—a bit like the sort of matching of the data to the environmental conditions.

**Mr McMahon:** I am John Michael McMahon. I am President of Wind Industry Reform Victoria, and we are a voluntary body incorporated in January this year. We are hoping to reform regulations governing industrial wind turbines. We are not against turbines per se, but we are against having large turbines near people. Today the actual need for this Senate select committee was questioned; however, there are two game-changing things which have recently reared their heads. No. 1 is the ground-breaking report by Steve Cooper, and No. 2 is the imminent arrival of megaturbines. To put things into perspective, Cape Bridgewater turbines have caused significant problems, as we have heard—they are 2.2 megawatts. Chalicum Hills, which you have heard a lot about today and which are near Ararat, are much smaller than that. Macarthur's turbines are three megawatts and 140 metres high and equivalent to 40 storeys; the Bulgana project near Great Western, which was approved last week, has four megawatt turbines, is 196 metres high and equivalent to 60 storeys. The blade sweep area for each of them would be greater than the playing area of the MCG.

I do not think people understand the scale involved in what is coming—it has been bad enough already, but what is coming is a lot worse. There are more than 1,300 new turbines already proposed for western Victoria alone. The state planning amendment VC113 effectively removes size limitations on these turbines, so they could be larger than 60 storeys. The risks are enormous already, but they will increase dramatically as turbine size increases. They are a great health risk, as mentioned; they are also great risks for economic devastation across rural Victoria. Property devaluation will not only affect neighbours but also the total shire rate base and will undermine the economic model for governing rural Victoria in those areas with turbines. If all the planned turbines are built and are 200 metres or more in size, tens of thousands of rural Victorians will be significantly and adversely affected.

For all this risk there is so little control. There is no independent body effectively monitoring noise regulations in Victoria. The EPA are not allowed to do it—they are not even allowed to monitor today's simple audible noise-only regulations. Pac Hydro stated that it was compliant with current audible noise regulations; however, in a recently published *Warrnambool Standard* article, it acknowledged and finally acted upon a loud, screeching faulty turbine which neighbours had been complaining about for a year or more. If we are to have more turbines

in rural Australia, then let's have reasonable checks and balances: firstly, independent monitoring of regulations; and, secondly, improved regulations to include infra-sound. Let's have a little common sense. If less electricity is required at night and people have trouble sleeping, then turn the darn things off at night.

**Mr Gabb:** My name is Andrew Charles Gabb, and I am a past president of the Stockyard Hill Community Guardians in western Victoria. I have been involved in this industry for eight years and I have attended three panel hearings and one in-house hearing at the Victorian planning department. I am a farmer and I am a retired company director of a manufacturing business that employed 120 staff and worked seven days a week, 24 hours a day. My experience of the wind industry is not pleasant—I use words like 'deceitful', 'obfuscate' and 'complicit'. I will give you some examples.

I have seen a turbine landholder, whose property is recognised in western Victoria as containing native grassland and five brolga nesting sites, sit for two days and say nothing whilst his representatives distorted evidence to further enhance his project. Nest sites were removed from records; native grasses were not mentioned or offset; brolga setbacks of two to three kilometres—as per the guidelines to protect brolgas from these turbines—were downgraded by the so-called expert to less than 400 metres. Creek lines were all but removed from the overheads, and swamps were ignored. I sat there and listened to my brother-in-law and the property I used to manage be desecrated. I have seen a wind farm built without its permit having been fully met, and the Pyrenees Shire endorsed it. I refer to the same wind farm. I have observed a key witness from the Australian Trust for Nature lent on at lunchtime to withdraw her submission at this hearing—a submission which would have protected the brolga on the Chepstowe Wind Farm.

I have seen photomontages manipulated out of scale and proven to be so. I have seen sound logging equipment placed in non-compliant positions to distract background noise, therefore making it invalid to protect the occupant, in favour of the developer. I am aware of one council in our shire who manages the community fund at a wind farm. I have seen the Victorian state government allow turbine capacity to be increased and turbine tower height to be increased further, without further noise monitoring or planning being required. Yet we have a six-week hearing to expose all this.

I have observed landholders sign in secret and non-community consultation prior to contracts. I have observed contracts with indemnity clauses. I have witnessed a 90 to one vote against a wind farm project in our shire, only to have it approved by the shire. The industry promotes itself by large donations to community funds. They buy the populace. It is clearly evident that the New Zealand standard is not protecting rural residents. It is now obsolete.

**Mrs Dennis:** I am a farmer and conservationist. Wind turbines are huge industrial machines. A 747 jumbo jet can fit into the rotor-swept area. Imagine it twirling around, with speeds of 300 kilometres an hour at the tips. Wind turbines are definitely not green. Wind turbines kill birds and displace brolga, and the poor little bats suffer barotrauma—that is, their lungs explode.

The Macarthur international wind energy facility bird utilisation study shows that approximate 10 birds per turbine per year were killed by turbines, and 33 per cent of these deaths were raptors, including wedgies and the rare brown falcon. The top raptors are absolutely vital to maintain biodiversity. These estimates are considered a great underestimation, as scavenger trials showed most bird carcasses disappeared in under a week and they were only doing a monthly gathering of carcasses. The author of this research has recommended that AGL increase the bird carcass searches to weekly to get a truer picture of actual kill rates.

Of the 65 bird carcasses actually found at Macarthur, 23 per cent were unidentified. Who knows or cares what they were? There were six bat remains found, of three different species. It is a wonder any remains at all were found after they had died a horrible death when their lungs exploded. If my sheep's lungs exploded, I would be on *Four Corners* and probably end up in jail due to animal cruelty. Bats eat insects. Do we really want to increase our use of insecticides?

Brolgas are displaced by wind turbines. The Laura Navarrete research in the US has shown that sandhill cranes, which are a very similar size to brolga, are displaced out to eight kilometres from wind turbines. Similar work at Macarthur shows displacement to at least five kilometres. This consequently causes overcrowding in the next distance out, leading to stress.

There should be a moratorium on all wind farm permits across south-west Victoria until the south-west brolga project is completed. This project was specifically designed to inform wind farm planners and involves putting radio transmitters on brolga to track their flight patterns. It has just never, ever been finished. Currently, by the way, there are only 464 brolgas in Victoria.

So far neither the environment or planning departments of the Victorian government will take responsibility for the protection of the brolga. Each is saying, 'Thank you, Mrs Dennis, but this is not our concern.' Someone, somewhere has to take responsibility for our bird life before we lose it all.

**Mr Nicholson:** I am a Cape Bridgewater Pacific Hydro wind factory refugee. I am an electrician and proud 30-year union member. I initially supported wind power. Unions look after workers' OH&S issues, like the Metroll workers being exposed to infrasound at their workplace next to the Laverton gas fired power station. Unlike them, Australian families have no protection.

Infrasound is insidious and extremely harmful to health. You six senators have a chance to make our home liveable again. I stand up and speak today for the many Portland residents who are not willing or able to stand up and be heard.

Portland will be the ground zero for this industrial complex. The effects are horrific and disturbing. While travelling to Geelong each week, I would complete a sudoku puzzle. Later at home, that same puzzle took considerably longer or could not even be completed.

During the shutdown test Mr Steven Cooper completed, I was able to achieve many little jobs such as extra screws in doorhandles, tap washers, lubrication of door hinges, filling mouse bait stations and throwing a ball with my son—simple tasks, I know, but physically impossible to do when this industrial complex is operating. The fact I could mow the lawns and do the edges as well surprised me. I could actually bend over and not feel sick to pick up the clippings. Cooking and washing became almost impossible—not for me, as was pointed out to me.

During the shutdown, an incident happened and my wife and son looked at each other and laughed uncontrollably. The reason this is so significant is that we all knew this same situation would normally end in an argument when the turbines were operating. Our kelpie needed to be lifted into our station wagon but, when on holidays, could jump into my four-wheel drive after being only a week away from the turbines.

This wind factory has decimated the liveability of our home, our health, our family life and our future. On medical advice, my wife has been told to leave, and she has been told by the bank that our home is virtually unsellable. What are we to do? Who will protect my family, because I cannot?

Who is going to put an end to Australian families suffering from this unregulated industrial source of infrasound and low-frequency noise? All it takes is to properly regulate the noise pollution and protect people from harm is to locate these wind turbines at least 15, maybe 20, kilometres away from people and animals and increase the distance as the power-generating capacity and size of turbines increases. A royal commission is needed now.

I would also like to add—I have made some notes—no-one from the acoustic community has condemned Steven Cooper's report. I put out a statement: do the absent turbine hosts also need to sign an indemnity clause? Thank you.

**Mr Saunders:** My name is Steven Saunders. My family, the Mitchell and Saunders family, are traditional owners of Cape Bridgewater. We feel that our traditional rights, laws and customs have been violated throughout this Portland wind turbine process.

The cultural heritage side of things was never put in from our family. We did not agree with the wind turbines, so we did not sign off on any of the process. Our stories were interfered with. We have sacred dreaming stories along the coastline here. One of them is one of only a few traditional dreaming stories that connects all the tribes in Australia. None of those stories were documented through the whole cultural protocol of the wind farm project. It wasn't put in any reports, and our cultural heritage sites were destroyed. Eye witnesses to that include me and my family. When we spoke up about it, we were simply shut down.

The whole process that was set up was supposed to protect the traditional owners—that comes under federal law. Under the Native Title Act, we were supposed to be protected at Cape Bridgewater. It was failed—failed by the process that was fast-tracked through. When we reported incidents such as our cultural sites being disturbed, we were simply kicked offsite.

Throughout the whole process, we have spent years trying to go through the proper process but we haven't even been considered. In our native title determination, there is a process that the federal government has to intervene if such things happen. This process hasn't even got past the first hurdle. We have gone back for years and years and we keep telling the same story: our sites have been destroyed, our dreaming stories have been disturbed, and nothing has been done about it so far. We have been persistent in defending it.

**Ms Markulev:** Thank you, Senators, for listening to us. I am a hobby farmer from Narrawong. I am a past Melbourne worker in nursing and community and development. My interest in this is that I am an environmentalist, but not official, and I love climate change. I have come here today and have almost changed my view. I almost wanted to have one of those wind turbines on my property and my husband did not want one, so we did not have one. However, I have listened to everybody today and I have very much appreciated all the information.

I think that most people are genuine. I find occasionally that the people who have said the bad things about wind turbines have disagreed with what senators have encouraged them to talk about, like the EPA and somebody else and somebody else, saying that they were all false. I do not think that is the case. In our political system wind turbines get a lot of money; they are subsidised. You guys—and thank you, Senator Urquhart—are going to make a decision about whether or not we go ahead with this. But I am very heartened and I was very grateful that Steven Cooper had a chance to talk. I think the future for wind turbines or anything in Portland, in this region, is very complex and not easy. That is why senators are listening and why they have to study and get all the background information and multidisciplinary concepts and have interest from all parties that do not have a vested interest.

I am almost thinking that maybe there is something not so good about some of these turbines. My view was the opposite before. However, I believe in renewable energies. I am so glad that the Labor Party put the renewable energy sector at 20 per cent towards 2020. I think it should be even higher. Senators who are not from Victoria need to appreciate and value—I am sure they do—that Victoria is different from other states and our environment has to be taken as paramount.

The future can be better than the past. Yes, there were probably mistakes made with some people and their turbines, and they have suffered. But the future is going to be better. And I think turbines could maybe have smart meters in them.

**Senator CANAVAN:** I have a very quick question. Susan, do you have the scientific names of the birds that you mentioned? I am particularly interested in whether any of them are listed as threatened under the EPBC Act. I do not want them now, but if you can provide them to the committee later, that would be fantastic.

**Mrs Dennis:** I actually wrote the submission for the Brolga Recovery Group. I am President of the Brolga Recovery Group. That is all in that submission. This was me privately, but it would all be in that submission.

**Senator CANAVAN:** Thank you very much.

**Senator URQUHART:** I have a very quick question to Mr Gabb. Mr Gabb, you talked about observations a lot. Do you have studies of documentation or some proof that you can provide to the committee on your observations, or are they merely observations? Just a yes or no is fine.

**Mr Gabb:** They are my observations over eight years, but I could write words to that effect to the committee.

**Senator URQUHART:** I think you have put that on *Hansard*. I was just interested to see whether you had documents.

**Mr Gabb:** Are you referring specifically to the brolga situation that I referred to?

**Senator URQUHART:** I think you used the word 'observe' throughout your address, and I just wondered whether you had documentation or studies attached to that or whether it was your observation.

**Mr Gabb:** I have got something that I could forward on, yes.

**Senator URQUHART:** If you could provide that to the committee, that would be useful.

**Mr Gabb:** Yes, sure.

**Senator URQUHART:** Mrs Dennis, you talked particularly about the bats and the raptors. Again, do you have some evidence in terms of studies or whatever that you are able to provide to the committee?

**Mrs Dennis:** I believe that Mr Cumming said earlier in the day that he had forwarded the Macarthur wind energy bird utilisation study. I have mentioned the south-west brolga project and those ones in the Brolga Recovery Group submission, which you already have.

**Senator URQUHART:** So we have got them, great. Thank you very much.

**CHAIR:** Thank you, ladies and gentlemen, for your submissions today. We will now move to the in camera session.

**Committee adjourned at 17:19**