Parkesbourne/Mummel Landscape Guardians Inc.

Submission to Senate Select Committee on Wind Turbines in the matters of regulatory governance and economic impact

February 2015

This submission is made on behalf of Parkesbourne/Mummel Landscape Guardians Inc. (PMLG), an incorporated association of residents of Parkesbourne and Mummel and adjacent districts, in the Goulburn-Crookwell area on the Southern Tablelands in NSW.

PMLG has been in existence since about 2006. It is concerned to protect the landscape and soundscape of the Southern Tablelands, and the amenity, health and well-being of residents, from adverse environmental impacts, especially from the adverse impacts of inappropriately located wind farms.

This submission has been composed in January-February 2015, and submitted to the Select Committee in February 2015.

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Chairman
Parkesbourne/Mummel Landscape Guardians Inc.

23 February 2015

Sed quis custodiet ipsos custodes?

Juvenal

One of the oldest puzzles of politics is who is to regulate the regulators.

J. K. Galbraith

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Introduction

The matters to be examined by the Select Committee on Wind Turbines are “the application of regulatory governance and economic impact of wind turbines”. Of these, this submission will deal with only the aspects of regulatory governance, and leave to others, more qualified than myself, to deal in detail with the issues of economic impact.

However, I will say a few words about the economic issues, since they relate to the larger political context within which wind energy has been foisted on the energy market, with the result that regulatory governance now has to be provided for what has become an expanding industry.

As I will offer to show in the body of this submission, the regulatory governance that has been provided is very inadequate. This being so, it would be bad enough even if there were a sound economic justification for subsidizing the use of wind energy. It is surely all the worse if there is in fact no sound economic justification for subsidizing the use of wind energy. Neighbours affected by the adverse impacts of inappropriately located wind farms might perhaps console themselves that they were suffering in a good cause. But that they should suffer for a cause that is not good, for the sake of an industry that should never have received government support and patronage, is outrageous.

The general situation with regard to economic impact seems to be fairly clear.

The price of conventional power is $30-40 per megawatt-hour. The price of wind power is $90-120 per megawatt-hour. The whole purpose of the Renewable Energy Target is to push the price up to this level by adding to the wholesale price of electricity, generated from renewable energy power plants, the value of the Renewable Energy Certificate.

The retailer pays this artificially raised price, and passes it on to the electricity consumer, thus raising the consumer’s power bill.

Why does wind energy need this indirect subsidy? It is not because of high research and development costs, or high construction costs, or high labour costs. It is because wind farms are a very inefficient producer of their own product. Because they cannot produce reliable power, given the intermittency and variability of the wind, they cannot compete in the open market.

For the same reason, their inefficiency and unreliability, they are an ineffective way to reduce greenhouse gas emissions. Because they need constant back-up (coal-fired plants in ‘spinning reserve’ or open cycle gas turbines), the net reduction of greenhouse gas emissions becomes negligible in comparison with other, more reliable sources of power. If we wish to reduce greenhouse gas emissions, the only serious options are closed cycle gas turbines, hydro, and nuclear.

Furthermore, because the electricity output of wind farms is continually fluctuating, the more wind farms we have, the more instability is introduced into the power grid. The more instability is introduced, the more back-up is required, and the more greenhouse gas emissions are produced by the back-up.

Because weather-systems can span half the continent, even a grid as large as our Eastern Grid cannot smooth out the fluctuations in wind-generated electricity. So, the idea that wind farms might one day replace ageing coal-fired power stations is pure fantasy.

If wind farms cannot serve any useful function, then they should not be subsidized.

If, in addition, they raise consumers' power bills, and have multiple adverse environmental impacts, from causing sleep disturbance for their human neighbours, and mass slaughter for their avian neighbours, to increasing bush fire risk, and decreasing the capacity of fire services to fight bush fires, then, so far from being subsidized and patronized, they should be banned.

(On these matters, see the following:

- Peter Lang, Cost and Quantity of Greenhouse Gas Emissions Avoided by Wind Generation, 2009. Available at www.wind-watch.org.
- Peter Lang, Emission Cuts Realities - Electricity Generation, 2010. Available at www.wind-watch.org.
- Paul Miskelly, Wind Farms in Eastern Australia - Recent Lessons. *Energy & Environment*, Vol. 23, No. 8, 2012, pp. 1233-1260
- Ray Evans and Tom Quirk, The Ruinous Privileges of Renewable Energy, *Quadrant*, vol. LVI, No. 7-8 (July-August), 2012, pp. 8-15)

The Renewable Energy Target and Regulatory Governance

The national Renewable Energy Target has had a profound, indirect influence on the planning and development policy for wind farms at state level, and on the compliance monitoring of wind farms at both state and national level.

I will illustrate this with the case of NSW.

The NSW government, like other state governments in Australia, has signed up to the Federal Renewable Energy Target through the Council of Australian Governments (COAG). This is a bipartisan policy, so it makes no difference which party is in office.

However, even just to attempt to meet the target requires wind farms, since they are the only form of renewable energy power station that can be quickly rolled out.

So, the NSW Department of Planning is under pressure to roll through wind farms.

However, if the wind farms were to be built in the outback where they could not harm anybody, massive new infrastructure (transmission lines, and sub-stations to maintain the power level) would have to be built. The cost of this new infrastructure would have to be borne either by the developers or by the government (i.e. by taxpayers).

Since the developers do not want to take a cut in their profits, and since the government does not want to raise the money through taxes, the developers and the government have arrived at an understanding that the developers will be allowed to place their wind farms where they want to place them, i.e. along the Great Dividing Range, close to existing power lines, and close to the final consumers in metropolitan areas.

This understanding produces a planning problem, as these areas have been relatively densely settled (by rural standards) for the last 150 years or so. Locating industrial-scale wind farms in these settled areas obviously creates the potential for adverse noise and health impacts for rural residents, as well as the risk of a reduction of property value for properties in the vicinity of the wind farms.

If the wind farms are to be approved, and to be allowed to operate in the locations desired by the developers, then the Department of Planning must lower the standards of assessment. The standards must be so low that the real adverse impacts on neighbours are not even registered or acknowledged by the Department's assessment, nor by the compliance monitoring after construction.

And this is in fact what has occurred. The noise guidelines for wind farms in NSW, both those already adopted and those proposed, are demonstrably inadequate to protect neighbours from adverse impacts. The assessment of visual impact is a farce, with no published criteria as to what would count as an adverse impact. The assessment of the impact on property value is routinely mystified, and rendered inconclusive by inappropriate methodologies.

In this way, the Department of Planning is able to recommend approval of wind farm proposals. The Minister for Planning or the Planning Assessment Commission or the Land & Environment Court routinely accepts the recommendation, and the proposals are approved. The wind farms are built, and immediately start to have adverse impacts on neighbours. Compliance monitoring fails to recognize the adverse impacts, because, given the low standards of assessment, the impacts are rendered invisible. Neighbours are told that the wind farms are compliant. That is the end of the matter. Neighbours are suffering real adverse impacts, but they have no further avenue for appeal.

All this has been pointed out to the NSW government, with evidence drawn from peer-reviewed studies, over several years. But the NSW government routinely ignores or dismisses the evidence presented to it. The ultimate explanation for this is the NSW government's commitment to the Renewable Energy Target. The government cannot admit to the possibility of adverse impacts on wind farm neighbours or to the real inadequacy of its standards of assessment without jeopardizing its understanding with the wind farm developers, and undermining its commitment to the policy of adhering to the

Renewable Energy Target.

No matter how cogent the accumulating evidence of adverse impacts, the NSW government cannot review already granted wind farm approvals, because under the *Environmental Planning and Assessment Act, 1979*, a developer can sue the Minister, if the Minister revokes or even modifies an approval.

So, the wind farm neighbours are left to suffer.

It can only be concluded that the Renewable Energy Target has corrupted the planning process in NSW.

The same kind of analysis no doubt applies to all the other states in Australia.

At the national level there are grounds for asking the question whether the Renewable Energy Target may have had similar adverse effects on the integrity of national regulatory agencies. I refer to the Office of the Clean Energy Regulator, and to CASA. I will deal with this question in the body of this submission.

Turning a blind eye

I wish to emphasize here that the problem for wind farm neighbours suffering from adverse impacts is *not* a shortage of evidence. Research indicating the potentiality of adverse impacts for neighbours was conducted on behalf of the US Department of Energy as long ago as the 1980s and 1990s. Since then there has been an abundance of research conducted by acousticians, noise consultants and physicians, independent of government and of the wind energy industry. Most of this research has concerned noise and sound energy. Some of it is medical, or relevant to medical issues.

Although more research is always possible, and more needs to be done especially in the medical area, it is reasonable to affirm that there is more than ample evidence to establish a *prima facie* case that inappropriately located wind farms have adverse impacts on at least some of their neighbours, and that many wind farms are in fact inappropriately located.

There is abundant evidence to *demonstrate* that the noise guidelines in use in Australia are inadequate to protect neighbours from adverse impacts.

The problem is not shortage of evidence. **The problem is that institutions and agencies involved in the planning, assessment, approval and governance of wind farms deliberately ignore or dismiss all such evidence. They do so because of the policy commitment to the Renewable Energy Target, and because of the fear of litigation from developers. The whole system of regulatory governance for wind farms has been corrupted.**

This may not involve money changing hands. That is unnecessary. The force determining the situation is commitment to the policy of the Renewable Energy Target. Whether the politicians sincerely believe in the need for the RET, or whether they subscribe to it cynically to win votes, or at least not to lose votes, is irrelevant. Once the policy is in place, it becomes necessary to patronize and promote wind farm development by lax standards of assessment and lax standards of governance.

If serious problems emerge, at any stage of development, from the setting of the original terms of reference for a proposal ('Director-General's Requirements' in NSW) through the stages of assessment, approval, and construction to operation, they must be glossed over, and a blind eye turned, so as not to create too great difficulties for the development.

In the body of this submission I will illustrate these general remarks by the example of what has occurred in relation to the Gullen Range Wind Farm, located near Crookwell in NSW.

Sociologists have already invented a term for this kind of malign influence exerted by a lobby group over a government agency that is supposed to regulate it: it is called *regulatory capture*.

'Regulatory capture' sums up what has happened to the regulatory governance of wind farms in Australia. *This* is the problem that this inquiry should seek to address.

The need for a Royal Commission

Given the situation in the states described above, it is pointless to hope that any state government in Australia will investigate the maladministration of which those very same state governments have been guilty, in relation to the development of wind energy. There is now too much to hide, and on both sides of politics. Government departments and political parties are hopelessly compromised.

Wind farm neighbours can hope for nothing from the state governments, especially those people living beside existing wind farms. Existing wind farms cannot be touched because of the threat of litigation hanging over any state government that offers to review an existing approval.

For these reasons any attempt to reform the situation, and to bring redress to neighbours of existing projects must begin at federal level. A federal government that recognised the need for reform and redress of grievances would have the *de facto* power to persuade the state governments to pass the necessary legislation to do what is necessary, in respect of the imposition of new conditions of consent, a more robust system of compliance monitoring, the serving of orders for turbines to be turned off or removed, or acquisition rights for all properties where adverse impacts can be proved by independent consultants.

But this process must begin with a thorough investigation of all the failures of regulatory

governance that currently occur, both at state and national level. This must require a Royal Commission.

I respectfully suggest that the Select Committee take as its primary task the assembling of all evidence necessary to justify the calling of such a Royal Commission, and that the Select Committee in fact recommend that such a Royal Commission be called.

The Royal Commission should, of course, consider the issues of economic impact as well as those of regulatory governance, since both deserve investigation, and since the two are connected.

Note

In respect of the impact on wind farm neighbours, some may hope that the need for a Royal Commission might be avoided if the Renewable Energy Target were abolished, or at least extensively reduced. Their reasoning, presumably, is that if the revenues of wind farms are reduced, the wind farms will go out of business. No more problems for neighbours.

Setting aside the problem of ensuring that defunct wind farms are properly decommissioned and physically removed from their sites, we must still make a distinction between existing and future wind farms. It may be the case that reducing the RET will end investment in future wind farms, so that no more wind farms are built. But, reducing the RET may not necessarily reduce the income of *existing* wind farms to the point where they go out of business.

Neighbours of existing wind farms will continue to suffer.

It will be no consolation to the neighbours of existing wind farms if a wind farm hangs on until the end of its first twenty-five year term. Many neighbours may die off in the process, with the wrong done to them not righted.

The neighbours of existing wind farms are suffering an undeserved injury, which ought to be righted. It is obvious that politicians at state level will never do what is necessary. They do not have the courage. A Royal Commission at national level is the only way to proceed, if we are concerned for justice as well as for economic efficiency.

It should also go without saying that the maladministration of which state governments and other government agencies have been guilty in the planning and development of wind energy is a grave matter of public interest in its own right. That maladministration is now of such scope and so long-standing, and so many agencies are now involved that a Royal Commission is indispensable.

The specific terms of reference that this submission will address are as follows:

- (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) any related matter.

For convenience of exposition I shall organize my submission in the following way:

Section A: The planning debacle in relation to the Gullen Range Wind Farm

Section B: The noise assessment regime for wind farms in NSW, and compliance noise monitoring

Section C: The Clean Energy Regulator

Section D: The NHMRC

Section E: Other agencies

Section A

The Planning Debacle in relation to the Gullen Range Wind Farm

In this section I am concerned with your terms of reference (d) "the implementation of planning processes" and (e) "the adequacy of monitoring and compliance governance of wind farms".

What I have to recount is a colossal failure of planning in relation to the NSW Department of Planning's oversight of the construction and subsequent operation of the Gullen Range Wind Farm. But, as my introductory remarks below will show, there was also a prior failure of planning by the Department insofar as the project should never have been approved for its location.

The project

The Gullen Range Wind Farm consists of 73 turbines, with a total capacity of 165.5 megawatts (MW). 56 of the turbines are of 2.5 MW, and the other 17 turbines are of 1.5 MW. The total tip height of the 2.5 MW turbines is 130 metres, that of the 1.5 MW turbines is 126.3 metres.

There is also a sub-station, with a communications tower.

The wind farm is located about 25 kilometres north-west of Goulburn. The northern-most point of the wind farm is about 6 kilometres south of Crookwell. The wind farm site is about 25 kilometres long, from north to south.

The neighbourhood of the wind farm consists of large and small farms, and of rural residential ("lifestyle") blocks. When the *Environmental Assessment* was published in 2008, it was stated that there were 32 non-involved residences within 1.5 kilometres, 63 non-involved residences within 2 kilometres, and 118 non-involved residences within 3 kilometres.

The above figures for non-involved residences suggest forcefully the inappropriateness of locating such a wind farm in such a relatively densely populated area. Planting the wind farm on this site was only possible because the planning authority for a wind farm of such size was the Minister for Planning. If the planning authority had been the local council, the project could never have been proposed, and certainly not approved. Upper Lachlan Shire Council has a Development Control Plan for wind farms in its jurisdiction. This DCP prohibits turbines within 2 kilometres of dwellings, and within an even greater distance if the turbines are set on hills and ridges at a level substantially higher than that of residences.

If all turbines within 2 kilometres of non-involved residences were to be removed, then

about 60 turbines would have to be removed, leaving only about 13 turbines. If the fact that for most of the 25 kilometre site the turbines are set on ridges above the level of residences were taken into account, then probably all of the turbines would have to be removed.

According to the proponent's *Modification Application* (March 2014) (pp. 148-149), the number of non-involved residences within 2 kilometres has been reduced to 49. However, this makes no difference to the general point of the inappropriateness of locating the wind farm on this site, especially as many of the owners concerned have been forced into agreements against their will. (According to the Department's *Major Project Assessment* (p. ii), by July 2014 the number had been reduced to 45.)

Needless to say, now that the wind farm is complete and operating, it is having adverse impacts on many neighbours. Complaints about noise have already begun. In some cases the complaints are also about sleep disturbance. In two cases neighbours have been forced to sell out because the noise impacts were intolerable.

The Gullen Range Wind Farm should never have been approved. As long ago as 2008 neighbours predicted that the wind farm would be a disaster for the neighbourhood. So it has proved. The planning authorities took no notice of the warnings. This was the first failure of planning.

Proposal, approval and ownership

The Gullen Range Wind Farm (Application No. 07_0118) was proposed in 2007, approved by the Minister for Planning (Kristina Keneally) in 2009, and re-approved by the NSW Land & Environment Court in 2010. The proponent is Gullen Range Wind Farm Pty Ltd (GRWF), now sold to New Gullen Range Wind Farm Pty Ltd (New GRWF).

GRWF was originally owned by the developer Epuron. Epuron sold GRWF to the Chinese multi-national Goldwind in 2011.

(Goldwind is now entering into an arrangement with the Chinese clean-energy company Beijing Jingneng, such that Goldwind is to own only 25% of New GRWF, while Beijing Jingneng is to own the other 75%. The date for the finalisation of this arrangement is 28 May 2015. (See the attached announcement through the Hong Kong Stock Exchange by Beijing Jingneng, 9 July 2014.) I shall have to refer to this arrangement again below.)

In effect, Epuron only proposed the wind farm, and gained the approval. Epuron then sold the approval to Goldwind (in 2011). Goldwind has built the wind farm, using turbines of its own manufacture.

Construction and the relocation of turbines

The narrative begins: September 2012 to December 2013

Construction of the wind farm began around September 2012. By May 2013 the entire system of roads, hardstands and turbine footings had been built, and the developer was in a position to begin erecting turbines.

When the first turbines began to go up, in May-June 2013, some neighbours began to wonder whether some of the turbines were located where they were supposed to be located, according to the project approval and associated documents. These neighbours contacted the Department of Planning and expressed their concerns. But the Department took no notice of these warnings, being apparently assured by the developer that all was well.

However, as subsequent investigations showed, the neighbours were in fact correct. Moreover, it was not just a matter of a few turbines. It subsequently was revealed that the turbine footings of 69 of the 73 turbines had been built in locations different from those approved in the project approval. In other words, 94.5% of the Gullen Range turbines were located in the wrong place.

The Department went on ignoring the mislocations, and the developer went on erecting turbines.

The Department might have made itself aware of the mislocations in October 2013, because in October 2013 the developer submitted to the Department a large document called the *Operational Environmental Management Plan*. This document of 600-odd pages includes the final pre-construction noise assessment, based on the Goldwind turbines to be used in the construction of the wind farm. This noise assessment includes in its Appendix B a list of the co-ordinates or grid references for all the turbines of “the current layout”. These co-ordinates are in fact different from those approved by the project approval, although the authors of this noise assessment do not draw attention to the fact. The co-ordinates are merely given in columns, without any commentary.

Presumably, nobody in the Department of Planning noticed in October 2013 that the co-ordinates for the location of the turbines in the final layout for the wind farm were in fact different from those approved in the project approval. So, the Department remained in ignorance.

According to departmental officials, the Department only became aware of all the turbine relocations in November 2013, when another neighbour contacted the Department and forcefully argued that some turbines in the vicinity of her residence were certainly in the wrong place. At this point the Department investigated, and made a site visit.

As a result of these investigations Azmeena Kelly, the Manager for Compliance in the Department, wrote a letter (dated 9.12.13) to Ben Bateman, then project manager for the

development, stating that the Department was not satisfied that the turbine relocations were consistent with the project approval, and asking for further information, and explanation as to how the turbine relocations were consistent with the previously approved locations. (For this letter, see Appendix H of the proponent's *Micrositing Consistency Review*, December 2013.)

As a response to Ms Kelly's letter, the developer submitted the *Micrositing Consistency Review* (dated 17.12.13). In this *Review* it is revealed that the locations of 69 of the 73 turbines are different from those approved in the project approval. It is stated that the turbines have been relocated by distances from 1 metre to 187 metres, the average distance of change being 42 metres (p. 5).

By this date, early December 2013, the developer had erected about 30 turbines.

(Before we pass to the next developments in this saga, it is worth noting that the issue of possible turbine relocations had been raised by the developer with the Department as early as May 2012, when the developer submitted to the Department an earlier *Micrositing Consistency Review*. This earlier *Review* has not been made public, so for information regarding its contents we must depend on the later *Review* (December 2013) and on Azmeena Kelly's letter to Ben Bateman (9.12.13).

According to the later *Review* (2013), the earlier *Review* (2012) raised the issue of the difference in turbine locations as between the *Environmental Assessment* (2008) and the final design layout (p. 1). (The locations in the *Environmental Assessment* being those approved by the project approval.)

But, according to the later *Review*, the earlier *Review* only considered the movement of turbines in excess of 125 metres. According to Azmeena Kelly's letter to Ben Bateman (9.12.13), the earlier *Review* identified 8 "substantial" relocations of turbines, estimated to be movements of "125-250m".

Presumably, the earlier *Review* (May 2012) did not mention the movement of the other 61 turbines.

It can only be surmised that the Department dismissed or forgot about this issue of turbine relocations, so that when neighbours raised it with the Department in May-June 2013, it was a new issue to the departmental officials concerned, and one that could be dismissed yet again.)

The legal issues

Before we resume the narrative, we should consider the legal issues.

On the face of it, the relocation of the 69 turbine footings constitutes a violation of condition 1.5 of the Project Approval. Condition 1.5 states:

> 1.5 Pursuant to section 75J(4) of the *Environmental Planning and Assessment Act 1979* the project is modified to remove the ability of the Proponent to relocate turbines from the locations indicated in the document referred to under condition 1.1b) [i.e., the *Environmental Assessment*, 2008] by up to 250 metres, without further assessment and approval in accordance with the requirements of the *Environmental Planning and Assessment Act 1979*.

When the original developer, Epuron, proposed the project, it requested in the *Environmental Assessment* (2008) that it be allowed a freedom to move any turbine by up to 250 metres in any direction from the originally proposed locations. When the Minister for Planning (Kristina Keneally) approved the proposal in 2009, she refused this request. This refusal is expressed in condition 1.5 of the Project Approval.

Epuron appealed this decision to the NSW Land & Environment Court in 2009. But the Court refused to reverse the Minister's decision, and ordered that condition 1.5 remain as it was.

So, according to the Project Approval, the proponent was not supposed to change the locations of the turbines, unless it sought and obtained from the Minister permission to do so.

The new developer, Goldwind, disregarded this condition, and built the entire infrastructure of roads, hardstands and turbine footings, with 69 of the turbine footings in unauthorised locations, without seeking or obtaining the Minister's permission to do so.

At first, this looks like an open-and-shut case. But, in fact it isn't, because NSW law, and the conventional practices of the planning establishment in NSW render everything vague and uncertain. **This is a topic which requires serious consideration by the Select Committee, because it is a matter of inadequate regulation. Specifically, it is a case of a regulation, which appears to be robust, turning out to have little or no force, despite being authorised by both a Minister and a Court.**

Goldwind's first line of defence is section 75W(2) of the *Environmental Planning and Assessment Act 1979*. Section 75W(2) is brief. It consists of only two sentences:

> 75W(2): The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part [i.e., Part 3A of the EP&A Act 1979].

We may ask, what does "consistent with the existing approval" mean? It is of no use consulting the ordinary meanings of words in the English language, or common-sense. It appears that ordinary meanings and common-sense count for nothing. All that counts is how the planning establishment in NSW interprets these words.

According to a letter from Carolyn McNally, then Acting Secretary to the Department of Planning, to myself (dated 26.6.14), the words “consistent with the existing approval” are to be understood as meaning “minor”. The letter states:

> Although condition 1.5 expressly removes the ability to move turbines and other equipment up to 250m without environmental assessment and, presumably, without the Minister’s approval, the condition does not mean that the turbines cannot be moved at all, if the move is “minor”.

So, now we are compelled to ask, what in practice does “minor” mean? The word “minor” does not occur in section 75 W of the EP&A Act 1979. It has been dragged into the discussion by the Department of Planning.

I have repeatedly asked the Department of Planning to define “minor” in this context. I have asked the Department repeatedly to state at what distance a turbine relocation ceases to be “minor”, and hence not “consistent with the existing approval”. The Department has consistently declined to do so.

This is a case of inadequate regulation for the Select Committee to consider. Specifically, it is a case where a condition in a Project Approval, and a section in a law appear to be clear and precise, but are rendered vague and uncertain, if not meaningless, by a Department which evidently wishes to reserve to itself an unlimited freedom of action, unconstrained by laws and court orders. This is an abuse of power that renders a regulation meaningless and of no practical force. It undermines the very institution of regulation.

It is not only residents who suffer from this undermining of the law. It is developers also who suffer. How is a developer to know whether a potential turbine relocation is inconsistent with an existing approval, if the Department of Planning refuses to publish clear and defined criteria?

In the case of the Gullen Range Wind Farm, the developer evidently had a different idea of the meaning of “minor” from that of the Department. In her letter to me Carolyn McNally states:

> The proponent has relied on s 75W, condition 1.5, and the consistency review conducted by the Environmental Representative for the project, to adopt the position that the relocation of the turbines was consistent with the original approval.
>
> The Department, upon examining the information relied upon by the proponent, considers that the level of variance which has occurred is not minor, and the relocations to be inconsistent with the approval. This is based on the potential cumulative impact from the number of turbines which have been relocated, the possibility that the relocation may cause additional properties to be acquired, as well as the consideration of possible noise or visual impact which could have arisen as a result, and which need to be appropriately assessed.

Pity the poor developer! How is a developer to take all these generalities into account, if there are no definite criteria for a “minor” modification in the Department’s publications? Are developers supposed to be telepathic?

That Goldwind had quite a different idea of the meaning of “minor” is shown by a passage in its Modification Application (March 2014). This states:

> A detailed consistency review, prepared by nghenvironmental in December 2013 and approved by the Environmental Representative was submitted to the Director-General [sc., of the Department of Planning]in December 2013 with the conclusion that “*the changes to the project are consistent with the approval and therefore, the Minister’s approval for modification is not required under Section 75W (2) of the EP&A Act*.”
>
> The conclusion by the Environmental Representative differs from the P&I’s [sc., the Department of Planning and Infrastructure’s] recent advice to GRWFPL. P&I has acknowledged that the turbine locations identified in the environmental assessment may be subject to “minor relocation”, but P&I is also of the opinion that “minor relocation” can be taken to mean small, or insignificant. GRWFPL notes that for a project that spans 25 km, that even the maximum turbine relocation of 187 metres is less than 1% of the overall project length.

It may well be that the proponent here is being disingenuous. But, let us suppose that it is not, that it is in fact sincere. We have here two totally different conceptions of what constitutes a “minor” modification. The Department thinks in terms of changed environmental impacts from the accumulation of micro-relocations. The developer thinks of the proportion that each relocation bears to the overall scale of the development.

So far as I know, there are no published departmental documents which explain to developers or to the general public what counts as a “minor” modification in relation to wind turbine relocations. I have been in correspondence with the Department of Planning in relation to this matter for about a year, and none has ever been cited to me.

What is the point of substituting “minor” for “consistent with the existing approval”, then substituting “small” for “minor”, and then substituting “insignificant” for “small”? This process of verbal substitution could go on forever, without adding any clarity. It surely must be obvious that what developers need is a *quantitative* definition. This the Department refuses to give.

Developers are left in the impossible position of having to guess what departmental officials are likely to consider excessive for a particular development. This is unacceptable.

Note

In the NSW draft *Wind Farm Guidelines* (p. 36) the following is proposed under the heading **Micro-siting of turbines**:

> Micro-siting of turbines up to 100m from each turbine's nominated location will generally be permitted. Noise levels at receivers must be based on the 'worst case' turbine layout/configuration having regard to any micro-siting.

This proposal is very undesirable. Given the sensitivity of electricity production and of noise generation to the separation distance between turbines, an unqualified approval of 100 metre relocations of turbines is more than likely to increase the accumulated noise impact for neighbours. In general, wind turbines are already placed far too close together. To allow developers to regard a movement of 100 metres as a "minor" modification is asking for trouble.

I will discuss this in more detail in Section B below.

The "independent" Environmental Representative and the turbine relocations

The proponent's next line of defence is that the turbine relocations were all approved by the "independent" Environmental Representative, and that the Environmental Representative was approved by the Department of Planning. In the proponent's *Modification Application* (March 2014) it is stated (p. 37):

> Consistency reviews of variations to the approved project have been undertaken progressively by the P&I approved and independent Environmental Representative. . . . The conclusions reached by the Environmental Representative are that modifications to the project are consistent with the existing approval and GRWFPL was advised accordingly. Furthermore, GRWFPL was also advised by the Environmental Representative that as a result of the Consistency Review finding that the amended turbine locations were consistent and, that in accordance with Section 75W(2) of the EP&A Act, the minister's approval for modification of the Project Approval was not required. [ungrammatical sentence construction of last sentence in the original]

Under condition 7.1 of the Project Approval for the Gullen Range Wind Farm the proponent is to nominate a suitably qualified and experienced individual to act as the "independent" Environmental Representative. This nomination is to be made to the Director-General of the Department of Planning. If the Director-General approves of the nomination, then the candidate is appointed to the position.

Amongst other things, the "independent" Environmental Representative is to advise the proponent on the proponent's compliance obligations in relation to the Project Approval (7.1b). It is also stated that the Environmental Representative is to have sufficient "authority and independence" to recommend action to avoid unintended or adverse

environmental impacts, and to recommend that the proponent's activities cease if there is a significant risk that an adverse environmental impact is likely to occur (7.1c).

In 2011 Goldwind nominated one Erwin Budde to be the "independent" Environmental Representative. Erwin Budde was duly approved and appointed to the role by the Director-General (Sam Haddad).

As Goldwind's Modification Application, cited above, indicates, Erwin Budde advised Goldwind that all the turbine relocations were "consistent with the existing approval", and that therefore no modification application needed to be made to the Minister. Acting on this advice, Goldwind went ahead and constructed the entire system of roads, hardstands and turbine footings, with 69 of the turbine footings in the wrong place, between around September 2012 and May 2013, without submitting any modification application to seek the Minister's approval for the changes.

Goldwind's defence is : (i) the independent Environmental Representative approved all the turbine relocations; (ii) the Environmental Representative was appointed by the Director-General of the Department of Planning.

Let us examine this.

Erwin Budde was, and still is a Director of the environmental consultancy *NGH Environmental*, a consultancy that has been working on the Gullen Range Wind Farm project for the proponent (first Epuron, now Goldwind) since 2007. *NGH Environmental* prepared the original *Project Application* (2007), and the *Environmental Assessment* (2008). It also prepared the *Submissions Report* (2008). And it prepared the *Micrositing Consistency Reviews* (May 2012 and December 2013). Finally, it prepared the *Construction Environmental Management Plan* (2012) and the *Operational Environmental Management Plan* (2013). It has been working on the Gullen Range Wind Farm project since 2007. It has obviously acted as the agent of the proponent.

All this being so, it is preposterous to suppose that Erwin Budde could act as an "independent" Environmental Representative, and give independent advice on compliance obligations to the proponent. He must have had an obvious and extreme conflict of interest.

He should never have been nominated by Goldwind for the role, and he should never have been appointed by the Director-General of the Department of Planning.

Since this matter of the unauthorised turbine relocations came to light, the Department of Planning has terminated Erwin Budde's appointment as Environmental Representative. This termination occurred sometime in early 2014. According to an e-mail from Azmeena Kelly, Manager for Compliance in the Department, to myself (2.4.14), Erwin Budde was dismissed from his role for not being sufficiently independent! Ms Kelly states that the Department "informed the proponent that the former ER did not have the level of independence to fulfil the role and was therefore required to cease the role."

Why did it take the Department three years to discover the unsuitability of Mr Budde for the role? This must be either incompetence or negligence or impropriety.

Gullen Range Wind Farm is no longer listed as a current project for *NGH Environmental* on *NGH Environmental*'s website (www.nghenvironmental.com.au).

However, there is another aspect to this matter.

If we ask, how could Mr Budde ever have been regarded as a suitable candidate for the role, the answer lies in the wording of condition 7.1 of the Project Approval. According to condition 7.1, the only constraint on the nomination and appointment of an individual for the role is that the candidate must be "independent of the design, construction and operation personnel". These words are clearly a fudge, apparently designed to allow someone like Mr Budde to be nominated and appointed. Mr Budde is not amongst the authors of any of the *NGH Environmental* documents cited above. This fact, presumably, was regarded by the Department in 2011 as enough for Mr Budde to qualify as "independent of the design, construction and operation personnel", and for the Department to turn a blind eye to the fact that, as a Director of *NGH Environmental*, Mr Budde had a massive conflict of interest.

I have been told that the Department no longer uses the wording "independent of the design, construction and operation personnel". In her letter to me (26.6.14) Carolyn McNally, Acting Secretary of the Department, employs the following fudge:

> One of the reasons the condition [sc., 7.1] does not require complete independence is that the environmental representative only has an advisory role, rather than an approval role. Notwithstanding, conditions in more recent approvals require a greater level of independence to be demonstrated prior to the appointment of an ER to a project. . . .
>
> In this case, it is acknowledged that Mr Budde was employed by the same company who prepared the Environmental Assessment for the original application however he did not appear to have any role in these matters prior to his appointment. Mr Budde's appointment was consistent with the general approach taken by the Department at the time [!], and the wording of condition 7.1 is consistent with that of other project approvals. [!]

In other words, Mr Budde's appointment in 2011, despite his lack of independence, was correct, and his dismissal in 2014 for lack of independence was also correct. Using the words "independent of the design, construction and operation personnel" was correct in 2011, and no longer using them in 2014 is also correct.

I submit that this kind of fudge is just a lack of common honesty. One reason why there needs to be a Royal Commission into wind farm development in Australia is that it is impossible to get state government officials to give straightforward answers to straightforward questions. There is a general failure of 'transparency'. Until they

are placed in a witness box and compelled to give evidence on oath, they will continue to prevaricate.

The appointment of Erwin Budde as "independent" Environmental Representative is a glaring instance of the way in which the Department of Planning 'bends the rules' and lowers standards of assessment in order to give developers an 'easy ride'. The notion that the Environmental Representative is supposed to be independent so as to be able to give a proponent frank and fearless advice is sufficiently clear in condition 7.1c of the Project Approval (see above). But this will be of no force if the Department writes 7.1 in such a way as to evade 7.1c. This is surely impropriety, and not just incompetence or negligence.

The narrative resumes: December 2013 to February 2014

To recapitulate: The Department claims that it first became aware of the unauthorised turbine relocations in November 2013. Azmeena Kelly, Manager for Compliance in the Department, wrote to Ben Bateman, then project manager for the development, on 9.12.13, stating that the Department was not satisfied that the turbine relocations were consistent with the Project Approval, and asking for further information, and justification of the turbine relocations. In response, Goldwind provided the *Micrositing Consistency Review*, dated 17.12.13. (This appears to be the last document prepared for Goldwind by *NGH Environmental*.)

In the *Micrositing Consistency Review* Goldwind has, broadly, three lines of defence. First, it argues that the turbine relocations should all be regarded as "minor" modifications, and that therefore it did not need to submit a modification application to gain approval for them. Second, it argues that all the turbine relocations were approved by the "independent" Environmental Representative, Erwin Budde, who had been approved and appointed by the Director-General of the Department of Planning. Third, it argues that there is no significant difference in the projected environmental impacts of the turbines in the original locations, and the projected environmental impacts of the turbines in the new locations.

I have dealt already with the first two lines of defence. It is impossible to deal thoroughly and in detail with the third line of defence without swelling this submission to an unacceptable size. I must refer the Committee to the attached PMLG documents: (i) Submission re Gullen Range Wind Farm Modification Application 07_0118 MOD 1 (rev. 1, May 2014); (ii) Submission to the Planning Assessment Commission re Gullen Range Wind Farm Modification Application 07_0118 MOD 1 (September 2014).

Broadly speaking, my position is that both the proponent's original *Environmental Assessment*, and its *Modification Application* presuppose a system of assessment, adopted by the Department of Planning, that is totally inadequate to protect neighbours from adverse impacts. This is true in respect of the consideration of noise impacts, health effects, visual impact and impact on property value. Therefore, there will be adverse

impacts for neighbours, whether the turbines are located in the original positions or in the new positions. The detailed analysis needed to justify this position will be found in the above cited PMLG documents.

A summary account of the inadequacies of the system of noise assessment will be found in Section B below.

However, to resume.

It is apparent that in December 2013 the Department of Planning and the developer Goldwind had adopted diametrically opposed positions. How was this to be resolved?

Any ordinary citizen would assume that the Department of Planning as the relevant compliance authority would order the proponent to cease construction immediately, to remove all turbines in unauthorised positions, and to remove all turbine footings in unauthorised positions. This would certainly be the approach of any planning authority, if the case were that of, say, a garden shed. But, things are not so simple if it is a matter of a $300 million development owned by a foreign multi-national. There would appear to be one law for the ordinary citizen, and another for large corporations, especially those involved in wind farm development.

For three months the Department of Planning consulted its lawyers. That legal advice has, inevitably, never been made public. It is impossible to know to what extent that legal advice pertained to the public interest of NSW, and to what extent it pertained to the private self-interest of the Department of Planning. There can be no doubt that the Department of Planning has the authority to serve orders on developers who violate their project approvals. So, we have to wonder, was the Department concerned that any legal action that it might take against Goldwind in court was likely to be compromised by the Department's appointment of the Environmental Representative, or by any other planning blunders? Who knows? The truth of all this could only be discovered by an independent public inquiry.

At any rate, the next event to occur in the public domain was a media release, put out by the Department on 28 February 2014. This media release is entitled 'Response sought from Gullen Range Wind Farm'. After three months' deliberations, only to seek a response is not exactly to take vigorous action.

Moreover, the media release is largely mystification. I will quote it all.

> Planning and Infrastructure has requested that the proponent of Gullen Range Wind Farm stop work on several key turbines after it was identified they were being built in an unauthorised location.
>
> The company has been warned that it faces possible court action unless it addresses the findings of a Planning and Infrastructure investigation that found many of the 73 proposed turbines were constructed in different locations to what was originally

> approved.
>
> The variations ranged from about a metre to 187 metres.
>
> The company has been advised that legal action in the Land and Environment Court is being considered.
>
> Planning and Infrastructure Executive Director Chris Wilson expressed his disappointment that turbines were being built in unauthorised locations and said the matter was serious.
>
> "It is essential that the company stops work on the turbines that have been moved closer to homes," Mr Wilson said.
>
> The proponent has been given until Wednesday 5 March to respond.

Note that the proponent has not been *ordered* to cease construction. It has only been "requested". And it appears from the quote from Chris Wilson that this request only concerns turbines "that have been moved closer to homes". How many turbines does this involve? The media release does not say, and it does not identify the turbines.

The first three paragraphs of the media release seem to imply that the Department regards all the 69 turbines that have been mislocated as being in "an unauthorised location". This can be inferred by taking the second paragraph with the third paragraph, and then referring back to the first paragraph. Thus, the second paragraph states that "many" of the 73 turbines have been given locations different from those originally approved. If we now want to know how many is "many", the third paragraph seems, by implication, to tell us.

The third paragraph refers to the turbines whose variations ranged from about a metre to 187 metres. But we know from reading the *Micrositing Consistency Review* (2013) that this is the range of variation of all 69 turbines.

If we now refer back to the first paragraph, we see that the turbines that have moved closer to homes, and on which construction is to cease, are said to be in "an unauthorised location". But, if those turbines are in unauthorised locations, it follows that all the other turbines that have moved must also be in unauthorised locations. Why limit this judgment only to turbines that have moved closer to homes? Moving closer to homes has nothing to do with whether a turbine is in an unauthorised position, or not.

So, it would appear that here we have just a glimpse of the Department's real view, namely, that all 69 turbines in positions different from those originally approved are to be considered as in "unauthorised locations".

However, the Department will not admit this explicitly, even though it has been asked to do so many, many times. Moreover, as we have already seen, and will continue to see, the Department refuses to act on this judgment.

If the Department really regards all 69 turbines as in unauthorised locations, why has it requested the proponent to stop work only on those that have moved closer to homes?

It turns out that the number of turbines designated as having "moved closer to homes" is only 16! This is revealed in Carolyn McNally's letter to me (26.6.14). Ms McNally states: "The proponent agreed to stop construction of 16 turbines that had or were in the process of being relocated closer to residences . . . ."

I shall have more to say about these 16 turbines below. For the moment I will only say that moving closer to homes could not possibly be a legitimate criterion for having work cease on any turbines. The only legitimate criterion must be violation of the project approval. This means all 69 turbines. Therefore, it would appear that we have here another instance of the Department being willing to give the developer 'an easy ride'.

The fourth paragraph states that legal action was being considered against the proponent in the Land and Environment Court. This is not true. By the end of February the option of legal action against the proponent had already been dismissed. For evidence of this we need to look again, and in more detail, at Carolyn McNally's letter to myself (26.6.14).

Under the heading 'The Department's compliance monitoring regime' Ms McNally writes:

> In December 2013, the Department sought further information regarding the location of turbines from the proponent, and following the receipt and consideration of this information formed the view that the relocation of many of the turbines was not considered to be consistent with the approval.
>
> The Department's position was conveyed to the proponent on 29 January 2013 [sic; should be 2014], and the proponent was given 7 days to respond to the Department's position. . . .
>
> Upon considering the representations made by the proponent and members of the community, and after seeking independent legal advice, the Department confirmed its position to the proponent on 26 February 2014 that the location of many of the turbines as constructed, are [sic] not consistent with the project approval, and that the relocations are not considered to be minor.
>
> The proponent was put on notice and given 7 days to respond. The proponent agreed to stop construction of 16 turbines that had or were in the process of being relocated closer to residences, and advised that it would lodge a modification application to regularise the non-compliance. . . .

So, the Department recognized that "many" of the turbine relocations were not consistent with the approval. Did the Department tell the proponent exactly how many turbine relocations were unauthorised, and which they were? Who knows? The Department's

letter of 26 February 2014 to the proponent has never been released.

After three months of correspondence with the proponent, and of departmental deliberation - from the beginning of December 2013 to the end of February 2014 - the result is that the proponent agrees to halt construction on only 16 turbines, and to lodge a modification application to "regularise" the situation. This result is surely astonishing in its paltriness and impudence. How did it come about?

That the Department was not in fact contemplating legal action against the proponent, despite what was said in the February media release, can be seen from further passages in Ms McNally's letter to myself. Under the heading 'Compliance action in relation to relocation of turbines', Ms McNally writes:

> In relation to the Department's compliance action to the relocation of turbines, as discussed above, compliance action by the Department is guided by its Compliance Policy. Where there is an issue of non-compliance, there are a number of options available such as remedial or rectification action where the aim is to rectify the non-compliance, or penalty action where the aim is to punish the offender. The type of compliance action taken will depend on the significance of the breach and the outcome the Department is seeking to achieve. [!] In this case, the Department's first priority was to undertake remedial or rectification action due to the potential impact of the relocation of turbines.
>
> The Department considered whether it should serve an order to move the turbines to the approved locations, to negotiate with the Proponent and seek undertakings or whether to commence enforcement proceedings in the Land and Environment Court.
>
> In relation to the prospects of any legal action, the Department considered that the Court would not likely order an immediate rectification, such as the removal of turbines, but allow for an opportunity to attempt to regularise the situation. The method for this would be the submission and determination of a s 75W modification application. If the Department were to serve an order requiring the removal of the turbines, the same outcome would likely arise, being that any action would be suspended pending the outcome of a s75W modification. Subsequently, the Department accepted the modification application made by the proponent in order to expedite any potential regularisation process.
>
> This decision was made in balancing the public interest, and in consideration of whether there was a likelihood of serious environmental harm which could arise as a consequence of halting the works and the delay in rectification, if proceedings were to be commenced.
>
> In relation the Department's [sic] acceptance of the s75W application, it is common practice for unauthorised works to be assessed in the context of the submission of a modification application by Councils, the Department or the Court. The submission of a modification allows proper consideration of the environmental impacts of the works,

> and includes public consultation. It allows the consent authority to approve, modify or refuse the application. Once a s75W modification is requested the Minister must process it in accordance with the provisions of the *Environmental Planning and Assessment Act, 1979*.

I submit that what is contained in these paragraphs is self-serving hypocrisy and mystification.

Setting aside the issue of punishing the offender, and considering only the issue of remedial or rectifying action, we can surely say that the Department had a clear duty to serve an order on the proponent to remove the turbines and turbine footings,and a clear duty to refer the matter of the unauthorised turbine relocations to the Land and Environment Court. There had been a clear and extensive violation of the Project Approval, and that Project Approval had been re-issued as a court order of the Land and Environment Court in 2010.

It was not for the Department to anticipate, or guess at the Court's likely findings. It was the duty of the Department to take the proponent to court, so that the Court might exercise its legitimate authority in the consideration of a case of the violation of one of its own court orders.

By refusing to go to court, the Department has surely rendered itself guilty of a dereliction of duty.

The use of the word 'regularisation' is surely suspicious, since it seems to suggest that a blatant violation of a project approval is to be re-classified as acceptable. The facts will remain the same, but their legal status will be changed.

To allow the proponent the opportunity to seek retrospective approval for such an extensive violation of a project approval is wrong in principle.

It is impossible not to suspect that the Department of Planning was afraid of going to the Land and Environment Court, because the Department's own position was hopelessly compromised, partly by the appointment of Erwin Budde to the role of Environmental Representative, and partly by the Department's culpable failure to prevent such an extensive violation of a project approval.

It is also impossible not to suspect that the Department was terrified by the prospect of ordering a foreign multi-national to relocate 69 turbines at the cost of millions of dollars. It is impossible not to suspect that when the Department speaks of 'regularising' the situation, what it hopes is that all or at least most of the turbine relocations can be declared acceptable, so that the Department does not have to take the responsibility of ordering a mass return of turbines to their original locations.

Finally, it is impossible not to suspect that the Department was (and is) terrified of being sued by the developer. The developer would, presumably, argue that it had acted in good

faith, that it had followed the advice of the Environmental Representative appointed by the Director-General of the Department of Planning, and that, this being so, it should be compensated for the cost of returning turbines to their original locations by substantial damages (to be paid for ultimately by the NSW taxpayer).

The concern for the environmental impact that might result from any delay brought about by court proceedings is pure hypocrisy, since the proponent could be ordered to protect the site.

All in all, one must suspect that there was a tacit agreement between the Department and the developer to avoid going to the Land and Environment Court, lest the Court censure both of them, the developer for violating the project approval, and the Department for failing to prevent it.

This episode seems to be an especially involuted case of 'regulatory capture'.

Evidence to corroborate the suspicions expressed above will be found below, when we consider subsequent events over the course of 2014.

16 turbines that have "moved closer to homes"

In the Department's media release of 28 February 2014 Chris Wilson, Executive Director of the Department of Planning, is quoted as saying, "It is essential that the company stops work on the turbines that have been moved closer to homes."

And in her letter to me of 26 June 2014, Carolyn McNally, then Acting Secretary of the Department, explains: "The proponent agreed to stop construction of 16 turbines that had or were in the process of being relocated closer to residences, and advised that it would lodge a modification application to regularise the non-compliance."

Later in the same letter she adds: "In addition to submitting a s75W request, the Proponent has also provided an undertaking to cease construction of 16 turbines which had been relocated closer to residences *whilst the s75W request remains undetermined*. (italics added)"

After coming to this agreement with the Department of Planning in February 2014, the proponent prepared its modification application (its "s75W request"). The Modification Application document is dated 31 March 2014.

This modification application was finally determined by the NSW Planning Assessment Commission in a report and an instrument, both dated 2 October 2014.

Therefore, according to the above assurance given by the proponent to the Department, the proponent should have stopped work on the 16 turbines until 2 October 2014. But this did not occur. The proponent went on erecting turbines.

In my submission on the modification application I noted that it was impossible for work to have halted on 16 turbines, since at the time of my submission (May 2014) only 7 turbines remained to be erected.

So, it would seem that this agreement between the proponent and the Department was worthless. At any rate, the Department failed to enforce it. All through 2014 neighbours, including myself, e-mailed the Department repeatedly to tell the Department that the proponent was continuing to erect turbines. The Department took no action to enforce the agreement, until, by May, it was no longer possible to enforce it, as too many turbines had already been erected.

However, as it turned out, there was never any rational foundation to the selection of these 16 turbines for special attention.

Assuming that this agreement between the proponent and the Department pertained to turbines that had moved closer to *non-associated* residences, and using the proponent's residence data sheets (accompanying the Modification Application) and the proponent's Submissions Report, I calculated that *in toto* **37** turbines had moved closer to 34 non-associated residences within 2 kilometres of the turbines.

I wrote to Ms McNally, asking her to respond, and to provide details of the 16 turbines that were the subject of the agreement (e-mail: Brooks to McNally, 22 August 2014).

In her e-mail response (27 August 2014) Ms McNally informed me that of all the turbines that had moved closer to residences only 16 had moved more than 50 metres. (So, it appears that the Department was using 50 metres as the cut-off point between a minor and a non-minor turbine relocation. However, the Department has never stated this explicitly.)

Ms McNally identified the 16 turbines as the following: BAN 09, BAN 10, BAN 12, BAN 13, BAN 15, BAN 25, GUR 7, GUR 10, GUR 12, GUR 18, POM 03, POM 04, POM 06, POM 11, POM 19, and POM 22.

But this list of 16 turbines still makes no sense.

First, the list omits some turbines that have moved closer to non-associated residences by more than 50 metres. Thus, POM 01 has moved closer by more than 50 metres to residence PW34. BAN 21 has moved closer by more than 50 metres to residence B19. And BAN 08 has moved closer by more than 50 metres to residence B29.

In addition, the Department's list adds turbines BAN 25, GUR 10, GUR 12, GUR 18, POM 04, POM 06, POM 11, POM 19 and POM 22, none of which has moved closer to any non-associated residence.

Thus, it would appear that of the 16 turbines on the list (turbines about which Chris Wilson was so concerned, because they had moved "closer to homes") only 7 had moved

closer to non-associated residences, while 9 had not; and 3 turbines that had moved closer to non-associated residences by more than 50 metres had been left off the list.

I e-mailed Carolyn McNally about this (28 August 2014), and received an e-mail reply from Chris Wilson (3 September 2014). Instead of explaining the anomalies, he blandly stated:

> I can advise that the Department became aware of the discrepancies you mention after Goldwind's undertaking was provided. Notwithstanding, the Department decided to continue with its assessment of the entire wind farm through the Section 75W process.

Just that. Nothing more.

Finally, I was informed by Mrs Jennifer Price-Jones on 20 August that the proponent had resumed work on one of the 16 turbines, namely, BAN 25, contrary to the agreement. I raised this matter in my e-mail to Carolyn McNally of 22 August 2014. In her e-mail reply to me (27 August 2014) Ms McNally blandly states:

> Goldwind previously gave an undertaking that it would cease construction on 16 turbines, other than essential safety work for a limited period. The Department received correspondence from Goldwind on 19th August informing the Department that Goldwind intends to complete construction on 5 remaining turbines including Ban_25. A specific date for recommencement was not given.
>
> The Department's position is that there should be no further construction of turbines until such time as the Planning Assessment Commission has made a decision on the current modification application. The Department has made this position clear to Goldwind. Goldwind has subsequently advised the Department that following the completion of Ban 25 (expected 23rd August) it will again cease construction pending a further response to the Department.

So, Goldwind unilaterally breaks the agreement, resumes work on BAN 25, contrary to the agreement, and the Department allows Goldwind to finish work on BAN 25, despite the agreement.

It must surely be obvious that this agreement was worthless.

It must be obvious that Goldwind's assurances were worthless.

It must also be obvious that the Department never had any intention of enforcing the agreement.

And the agreement was misconceived from the beginning, since the selection of turbines had not been correctly made.

I submit that this "agreement" was nothing more than a public relations exercise,

designed to cover the Department's embarrassment at having failed to prevent the proponent's massive violation of the Project Approval.

Whether it is a symptom of incompetence, negligence, or impropriety can only be determined by an independent public inquiry.

The narrative resumes: from the Modification Application (31.3.14) to the Planning Assessment Commission's determination (2.10.14)

The Modification Application

According to the agreement reached with the Department in February 2014, the proponent submitted its Modification Application, dated 31 March 2014. The function of this Modification Application is to argue that all the unauthorised turbine relocations are consistent with the existing approval, and therefore acceptable. In other words, the function of the Modification Application is to seek retrospective approval for what is in fact a massive violation of the Project Approval. Or, in the Department's euphemistic terminology, to *regularise* the situation.

The proponent used the same arguments as in the *Micrositing Consistency Review* (December 2013): namely, (i) that the modifications were all minor; (ii) that the modifications were all approved by the "independent" Environmental Representative, who had been approved and appointed by the Director-General of the Department of Planning; and (iii) that the projected environmental impacts of the turbines in the new positions were not significantly different from the projected environmental impacts in the old positions.

The Department put the Modification Application on public exhibition, and invited submissions from the general public. There were many submissions, including mine made on behalf of Parkesborne/Mummel Landscape Guardians (PMLG).

Some submissions, including my own, argued that the Modification Application should not be assessed, but that instead there should be an independent public inquiry into what was obviously a gross failure of planning by the Department of Planning. Needless to say, this argument was rejected by the Department.

In due course the proponent considered the public and official submissions, and issued its Submissions Report, dated 4 June 2014. In this Submissions Report it offers reasons for rejecting all the objections to the modifications, made by neighbours and the local council.

In a letter to Karen Jones of the Department of Planning (dated 14 July 2014), I analysed the sophistry in the proponent's Submissions Report. (I attach my letter.)

The Major Project Assessment

In July 2014 the Department issued its report and recommendations concerning the Modification Application. This document is entitled *Major Project Assessment: Gullen Range Wind Farm MP07_0118 (Mod 1); Secretary's Environmental Assessment Report Section 75W of the Environmental Planning and Assessment Act 1979* (posted at www.planning.nsw.gov.au).

This *Major Project Assessment* gives the Department's own version of the history of the project. It blandly states that "a minor relocation is taken to mean small, or insignificant" (i). It states that "the Proponent ceased construction of 16 turbines that had been moved closer to homes" (i), which is untrue.

Although the report finds that 19% of the turbines have moved between 50 and 100 metres; and that 13% of the turbines have moved by a distance greater than 100 metres; and although the report finds that 27% of the turbines have a higher elevation of greater than 5 metres (i), nonetheless the report concludes "that in most instances , the change in the visual impact from the constructed layout and approved layout was not discernible", with the exception of two turbines, BAN-09 and BAN_15, "which have moved 167m and 178m respectively from their approved locations." (ii)

The selection of BAN_09 and BAN_15 is surely arbitrary. Even if we concentrate only on turbines that have moved more than 100 metres, we must add another 7 turbines: BAN_08 (187m), BAN_13 (168.6m), BAN_21 (111.9m), BAN_24 (123.6m), POM_01 (115.2m), POM_03 (102.2m) and GUR_07 (101.5m). (Modification Application, pp. 43-44)

We noted above that in her e-mail to me of 27 August 2014 Carolyn McNally seems to imply that the Department regards 50 metres as the cut-off point between a minor and a non-minor modification. If we add in all the turbines that have moved between 50 metres and 100 metres, then we must add another 13 turbines: BAN_10 (80.4m), BAN_12 (64.8m), BAN_14 (85m), BAN_25 (50.9m), POM_04 (96.2m), POM_06 (56.7m), POM_10 (92.5m), POM_11 (64.4m), POM_19 (56.6m), POM_22 (81.5m), GUR_10 (60.5m), GUR_12 (59.7m), and GUR_18 (55.3m). (Modification Application, pp. 43-44).

All in all, 22 turbines have moved by a distance greater than 50 metres. To assert that only 2 of these will make a difference to the visual impact of the wind farm is manifestly preposterous. But it is impossible to reconcile all the inconsistencies across all of the Department's documents. The Department is obviously desperate not to have to order Goldwind to relocate a substantial number of turbines.

The detailed consideration of visual impact in the body of the *Major Project Assessment* is full of sophistry, evasion and self-contradiction. I have made a detailed criticism of it in the PMLG document *Submission to the Planning Assessment Commission re Gullen*

Range Wind Farm Modification Application MP 07_0118 MOD 1 (September 2014).

With regard to noise impacts, the report concludes that "the proposed relocation of the turbines will result in an insignificant change in wind turbine noise from the wind farm and that it is capable of meeting the noise limits in the Project Approval." (ii)

In the context of the Department's adopted noise guidelines, namely, the so-called *South Australian Noise Guidelines* (2003), the Department's judgment may be correct (although noise complaints by neighbours already suggest that it may not). However, even if it is correct in terms of the projections, it takes no account of the *demonstrable* inadequacy of the *South Australian Noise Guidelines* (2003), which the Department should never have adopted, and used to grant approvals. The fact that the Department itself has felt obliged to assemble the NSW draft *Wind Farm Guidelines* (2011), which consider many aspects of wind turbine noise that the *South Australian Noise Guidelines* ignore, is a tacit admission that the *South Australian Noise Guidelines* are deficient - as indeed they are. The NSW draft *Wind Farm Guidelines* are also inadequate to protect neighbours, but they are at least an improvement on the existing guidelines.

As if in tacit acknowledgment that a judgment of noise impact according to the *South Australian Noise Guidelines* must be inadequate to protect neighbours, the Department's report also recommends new noise conditions of consent concerning low frequency noise and tonality, and the provision of a right for neighbours to request independent noise monitoring at their residence (p. 36). This right of request is extended to all landowners within 3 kilometres of turbines! (*Modification of Minister's Approval*, 2.24A)

Why would such independent noise monitoring be necessary if the Department is confident that the projections under the *South Australian Noise Guidelines* are both accurate and adequate to protect neighbours?

The brief rationale given is that the new noise conditions are "to address concerns expressed by residents about noise levels experienced by the operation of the turbines whilst they are in commissioning stages. (p. 36)" But if the Department already suspects that adverse noise impacts are already being experienced by neighbours, and that these adverse impacts cannot be registered by the *South Australian Noise Guidelines*, why hasn't the Department suspended all assessment of the Gullen Range Wind Farm, and commenced new noise monitoring, according to more adequate standards? After all, the wind farm is now built, so actual measurements can be taken. It is no longer necessary to rely on projections.

The truth must be that the Department knows that the *South Australian Noise Guidelines* are useless, and that any projection made according to them will be worthless in respect of protecting neighbours from the specific characteristics of wind turbine noise, such as modulating infrasound, modulating low frequency noise, the amplitude modulation of high and mid frequency noise, and the tendency of wind turbine noise to be worse at night, partly because of a reduction of background noise and partly because of temperature inversions.

However, the Department cannot admit all this, because to do so would mean admitting to all its own blunders. And any action by the Department to interrupt the steady progress of the wind farm to full operation would run the risk of exposing the Department to being sued by the developer.

The Department of Planning knows that the noise assessments that it has accepted in order to grant wind farm approvals are worthless, but the Department does not have the courage or the honesty to admit this.

I will discuss the issue of noise impacts and noise assessment in Section B below.

Despite there being 22 turbines that have moved more than 50 metres, the Department recommends acquisition rights for only two properties, B29 and PW34 (pp., 23, 30). Given the fact that at the time of writing of the *Major Project Assessment* (July 2014) there were still 45 non-associated residences within 2 kilometres of turbines (ii), to grant acquisition rights to only 2 is manifestly preposterous. **Once again, it can only be surmised that the Department is desperate not to order the proponent to remove a substantial number of turbines, or to impose vast new costs on the proponent, lest the proponent sue the Department.**

The Planning Assessment Commission

The comfortable agreement between the Department and the proponent, and the Department's vast system of evasion, sophistry and mystification were about to be thrown into confusion by the NSW Planning Assessment Commission.

The new Minister for Planning, Pru Goward, declined to determine the proponent's Modification Application herself. She delegated the task to the NSW Planning Assessment Commission. The Department announced this in a media release, dated 30 July 2014: 'Gullen Range Wind Farm proposal referred to independent Commission'.

The media release promises: "The independent PAC will make the final determination on the modification application, at arm's length from Government." [!]

Well, the PAC certainly turned out to be independent. But it appears that it has not made the "final determination" on the proposal.

The PAC announced that it would be holding a public meeting on 5 September in Crookwell, and it invited interested members of the public to register to speak at the meeting.

I made a submission on behalf of PMLG to the PAC, and spoke at the meeting. (I have attached my submission.) About 40 people spoke at the meeting, only 3 of whom were in favour of the wind farm.

The PAC could have no doubt that the overwhelming majority of interested local people were strongly opposed to the wind farm, that they, the majority of interested local people, were aware of the adverse impacts already experienced by many of the wind farm's neighbours, and that they were appalled by the planning fiasco perpetrated by the Department of Planning. Many called for an independent public inquiry.

The PAC considered the submissions made to it, and published its determination on 2 October 2014.

I am reluctant to use cliché, but the PAC's determination can only be described as "throwing a spanner in the works."

All we neighbours had expected that the PAC would roll through the proponent's Modification Application, with the Department's recommendations for very minor amendments. We had no hope from the delegation of the making of the decision to the PAC. We assumed that it was a "done deal", and that the PAC would provide the "cover" for the deal stitched up between the Department and the proponent. We expected the PAC to 'regularise' the situation!

We were quite wrong, and were quite unjust in our assumptions about the PAC.

The PAC's report is entitled *NSW Planning Assessment Commission Determination Report Gullen Range Wind Farm Project (MP07_0118), Upper Lachlan Shire LGA* (2 October 2014).

In its report the PAC explains that it cannot address the issue of the breach of the Project Approval, and that it must consider the modification application on its own merits (pp. 1-2).

However, the PAC puts the consideration of the modification application on new ground insofar as it insists on assessing the application in the context of the NSW draft *Wind Farm Guidelines* (p.p. 4-5). It should be noted that when the Gullen Range Wind Farm proposal was originally approved (in 2009 by the Minister, and again in 2010 by the Land & Environment Court), the draft *Wind Farm Guidelines* were still being assembled, and had not been put on public exhibition. Consequently, they do not enter into the original approval, either by the Minister or by the Court. (This matter will have to considered again below in connection with Goldwind's response to the PAC decision.)

The PAC notes (p. 5):

> The draft guideline was exhibited between December 2011 and March 2012. According to the Department, it advised wind farm proponents that the draft guidelines would apply to all new wind farm applications where Director General's Requirements had not been issued.

> This modification application was lodged in April 2014, two years after the public exhibition of the draft guidelines. Although this is a modification application to an already approved wind farm, the Commission considers it should have regard to the intent and spirit of the draft guidelines in determining this application.
>
> The two key matters that are relevant for the Commission's consideration are proximity of turbines to existing residential dwellings and visual amenity.

In respect of the issue of proximity to existing dwellings, the report states (p. 5):

> The original wind farm approval has up to 49 non-associated residences within 2km of a turbine. As stated earlier, the approval predated the draft guidelines. However, the current modification application seeks to locate many of these turbines even closer to non-associated residences. The proposal is inconsistent with the intent and spirit of the draft guidelines, *which proposes a 2km distance between a turbine and any non-associated residence unless agreed by the relevant landowner or a site compatibility certificate has been issued*. (italics added)

In respect of visual amenity, the report states (p. 6):

> The Commission agrees that the increased proximity of the turbines to non-associated residences will result in visual impact on these properties. The proposed vegetation screening may in some instances be ultimately sufficient to reduce/block the view when it has achieved adequate height, *but the vegetation screen itself will change the outlook and vista of the residence. In other cases, the screen itself will not be adequate to mitigate the imposing view of a close-by turbine*. (italics added)

Taking this approach, the PAC made the following findings (amongst others) (p. 7):

> 1) The original approval has up to 49 non-associated residences within 2km of a turbine. The relocation of some of these turbines even closer to residences is inconsistent with the intent and spirit of the *Draft NSW Planning Guidelines: Wind Farms*.
>
> 2) Many of the relocated turbines will have significant visual impact on non-associated residences, notwithstanding the proposed vegetation screening.

The PAC thus made the following determination (p. 8):

> On balance, the Commission does not consider the benefit of the proposed modification outweighs the potential adverse impacts on the community, the rural and natural environment or on non-associated properties.
>
> Having regard to the findings above, the Commission determines not to approve the modification application (MP07_0118 (MOD 1)) for the following reasons:

1. The application is inconsistent with the intent and spirit of the *Draft NSW Planning Guidelines: Wind Farms*.

2. The application, if approved, would have significant visual impact on non-associated residences and the proposed vegetation screening would not be able to mitigate the impact on all affected residences to an acceptable level.

This determination was duly expressed in the instrument of refusal, *Modification Refusal Section 75W of the Environmental Planning & Assessment Act 1979* (2 October 2014).

Thus, the PAC refused the modification application altogether. This determination delighted the local community. But what was especially surprising, indeed astonishing, was the justification for the determination, given by the PAC. This was the first time that any official planning body in NSW had suggested that the spirit and intent of the NSW draft *Wind Farm Guidelines* were to prohibit turbines within 2 kilometres of non-associated residences. Until now everyone considered that the draft *Wind Farm Guidelines*' so-called 'Gateway Process' was no more than another instance of bureaucratic mystification, more 'cover' for the Department and developers to get their own way. No one, and certainly no official planning body, had suggested that the provisions in the draft *Wind Farm Guidelines* about turbines within 2 kilometres of residences should be interpreted to mean that, other things being equal, there shouldn't be any turbines within 2 kilometres of residences.

Again, no official planning body in NSW had ever suggested that 'landscape screening' might actually not be adequate to screen turbines from residences, or that the screen itself might be a problem. Until now the planning authorities in NSW had always used the idea of 'landscape screening' as a 'cover' for inflicting turbines on residents, while hypocritically pretending to be concerned for residents' visual amenity. No one in planning had ever before acknowledged the truth that the idea of 'screening' turbines 125 metres high, set on a ridge, was an absurdity.

These were revolutionary findings.

However, our naive delight was to be short-lived. It quickly became apparent that neither the developer nor the Department intended to take any notice of the PAC's decision.

From the PAC decision to the present

Since the PAC had refused the modification application, so that the situation was not 'regularised', we all expected that the Minister would now be obliged to serve an order on the proponent to remove the unauthorised turbines and turbine footings, and that the proponent would be compelled to comply. After all, there was now a situation where 69 turbine footings, and most of the 69 turbines themselves had already been built in unauthorised locations. These locations were not approved in the Project Approval, neither as issued in 2009, nor as re-issued in 2010. They were regarded as not consistent

with the existing approval by the Department. And now approval for these locations had been positively and explicitly rejected by the PAC. How could these turbines and turbine footings remain in place?

This was clearly not Goldwind's view. Goldwind issued a press release to two local newspapers, the *Goulburn Post* and the *Crookwell Gazette*. (This press release has not been posted on the wind farm's website: www.gullenrangewindfarm.com.) The press release formed the basis for articles in the *Post* (6.10.14) and the *Gazette* (7.10.14).

According to a journalist on the *Crookwell Gazette*, the wording of the article in that newspaper follows the wording of the developer's press release. So, we can take the following as Goldwind's words:

> In making their decision it is GRWF's view that the PAC has misunderstood and misapplied the "Draft NSW Planning Guidelines: Wind Farms".
>
> The PAC has effectively relinquished its role in considering the modification; the PAC had the opportunity to apply specific conditions but did not.
>
> This leaves Gullen Range Wind Farm to continue to rely on the existing project approval.

Goldwind goes on to reiterate its usual argument that the changed turbine locations are consistent with the existing approval.

What could this possibly mean? How could a developer defy a determination of the Planning Assessment Commission?

The mystery was solved when in November 2014 Karen Jones of the Department of Planning informed neighbours that New Gullen Range Wind Farm Pty Ltd (75% of which is in the process of being sold by Goldwind to Beijing Jingneng) had lodged a Class 4 action in the Land & Environment Court against the Minister for Planning. It appears that the purpose of this legal action is to overturn the PAC's determination of the modification application.

The first 'mention' of the case for 'directions' was on 14 November 2014. The next 'mention', also for 'directions', is set down for 13 February 2015. Exactly when the case itself will begin is unknown.

This case must be a process appeal, and not a merit appeal, since under NSW law no merit appeal is allowed from a PAC determination, provided the PAC holds a public hearing - as the PAC had done with the Gullen Range modification application.

Presumably, New GRWF will argue that the PAC came to its determination in the wrong way, and that therefore the PAC determination should be canceled. If the Court were to find for New GRWF, then the modification application would have to be reconsidered.

The case is being brought against the Minister rather than directly against the PAC, because the PAC only possesses a derived authority from the Minister.

Below I will conjecture as to why Goldwind is bringing this case.

Meanwhile, what of the Minister?

On 9 October 2014, before neighbours knew of the possibility of any legal action by Goldwind against the Minister, I and some other neighbours visited Minister Goward in her ministerial office in Sydney.

We expected the Minister to recognize that she now had to serve an order on the proponent, on the basis of the PAC's decision. We were astonished to discover that she had no such intention, and that she obviously felt no obligation to do so. She spoke of serving an order for the proponent to move only 9, or possibly 5, or possibly 2 turbines. To our objections, she only responded by saying something like "Oh, that is only the modification application." We left her office baffled by her apparent indifference to the PAC's decision.

I subsequently had a conversation with a solicitor whose work concerns the Land & Environment Court, and he explained to me that under NSW law planning authorities, whether at state or local level, are not obliged to enforce project approvals in cases of non-compliance.

If this is so, then this is an arbitrary power that should be removed from the Minister, or the very notions of approval and compliance are undermined, and regulatory governance becomes a phantom.

In December 2014 the Department published a factsheet on the latest developments concerning the Gullen Range Wind Farm.

Having noted the PAC's decision, the factsheet states that the Department served a draft order on the proponent asking it to 'show cause' why it should not relocate or remove 9 turbines.

The factsheet states: "Nine turbines were identified in the Department's notice, as their movement was considered by the Department to potentially result in additional or different impacts considered to be more than minor."

The factsheet also notes that "the two properties most affected by the relocated turbines no longer object to the relocation of the turbines." (One of these properties has been bought by the developer. In the case of the other property, the owner has entered into an agreement with the developer.)

Goldwind apparently responded by rejecting the Department's view, reaffirming its

position that it did not agree that it had breached the approval.

So, it would seem that even if the Minister wins in the Land & Environment Court, and the PAC's decision is not overturned, nonetheless the Minister will only serve an order on the proponent to remove 9 turbines.

However, in view of the factsheet's statement that the owners potentially affected by the 9 turbines no longer object to them, it seems likely that the Minister will not order the proponent to move any turbines.

We will then have a situation where 69 turbines and their turbine footings are in unauthorised locations, in violation of the Project Approval, and in contradiction to the PAC's decision, and none, or at most 9, will have to be moved.

I submit that this is outrageous, and shows that in NSW the regulatory governance of wind farms is non-existent. The Department of Planning and successive ministers have clearly been 'captured' by the wind energy lobby.

This must be investigated by a Royal Commission.

It makes no difference if the Minister loses against the proponent in the Land & Environment Court, and the PAC decision is overturned. If this happens, the modification application will be re-opened. No doubt this time the Minister will determine that no more than 9 turbines need to be moved, and in fact that not even 9 need to be moved, as the potentially impacted owners no longer object.

The practical outcome will be the same, regardless of the outcome of the case. This case is clearly a formality, providing 'cover' for the Department and the proponent to resume their 'regularisation' of the situation.

The rule of law has become only a mask for arbitrary power.

It should also be noted that residents fail to get any advantage from the revolutionary findings of the PAC. Those findings offered hope for all wind farm neighbours, and future wind farm neighbours in NSW that more stringent regulations would be applied to wind farm proposals. Minister Goward's decision to limit the number of turbines to be moved to 9, and possibly 0 shows that this is unlikely to be so.

It would seem that the Minister and the Department are content to be 'captured'.

With regard to penalty action by the Department against the proponent, this has been indefinitely deferred. In her letter to me of 26.6.14, Carolyn McNally states:

> The Department has also informed the proponent and the community that it reserves its right to take penalty action against the proponent. It should be noted that such action can be taken within 2 years of the breach.

Given all the evidence of the Department's failure to enforce compliance on the proponent, and all the evidence suggesting the Department's unwillingness to make difficulties for the proponent, it is surely impossible to believe that the Department will take any penalty action against the proponent. It is surely doubtful whether the notion of penalty action will ever be mentioned again. It is surely much more likely that it will be quietly forgotten.

In any case, if all the turbine footings in unauthorised locations had been built by May 2013, and if the limit on the taking of penalty action is two years, then the Department has only till May 2015 to take penalty action. My bet is that none will be taken. Since the Select Committee will still be in existence in May 2015, may I respectfully suggest that you take note whether any such penalty action has been taken by May 2015?

Conjecture concerning the Class 4 action

I referred above to the fact that, according to the factsheet recently posted (December 2014), the Minister for Planning issued a draft order to the proponent only to move 9 turbines (and in practice possibly 0). But, if the Minister only wants at most 9 turbines moved, why would the proponent risk going to the Land & Environment Court to overturn the PAC's decision? By going to the Court the proponent surely runs the risk of the Court upholding the PAC's decision, and ordering the proponent to move far more than 9 turbines. From this point of view, going to the Court might seem to be a dangerous move.

Perhaps the explanation for Goldwind's going to court concerns the deal that Goldwind is making with Beijing Jingneng.

According to the Hong Kong Stock Exchange announcement of July 2014 (see attachment), Goldwind is to own 25% of New Gullen Range Wind Farm Pty Ltd, while Beijing Jingneng is to own the other 75%. But the announcement seems to suggest that this deal will not be finalised until 28 May 2015. And one condition of the finalisation occurring is that the wind farm be in commercial operation by 28 May 2015.

On page 4 of the announcement it is stated:

> If the date of commercial operation of the Wind Farm Project does not occur on or before 28 May 2015, New GRWF may terminate the Nomination and Asset Sale Agreement, and Goldwind International shall repurchase any shares held by Jingneng Hong Kong in New GRWF Holdco and return any amount Jingneng Hong Kong has paid for the subscription of the shares thereof plus a liquidated damages equal to 12% of such amount (the "**Shares Repurchase**").

Thus, it would seem that the wind farm must be in "commercial operation" by 28 May 2015, or the deal falls through.

If this is so, then Goldwind cannot risk having to move 9 turbines at a time when the wind farm needs to be in commercial operation. Better to go to court to overturn the PAC's decision altogether. At least that will enable the wind farm to keep operating until the deadline of 28 May 2015 has passed. And even if the Court upholds the PAC's decision, that judgment will probably not be issued until after 28 May 2015. Moreover, the Minister has already indicated that she will want only 9 (and possibly 0) turbines moved. So the situation in the future, after the case, will, in that respect, be no different. Perhaps Goldwind is relying on the Court's generally supportive attitude to wind farms, and does not expect the Court to order it to move turbines.

Significantly, Goldwind is already claiming that the wind farm is in "full operation". The GRWF newsletter of December 2014 states: "Construction has now finished and the wind farm is in full operation."

Moreover, as we shall see below, the Clean Energy Regulator has confirmed that the wind farm is an accredited renewable energy power station, and is earning Renewable Energy Certificates.

For Goldwind to agree to move 9 turbines might jeopardize the deal with Beijing Jingneng. Going to court would appear to be a way, albeit risky, of avoiding that.

Completion, operation and Renewable Energy Certificates

Members of the Select Committee may be astonished to learn that all the while that these formalities were taking place, throughout the last year, the proponent continued to erect turbines, so that by December 2014 the wind farm was complete. All 73 turbines had been erected (with 69 in the wrong place). In the December newsletter the proponent declared that the wind farm was now "in full operation".

The Department had failed to order that construction cease.

The Department had also failed to order that illegally located turbines cease to operate. This ought to have been done, since in order to earn Renewable Energy Certificates legally, a renewable energy power station must comply with all relevant national, state and territory laws. In view of the unauthorised locations of 69 of its turbines, it would appear that the Gullen Range Wind Farm has been earning Renewable Energy Certificates illegally all year.

I will discuss this aspect of deficient regulatory governance in section C below on the Clean Energy Regulator.

All that needs to be said here is that I have received a letter (dated 27 January 2015) from the Clean Energy Regulator informing me that "the NSW Department [sc., of Planning] has not yet determined that the wind farm is being operated in contravention of NSW

law." (This letter confirms that the Gullen Range Wind Farm is earning Renewable Energy Certificates.)

Over a year has passed since (in December 2013) the Department formed the view that "many" of the turbine relocations are inconsistent with the approval, and yet the Department has not determined that the wind farm is being operated in contravention of NSW law. (The Department disputes this version of events - see Section C below.)

The fact that the Department has failed to declare to the Clean Energy Regulator that the Gullen Range Wind Farm is in contravention of NSW law is yet another instance of dereliction of duty on the part of the Department. It is another instance of 'regulatory capture'. In effect, the Department is assisting the proponent to earn Renewable Energy Certificates to which, arguably, it is not entitled. What clearer instance could there be of 'regulatory capture'?

Summary

The violation of the Project Approval by the proponent of the Gullen Range Wind Farm, and the maladministration of the NSW Department of Planning in relation to this violation need to be investigated by an independent public inquiry (preferably a Royal Commission) on the following grounds:

- The proponent of the Gullen Range Wind Farm has deliberately violated the Project Approval. The violation is extensive in scope.
- The NSW Department of Planning has failed to prevent that violation, even though the Department knew of it in November 2013, and could have known about in in May-June 2013.
- The Department evidently had no system of compliance monitoring of its own in place, so that the entire system of roads, hardstands and turbine footings could be built (with 69 of 73 turbine footings in the wrong place), over a period of 8 or 9 months (September 2012 to May 2013), without the Department knowing that an extensive violation of the Project Approval was occurring.
- The "independent" Environmental Representative to the project has had an extreme conflict of interest, being a Director of a consultancy employed by the proponent on the Gullen Range Wind Farm project since 2007.
- The "independent" Environmental representative should never have been nominated by the proponent, and should never have been appointed by the Director-General of the Department of Planning.
- The Department of Planning wrongly facilitated the wrongful appointment of the aforesaid "independent" Environmental Representative by using the words "independent of the design, construction and operation personnel" in condition 7.1 of the Project Approval, these being words that apparently serve to enable someone not independent of the proponent to be appointed.
- The Department of Planning failed to order a halt to the construction of illegally located turbines, even though it knew that the turbines were being erected in

unauthorised positions. The Department allowed the proponent to continue to violate the Project Approval for over a year from when the Department claims to have discovered the violation (November 2013), with the result that the wind farm was completed by December 2014, with 69 of the 73 turbines (94.5%) in unauthorised locations.

- The Department has failed to order that all illegally located turbines not operate, lest those illegally located turbines earn Renewable Energy Certificates illegally.
- The illegally located turbines of the Gullen Range Wind Farm are earning Renewable Energy Certificates. Therefore, it must be judged that those certificates are being earned illegally.
- The Department has failed to declare to the Clean Energy Regulator that the Gullen Range Wind Farm is in contravention of NSW law.
- The Department and successive Ministers have failed to take legal action against the proponent in the Land & Environment Court.
- The Department and the Minister have failed to act on the determination of the Modification Application by the Planning Assessment Commission. Although the PAC rejected the Modification Application, the Department and the Minister have failed to order the proponent to remove all turbines and turbine footings in unauthorised locations.
- All the evidence since May-June 2013 suggests that the Department and successive Ministers have never had any intention of enforcing compliance on the proponent of the Gullen Range Wind Farm.
- The Department of Planning and successive Ministers have ignored the plain sense of condition 1.5 of the Project Approval, and of section 75W (2) of the *Environmental Planning and Assessment Act 1979*. In this way, the Department and successive Ministers have undermined the law.
- The Department and the Ministers have evidently been ‘captured’ by the wind energy lobby.
- All this ‘regulatory capture’ may now be connected with a possible risk to the pending financial arrangement between Goldwind and Beijing Jingneng.
- In the case of the Gullen Range Wind Farm, the failure of the Department and successive Ministers to enforce compliance on the proponent of the Gullen Range Wind Farm probably arises (it may be surmised) from the fact that the Department’s position is compromised by (at least) the improper appointment of the “independent” Environmental Representative, and the improper use of the words “independent of the design, construction and operation personnel” in condition 7.1 of the Project Approval.
- It may be surmised that the Department of Planning fears being sued by the proponent, if it were to take legal action against the proponent. In this way the Department of Planning appears to have undermined the authority and integrity of government, and to have nullified the regulatory governance of the wind energy industry in NSW.
- It may also be surmised that the NSW government’s commitment to the policy of the Renewable Energy Target also induces the NSW government to refrain from performing its duty of enforcing compliance on a wind farm developer in violation of its approval. In this way also, the Department of Planning appears to have

undermined the authority and integrity of government, and to have nullified the regulatory governance of the wind energy industry in NSW.

It must surely be obvious that the Department of Planning and the Minister now have a substantial conflict of interest in respect of any further decisions relating to the Gullen Range Wind Farm. It must be obvious that the Department, and now the Minister, are so hopelessly compromised by incompetence, negligence, and impropriety in relation to the planning and assessment of the Gullen Range Wind Farm that the Department and the Minister should not take any further decisions concerning the Gullen Range Wind Farm. The Department and the Minister should not be responsible for the serving of further orders on the proponent, or for the taking of penalty action against the proponent. All further assessment and other action relating to the Gullen Range Wind Farm should be suspended, pending a full inquiry into the above matters.

In view of the inadequacy of the assessment regime within which the original approval was granted, the independent public inquiry should include within its scope the principles of assessment, and especially the noise guidelines, on the basis of which that approval was granted. (I shall deal with the noise guidelines in Section B below.)

All this being so, a Royal Commission to investigate the wind energy industry in NSW, and its regulatory governance (or the absence thereof) by the NSW government is indispensable.

Note

I have lodged a complaint with the NSW Ombudsman, concerning the maladministration of the NSW Department of Planning in relation to its supervision of the Gullen Range Wind Farm project. This matter is still pending.

Section B

The noise assessment regime for wind farms in NSW, and compliance noise monitoring

In this section I am concerned with your term of reference (e), "the adequacy of monitoring and compliance governance of wind farms". Specifically, I am concerned with compliance and monitoring in relation to noise.

I shall be discussing the noise guidelines for wind farms in NSW, both those in use and those proposed.

The noise guidelines in use in NSW are the so-called *South Australian Noise Guidelines*, in their original (2003) version. Their official title is *Wind Farms: Environmental Noise Guidelines*. They were produced by the South Australian Environment Protection Authority, and adopted by the NSW government in the early 2000s. A slight revision of the *South Australian Noise Guidelines* was made by the South Australian EPA in 2009. But, this revision is not used in NSW. From the point of view of wind farm neighbours the (2009) revision is even worse than the (2003) version. No doubt, South Australians will report to you on both versions.

In the State of Victoria the noise guidelines in use are different. The Victorian government uses the New Zealand Standard NZS 6808. The New Zealand guidelines differ from the *South Australian Noise Guidelines* only in minor ways. For all intents and purposes criticisms made of the *South Australian Noise Guidelines* are applicable to NZS 6808, at least in their broad conception. I assume that wind farm neighbours in Victoria will give you a detailed report on the inadequacies of NZS 6808.

Since December 2011 there have been in NSW draft *Wind Farm Guidelines*. But these have never been finalised. Nonetheless, these need to be considered, as it is possible that the NSW government may finalise them eventually. It should be remembered that the Planning Assessment Commission referred to these draft guidelines in their determination of the Gullen Range Wind Farm modification application (2 October 2014).

The matter of compliance noise monitoring has two aspects: (i) the inadequacies of the actual procedures for compliance noise monitoring, as set out in the *South Australian Noise Guidelines* (2003), and in the NSW draft *Wind Farm Guidelines*; (ii) the inadequacies of the general framework for noise assessment in the *South Australian Noise Guidelines* and in the NSW draft *Wind Farm Guidelines*. I shall deal with both of these.

I have already written at length on the inadequacies of the noise guidelines in use or proposed for NSW. For a full account I must refer you to these PMLG documents. They are:

- *Deficiencies of the Noise Guidelines Adopted, or to be Adopted by NSW* (January 2013)

- *NSW Planning Guidelines: Wind Farms (DRAFT): Submission to the NSW Department of Planning and Infrastructure* (March, 2012)

I attach copies of both.

I also attach the document *Are wind farms too close to communities?* [2012] This is a presentation made by Stephen Cooper. Mr Cooper is a noise engineer of thirty years' standing, and the principal of The Acoustic Group Pty Ltd, Sydney, NSW.

Finally, I attach the peer-reviewed article by Richard R. James: 'Wind Turbine Infra and Low-frequency Sound: Warning Signs That Were Not Heard', *Bulletin of Science, Technology & Society* 2012, 32(2) 108-127. Mr James is a noise engineer of forty years' standing, and currently with E-Coustic Solutions, Okomos, MI, USA.

My account in this submission must be condensed.

The inadequacies of the *South Australian Noise Guidelines* (2003)

The procedures for compliance monitoring under the *South Australian Noise Guidelines* (2003) are inadequate for the following reasons:

1. Noise measurement is carried out, using the units dB(A), or decibels measured according to the A-weighted system. dB(A) are fairly accurate for the higher frequencies. But below about 800 Hertz (cycles per second) the A-weighted system acts as a filter, increasingly filtering out the mid-frequency sound (2000 > 250 Hz), the low-frequency sound (250 > 20 Hz), and the infrasound (20 > 0 Hz). Consequently, below about 800 Hz the measurements become increasingly worthless. Since the bulk of sound energy produced by a wind turbine is in the infrasonic, low-frequency and mid-frequency range, the units dB(A) are just inappropriate.

2. The noise limit '35 dB(A), or background noise + 5 dB(A), *whichever is greater*' is inadequate, because the lowest background noise level recognized by the guidelines is 30 dB(A). In reality, in rural Australia the night-time background noise level can fall as low as 25 dB(A), or even lower to 18 - 20 dB(A). If background noise were to fall to, say, 25 dB(A), then background noise + 5 dB(A) would equal 30 dB(A). If the actual noise were 31 dB(A), then this would be found 'annoying' and intrusive by neighbours. But this annoyance would not be recognized by the compliance authorities, since 31 dB(A) is lower than 35 dB(A).

   Setting the lowest background noise level as 30 dB(A), regardless of the reality, is a classic instance of the regulatory authorities being biased in favour of the developers and against neighbours.

3. The use of regression line analysis necessarily misses the highest peaks of the noise

actually heard by neighbours, since it averages out the fluctuations in the noise. It also necessarily overestimates the background noise level.

4. The official noise limit is set using the descriptor L_{eq}, but the compliance monitoring is carried out using the descriptor L_{90}. L_{eq} is an average figure that takes into account all the sound energy produced. By contrast, L_{90} is a measure of the lowest 10% of the sound energy! It must be lower than L_{eq}. So, the compliance monitoring is measuring something different from the sound energy level referred in the official noise limit (L_{eq}), and something necessarily lower.

   The official excuse for this is that L_{90} is necessary to filter out extraneous background noise. But this makes no sense. It 'throws out the baby with the bath-water.' It deliberately underestimates the actual level of sound energy. Moreover, extraneous noises tend to be discrete (e.g., a car passing), and so can be distinguished from the continuous turbine sound.

5. Under the *South Australian Noise Guidelines* (2003) there are not separate measurements for daytime, evening and night-time noise, nor even for daytime and night-time noise. Since wind turbine noise tends to be greater at night than during the day (partly from differences of wind strength, partly from a reduction of background noise, and partly from the effect of temperature inversions), averaging daytime and night-time noise levels will tend to underestimate actual night-time levels.

   This is another example of how the regulatory authorities are biased in favour of developers and against neighbours.

6. The *South Australian Noise Guidelines* make no provision for the measurement of amplitude modulation (the 'swoosh-swoosh-swoosh', that can become 'thump-thump-thump'). This is one of the most offensive and intrusive phenomena associated with wind turbine noise. It is ignored by the guidelines. The guidelines claim that it has already been taken into account in setting the official noise limit. But this is not so. It has just been ignored.

   Once again, this is regulatory bias.

7. The *South Australian Noise Guidelines* refuse to consider infrasound, even though the bulk of the sound energy produced by wind turbines consists of infrasound and low-frequency noise (ILFN). ILFN is already known to be associated with headaches, nausea, vertigo, tinnitus, panic attacks, etc. The distinguished medical researcher Professor Alec Salt has already proposed physiological mechanisms whereby wind turbine infrasound could produce such symptoms in wind farm neighbours. The recent research of Steven Cooper at Cape Bridgewater has established connections between wind turbine ILFN and such symptoms.

8. Under the *South Australian Noise Guidelines* compliance noise monitoring measurements are taken outside a house. No measurements are taken inside a house.

This ignores the fact that there can be considerable variation in the capacity of the sound energy to penetrate buildings, depending on the fabric of the walls, roof and floor of buildings.

It also ignores the fact that low-frequency sound and infrasound (ILFN) can more easily penetrate the fabric of a building than higher frequency sound, because of the greater wave-length that accompanies low-frequency.

9. It should also be remembered that low-frequency sound and infrasound have lesser rates of decay with distance. The guidelines do not take this into account when projections of noise levels at a residence are to be calculated.

10. Moreover, ILFN can resonate within a building, inflicting headaches and nausea, and other symptoms on human beings inside the building (whether the building is a house or a work shed).

11. Averaging 10 minute measuring periods necessarily fails to register the peak levels of the sound energy.

12. The *South Australian Noise Guidelines* ignore the tendency for night-time turbine noise to increase, due to conditions of stable atmosphere caused by temperature inversions.

13. No regard is paid to the wind speed ratio, i.e., the ratio between the speed of the wind at the turbines and the speed of the wind at the residence. This is relevant to estimating the extent to which wind noise at the residence may mask turbine noise (or not mask it).

14. No regard is paid to increased noise from an array of multiple turbines (in rows across the line of sight of a residence), or a line of turbines in line with a residence ("wake turbulence").

15. No regard is paid to wind direction when the capacity of the noise of the wind to mask turbine noise is being estimated.

16. Monitoring is carried out only at a selection of residences, at the choice of the noise consultant employed and paid by the developer. Given the variations of terrain and weather conditions, this method is likely to misrepresent actual impacts at some residences.

17. There is no provision for any appeal from the developer's compliance monitoring, under the *South Australian Noise Guidelines*.

In all these respects, compliance monitoring according to the *South Australian Noise Guidelines* (2003) will not provide an adequate picture of the real noise phenomena that

neighbours will have to endure. Most of the adverse impacts experienced by neighbours will not even be registered by the monitoring, since the guidelines fail to even mention them. All this is a clear manifestation of regulatory bias in favour of developers, and against neighbours.

The inadequacies of the NSW draft *Wind Farm Guidelines* (2011)

The NSW draft *Wind Farm Guidelines* (2011) are based on the *South Australian Noise Guidelines* (2003), and largely share the deficiencies of the *South Australian Noise Guidelines*. The NSW draft *Guidelines* have some new provisions, but these generally raise problems of their own.

The NSW draft *Guidelines* share the deficiencies of the *South Australian Noise Guidelines* in the following respects (see above for details):

- Units of dB(A).
- Limit expressed as '35 dB(A), or background noise + 5 dB(A), which ever is greater'.
- Use of regression line analysis.
- Use of 10 minute measurement intervals.
- Lowest background noise level set at 30 dB(A), regardless of reality.
- Measurements taken only at selected residences, chosen by consultant employed and paid by proponent.
- Infrasound ignored.
- No measurements taken inside residences.
- In respect of modelling propagation, no account taken of different rates of decay, as between higher and lower frequencies.
- No account taken of increased night-time noise from stable atmosphere, caused by temperature inversions.
- No account taken of wind speed ratio.
- No account taken of increased noise from arrays of multiple turbines, either in rows across line of sight of residence, or in a line in line with residence.

The new provisions in the NSW draft *Wind Farm Guidelines* generally bring problems of their own. Thus:

1. L_{eq} is assumed to be no more than L_{90} + 1.5 dB. This assumption can be false by a very large margin. But the draft *Guidelines* allow the proponent to calculate L_{eq} by measuring L_{90} and adding 1.5 dB. This is bound to lead to an underestimation of L_{eq} much of the time.

2. The draft *Guidelines* allow for separate measurements for daytime (7 am to 10 pm) and night-time (10 pm to 7 am) noise. But there really ought to be 3 categories if changing weather conditions are to be accurately taken into account: daytime (7 am to 6 pm) , evening (6 pm to 10 pm), and night-time (10 pm to 7 am). These 3

categories are recognized by the NSW *Industrial Noise Policy* (2000).

3. The draft *Guidelines* allow a proponent to calculate noise levels at a residence by measuring noise levels at an intermediate location, and then doing a sum based on a model's assumptions. Since the assumptions of models can be selected to guarantee a desired outcome, and since there is considerable uncertainty as to differential rates of decay along the frequency spectrum, this should not be allowed. Noise levels at a residence must be measured *in situ*.

4. The draft *Guidelines* penalise Amplitude Modulation greater than 4 dB(A). This is acceptable, so far as it goes. But it takes no account of the fact that sound energy at frequencies lower than about 800 Hz cannot be measured accurately by dB(A). It also takes no account of amplitude modulation on a micro-time scale, in milliseconds rather than seconds (see Bray, W., and James, R., 2011. Dynamic measurements of wind turbine acoustic signals, employing sound quality engineering methods considering the time and frequency sensitivities of human perception. NOISE-CON 2011, Portland, Oregon, 2011 July 25-27).

5. The draft *Guidelines* set low-frequency noise thresholds of 65 dB(C) for daytime, and 60 dB(C) for night-time. These thresholds are much too high. It is commonly accepted that if a dB(C) measurement is greater than a dB(A) measurement by more than 20, or even 15 decibels, there is likely to be an LFN problem. If the official noise limit in dB(A) is set at 35 dB(A), then 35 dB(A) + 20 dB = 55 dB(C), while 35 dB(A) + 15 dB = 50 dB(C). So, to set the LFN levels at 65 dB(C) and 60 dB(C) is clearly inappropriate.

6. The draft *Guidelines* propose allowing micro-siting changes for turbines of up to 100 metres. Given the sensitivity of noise emissions to turbulence caused by the interacting wakes of turbines set too close together, a 'blanket' allowance of a 100 metre change of location is wildly irresponsible. I will discuss this below in connection with what is known of the separation distances of the turbines of the Gullen Range Wind Farm.

7. The draft *Guidelines* allow a wind farm neighbour to request an independent noise audit. This proposal suffers from two defects. First, the neighbour may only *request* a review from the Director-General of the Department of Planning. The Director-General is under no obligation to grant the review. Second, the review must be carried out according to the principles set out in the draft *Guidelines,* and can only determine whether the noise impacts at the residence are within the limits of compliance. This procedure will necessarily suffer from all the deficiencies of the noise guidelines described above. The neighbour may be left to suffer because the noise guidelines are inadequate.

What is needed

A definitive system for noise assessment for wind farms cannot yet be completely formulated, since some crucial research, especially in the medical area, still needs to be done, and some recently completed research needs to be taken into account.

This being so, there should be:

- a moratorium on the consideration of new wind farm proposals.

- a thorough noise audit of all existing wind farms, using the methodology of Mr Stephen Cooper (see below), and incorporating the objective measurement of health effects (sleep quality, blood pressure, heart rate, stress hormones, etc) on neighbours, out to 10 kilometres from turbines.

- the non-operation of turbines of existing wind farms between 10 pm and 7 am, until further notice.

Further research into the health effects of wind turbine ILFN, according to the recommendations of Professor Alec Salt (see below) should also be commissioned.

With regard to a new system for wind turbine noise assessment, the following are essential:

- Basic measurements in dB(Lin), from which measures in dB(A), dB(C), and dB(G) can be calculated.

- Full spectrum analysis, across the whole range of frequencies from 0 Hz to 20,000 Hz.

- Indoors and outdoors measurements (*in situ*; no measurements from intermediate locations allowed).

- Separate daytime, evening and night-time measurements.

- Measurements for amplitude modulation, across the frequency range, and for both macro-scale and micro-scale modulation. Appropriate limits to be worked out for these.

- Measurements for tonality across the frequency range. Appropriate limits to be worked out for frequency ranges.

- The consideration of increased night-time noise as a result of a stable atmosphere caused by temperature inversions. This consideration to involve both (i) the situation where turbines and residences are set on a level, and (ii) the situation where turbines

are set on a ridge or hill at a higher level than that of residences (see below).

- Consideration to be given to the wind speed ratio.

- Consideration to be given to increased noise from arrays of multiple turbines, whether in rows across the line of sight of a residence, or in a line, in line with the residence.

- Consideration to be given to wind direction, as well as to wind strength, in the projection of noise impacts.

- Background noise to be measured by L_{90}, but actual noise to be measured by L_{max} or L_{10}, as well as by L_{eq}. These magnitudes to be measured, not calculated.

- Appropriate noise limits to be worked out for different frequency ranges (high, mid, low, infrasound).

- Noise limits to be set at levels to avoid sleep disturbance, and other adverse health effects.

- Background noise levels to be measured, and not assumed.

- A right of appeal for a noise review to be conducted by an independent noise consultant, nominated by a wind farm neighbour, and appointed by the Environment Protection Authority. The cost of this review to be paid by the proponent.

It should be evident that it is not yet possible to set all appropriate noise limits, since, if they are to be such as to avoid sleep disturbance and other symptoms at all times of the day and night, and in all weather conditions, further research needs to occur, especially in co-operation with both the neighbours and the operators of existing wind farms.

Hence the need for a moratorium, a noise audit, and the night-time non-operation of existing wind farms.

Note on Stephen Cooper's research

I have referred above to the research of Mr Stephen Cooper at Cape Bridgewater. Mr Cooper was commissioned by Pacific Hydro, the operator of the Cape Bridgewater Wind Farm, to investigate the complaints of adverse health effects from some neighbours of the wind farm. Pacific Hydro co-operated with the research by making available data concerning the wind-farm's operation, and by turning turbines off, as needed, to compare situations of operation and non-operation.

Mr Cooper developed a methodology to distinguish the acoustic "signature" of the wind farm, so that it could be identified in neighbours' residences.

As a result of his investigations, Mr Cooper was able to establish a strong connection between wind turbine ILFN (infrasound and low-frequency noise) and the symptoms of neighbours, as recorded in neighbours' diaries. In this respect, Mr Cooper's research corroborates the findings of research conducted for the US Department of Energy in the 1980s on wind turbine infrasound and adverse health effects.

All future research on wind turbine sound emissions and effects on neighbours must take into account Mr Cooper's methodology, and his use of the concept of 'sensation', under which neighbours' complaints are to be considered.

Mr Cooper's research method must now be combined with the objective measuring of physiological effects on neighbours, in relation to sleep quality, blood pressure, heart rate, stress symptoms, etc.

I attach an information sheet on these matters, issued by the Waubra Foundation.

Mr Cooper's study is available on the website of Pacific Hydro (www.pacifichydro.com.au).

Note on Alec Salt's research

Alec Salt is Professor of Otolaryngology in the School of Medicine of Washington University, St Louis, Missouri. He is attached to the Cochlear Fluids Research Laboratory in that university. He is also a member of the Acoustical Society of America.

Since 2010 Professor Salt has been publishing on the potential for adverse health effects from wind turbine infrasound. Details of his publications can be found on his website (http://oto2.wustl.edu/cochlea/wind.html).

His latest article, co-authored with Jeffrey T. Lichtenhan, is 'How Does Wind Turbine Noise Affect People?' (*Acoustics Today* Vol. 10, Issue 1, Winter 2014, pp. 20-28). In this article he describes the ear's response to infrasound, and notes a peculiarity of the impact of infrasound from wind turbines:

> One important aspect of wind turbine noise that is relevant to its physiological consequences is that the duration of exposure can be extremely long, 24 hours a day and lasting for days or longer, depending on prevailing wind conditions.This is considerably different from most industrial noise where 8 hour exposures are typically considered, interspersed by prolonged periods of quiet (i.e., quiet for 16 hours per day plus all weekends). There are numerous studies of exposures to higher level infrasound for periods of a few hours, *but to date there have been no systematic studies of exposure to infrasound for a prolonged period.* (p. 23; italics added)

After describing the processes by which infrasound induces cochlear responses Salt and

Lichtenhan state: “We conclude that low frequency regions of the ear will be moderately to strongly stimulated for prolonged periods by wind turbine noise.” (p. 23) They then discuss five physiological mechanisms by which such stimulation might have effects. These are:

1. Amplitude Modulation: Low-Frequency Biassing of Audible Sounds

2. Endolymphatic Hydrops Induced by Low Frequency Tones

3. Excitation of Outer Hair Cell Afferent Nerve Pathways

4. Exacerbation of Noise Induced Hearing Loss

5. Infrasound Stimulation of the Vestibular Sense Organs

They make it clear that these are hypotheses that require research, but they are hypotheses grounded in existing medical knowledge. (I attach this article for you to consider.)

They write:

> Given the present evidence, it seems risky at best to continue the current gamble that infrasound stimulation of the ear stays confined to the ear and has no other effects on the body. For this to be true, all the mechanisms we have outlined (low-frequency-induced amplitude modulation, low frequency sound-induced endolymph volume changes, infrasound stimulation of type II afferent nerves, infrasound exacerbation of noise-induced damage and direct infrasound stimulation of vestibular organs) would have to be insignificant. *We know this is highly unlikely* and we anticipate novel findings in the coming years that will influence the debate. (p. 27; italics added)

Information concerning Professor Salt’s work has been sent repeatedly to State government Departments of Health, Departments of Environment and Departments of Planning, and to the NHMRC, over a number of years. It has always been ignored or dismissed. I shall have to refer to this dismissal again in later sections of this submission.

The NSW Department of Planning ignores the publications of its own government

In this sub-section I will describe two instances where the NSW Department of Planning has ignored publications of its own government, when constructing the framework for planning and assessing wind farm proposals.

The issue of stable atmosphere and the NSW *Industrial Noise Policy*

I noted above that the NSW draft *Wind Farm Guidelines* do not require separate measurements of noise for all three of daytime, evening and night-time periods. This failing is especially relevant to the issue of a 'stable' atmosphere.

There can be increased turbine noise at a residence at night owing to a 'stable' atmosphere, caused by temperature inversion. What this involves is the formation of a layer of cold air close to the ground at night, with layers of warmer air above it. When this occurs, the layers of air do not mix. Thus, this kind of atmosphere is said to be 'stable'.

By contrast, during the day the air closer to the ground is warmer than the air higher up. The warm air rises, causing the layers of air to mix. Thus, this kind of atmosphere is said to be 'unstable'.

During the day, the warm air rising takes with it some of the sound energy emanating from the turbines, so that not all the sound energy reaches the residence. By contrast, at night the colder air near the ground acts as a channel to conduct the sound energy to the residence.

The result is that for any given magnitude of sound energy emanating from the turbine, there will be more noise at night than during the day (assuming the occurrence of a temperature inversion).

In addition, if the turbine (or any other sound source) is set on a hill or ridge at a level higher than the level of the residence, cold air will pour down from the ridge into the valley below. This channel of cold air acts as a conduit to conduct the turbine sound down to the residence.

This situation, where an industrial noise source is set on ground higher than that on which surrounding residences are set, so that temperature inversion and stable atmosphere cause cold air to pour down from the noise source to the residences, is recognized in the NSW *Industrial Noise Policy* (Environment Protection Authority, 2000). The *Industrial Noise Policy* points it out as a phenomenon requiring special treatment when noise impacts are being assessed:

> The drainage-flow wind default value should generally be applied where a development is at a higher altitude than a residential receiver, with no intervening higher ground (for example, hills). In these cases, both the specified wind and temperature inversion default values should be used in the noise assessment for receivers at the lower altitude. (p. 34)

And further on:

> As described in Section 5, adverse meteorological conditions such as temperature

> inversions and winds can act to increase the level of noise received from a noise source. (p. 37)

The Policy notes that dealing with these phenomena at the assessment stage may be complex and expensive, but it insists that it can be done, and offers procedures for doing it (p. 37; and see Appendix C). It sums up:

> Quantifying the influence of temperature inversions on background noise levels can be done in a similar fashion, and the policy provides a number of methods for estimating the presence of temperature inversions.
>
> The influence of adverse meteorology on the industry contribution to ambient L_{Aeq} noise levels may be more difficult to establish. However, where this can be quantified with a reasonable level of confidence the resultant noise levels may be used in assessing impact against the criteria. (p. 37)

The NSW Department of Planning has not required wind farm proponents to reference the NSW *Industrial Noise Policy* in their environmental assessments. Stable atmosphere and temperature inversion are not mentioned in either the *South Australian Noise Guidelines* (2003) or the NSW draft *Wind Farm Guidelines* (2011). Consequently, any treatment of these phenomena in environmental assessments is liable to be sketchy, and inadequate.

And yet, increased night-time noise is one of the most harmful aspects of wind turbine impacts on neighbours, since it can obviously lead to chronic sleep disturbance. That the Department of Planning does not require a robust assessment of it, and does not reference the NSW government's own *Industrial Noise Policy* concerning it is yet another sign of 'regulatory capture'.

For a fuller account of these matters with references, see the section 'Stable atmosphere and temperature inversion' in the PMLG submission (March 2012) on the NSW draft *Wind Farm Guidelines* (pp. 64-70.

Turbine spacing and the *NSW Wind Energy Handbook*

In assessing and approving wind farm proposals the NSW Department of Planning ignores the *NSW Wind Energy Handbook* in respect of turbine spacing. This handbook was published in 2002 by the Sustainable Energy Development Authority of NSW (SEDA). SEDA has since been absorbed into the Department of Environment, itself now incorporated in the Department of Planning and Environment.

The generation of electricity and the generation of noise from wind turbines are both sensitive to the separation distance between turbines. This is because operating turbines have extensive wakes. If turbines are too close together, or if the wind is gusty, the wakes of turbines can interfere with one another, causing turbulence. This will reduce electricity

production, and increase noise, including infrasound.

The *NSW Wind Energy Handbook* states (p. 53):

> A wind-farm layout must take into account that turbines have substantial 'wakes', which interfere with each other depending on wind direction and spacing. The general rule of thumb for spacing (the '5r-8r' rule) is five times rotor diameter abreast and eight times rotor diameter downwind. On very directional sites the 'abreast spacing' can be decreased by around 15 per cent, but the down-wind spacing is not as variable. Layout geometry can be primarily driven by the need to follow narrow ridgelines or to align arrays across the prevailing wind. On more complex terrain, individual sites need to be carefully evaluated to make best use of the wind resource, so the spacing may be quite variable.

So, the rule of thumb is 5 times the rotor diameter, if the the turbines are strung out across the wind direction, and 8 times the rotor diameter, if the turbines are all in a line, along the direction of the wind.

Let us now consider the Gullen Range Wind Farm.

The Gullen Range Wind Farm uses two models of Goldwind turbines. 56 of the 73 turbines are of type GW 100, and the other 17 turbines are of type GW 82 (Modification Application, Table 2-2, pp. 43-44).

The GW 100 turbine has a rotor diameter of 100 metres. The GW 82 has a rotor diameter of 82.3 metres (Modification Application, Table 2-1, p. 42).

In the case of the GW 100:
- 5 times the rotor diameter = 500 metres
- 8 times the rotor diameter = 800 metres

In the case of the GW 82:
- 5 times the rotor diameter = 411.5 metres
- 8 times the rotor diameter = 658.4 metres

The attached photomontages *Gullen Range Northern Section Interturbine Spacing - Google Image,* and *Gullen Range Southern Section Interturbine Spacing V4 Google Image 24/10/2013* show the calculated distances between the Gullen Range turbines. (In the case of the southern section the measurements are incomplete, because some locations could not be made out accurately at the date of calculation.)

63 distances have been calculated. The photomontages show that the majority of the calculated distances between turbines are very much smaller than the recommended distances given above. All but 1 of the 63 distances are less than 800 metres. 53 are less than 500 metres. 40 are less than 400 metres. 20 are less than 300 metres. It is obvious

that no regard has been paid to the accepted convention of turbine spacing. (I attach a table of the distances.)

N.B. This is not just a matter of the proponent's unauthorised turbine relocations. It cannot be doubted, given the magnitude of the relocations, that the original, approved locations would also be too close together.

It should also be remembered that at Gullen Range the wind direction is very variable. It can come from virtually any point of the compass, although westerlies and easterlies are the predominant winds. Nonetheless, northerlies and southerlies also occur.

In connection with this, it must also be noted that there are non-involved residences in every direction from the site. So, it doesn't matter from which direction the wind is blowing. There are bound to be some non-involved residences downwind somewhere.

This being so, if the amenity of the neighbours were consulted, the turbines would all be 8 rotor diameters apart (800 metres for the GW 100s, and 658.4 metres for the GW 82s). But, of course, the amenity of the neighbours is not consulted. Consequently, the majority of turbines are less than 500 metres apart, and many of them even closer together (see above).

If we wonder whether this proximity of turbines will disadvantage the proponent by reducing the electricity generation of individual turbines, the answer, presumably, is this. The proponent has to balance the electricity generation of individual turbines against the total electricity generation of the wind farm as a whole. Therefore, it may be worthwhile for the proponent to cram as many turbines as possible onto the site (given the limited supply of land to be leased), even if this means that individual turbines will not be as productive as they might be. For the proponent the trade-off between total number of turbines and generation per turbine will be worth it. It will maximise production and profits, given the limitations of the site.

However, while this trade-off may be worthwhile for the proponent, it is likely to be disastrous for the neighbours. Cramming turbines so close together is bound to lead to 'wake turbulence', with the effect of increased noise.

That the the NSW Department of Planning should allow all this (and in contradiction to the *NSW Wind Energy Handbook*) demonstrates yet again the bias of the Department, and the fact that it is (and has long been) subject to 'regulatory capture'. Once again, the Department deliberately sacrifices the amenity, health and well-being of non-involved neighbours to the commercial interest of the developer.

What is true at Gullen Range is no doubt also true at other NSW wind farm sites, and at wind farm sites in other States.

Note

While the official 'rule of thumb' for turbine separation distances is 5 times rotor diameter (abreast), and 8 times rotor diameter (downwind), independent noise consultants suggest that even these distances fall within the range of adverse impacts. The New Zealand consultants Huub Bakker and Bruce Rapley write:

> Wake effects are created when highly turbulent air leaving a turbine interacts with lower-speed air. Wake effects with pockets of smooth (laminar), lower-speed air are present within 3 rotor diameters downwind of a turbine and mostly dissipated at a distance of 10 rotor diameters. . . .
>
> If a second turbine is situated within 10 rotor diameters of the first turbine . . . . The blades of the second turbine can suddenly enter into a pocket of slower air in the wake caused by the first turbine. . . .
>
> The smooth inner wake eventually breaks down into turbulence that soon mixes the air with that surrounding it and is restored to the bulk wind speed. A turbine downstream at this point will see air more-or-less unaffected by the upstream turbine.
>
> When the wind speed increases, such as due to a wind gust, the length of the smooth wake is extended. Should the smooth wake extend to the downwind turbine, it will interact with the turbine blades to cause increased sound until the wind gust dies and the smooth wake retracts.
>
> The audible effect will change from a smooth characteristic ('plane landing' sound) to a dissonant characteristic (The 'rumble/thump', for example, where the normal 'swish' becomes much louder).
> ('Sound characteristics of multiple turbines', pp. 233-258 of *Sound, Noise, Flicker and the Human Perception of Wind Farm Activity*, ed., Bruce Rapley & Huub Bakker, Atkinson & Rapley Consulting Ltd (New Zealand) in association with Noise Measurement Services Pty Ltd (Australia). The quotation comes from pages 243-245.)

The sad truth is that State planning authorities have been, and are deliberately ignoring acoustic science as applied to wind turbines, in order to allow wind farm proponents to locate their wind farms where they wish to locate them. To this end what is known about adverse impacts is deliberately ignored, standards are lowered, criteria are weakened, and the interests of innocent neighbours are sacrificed.

All the above being so, it is very undesirable that the NSW draft *Wind Farm Guidelines* should propose to allow modifications of turbine separation distances of up to 100 metres (see Section A above). It must now be clear that allowing a modification of 100 metres to a separation distance that is already well below 8 rotor diameters or 5 rotor diameters may make a situation that is already bad, much worse. The blanket approval of 100 metre movements can only be understood as an expression of the Department of Planning's willingness to make things easy for wind farm developers, while remaining callously

indifferent to the situation of neighbours.

If neighbours' amenity, health and well-being were to be consulted, then there would be a rule that turbines should be separated by a distance of 8 rotor diameters, unless the proponent can demonstrate that a lesser separation distance holds no dangers for non-involved neighbours.

Two cases of adverse noise impacts at the Gullen Range Wind Farm

In the PMLG submission (May 2014) on the proponent's Modification Application I have already described several reports from neighbours of adverse noise impacts at their residences. Since then I have heard reports of adverse noise impacts from more neighbours.

I have not yet investigated systematically noise complaints around the wind farm site. There are still, after all, about 100 non-associated properties around the site. But it must be considered probable that if many people have already made their complaints public, there must be others whose experiences have not yet become known. That these experiences would be similar is likely from the similarity of distances of residences from the turbines.

Needless to say, the Department of Planning has made no effort to carry out a methodical noise audit of impacts on neighbours, despite the fact that the wind farm is complete, and has been in full operation since December 2014.

Therefore, I will refer you to the accounts of noise impacts on neighbours in the PMLG submission on the Modification Application, and offer here only two cases. I choose these cases because they illustrate different aspects of regulatory inadequacy. One concerns what can only be called 'sharp practice' on the part of the developer. The other concerns an adverse noise impact of great intensity, which nonetheless cannot be discovered by application of the usual procedures of compliance monitoring. I have the permission of the two householders concerned to recount their experiences here.

Residence PW34

According to the proponent's residence data sheets, PW34 is 969 metres from turbine POM_02; 1244 metres from POM_03; 1071 metres from POM_04; and 895 metres from POM_05. At these distances turbine noise was always going to be a problem. The situation is made all the worse in that PW34 is within 2 kilometres of a further three turbines.

As soon as these turbines were erected and put into operation, the owner of PW34 reported offensive and intrusive noise, both outside and inside his house, both during the day and at night. This was at times sufficient to disturb his sleep.

These adverse impacts had been made all the worse by deliberate action by the proponent.

First, the turbine POM_01 had moved 124 metres closer to the residence. (It is 865 metres from the residence.)

Second, the proponent had used turbine blades, on turbines POM_01 to POM_07, of a length guaranteed to produce adverse noise impacts at the residence, and had done so knowingly.

On 13 March 2012 Ben Bateman, then project manager for the Gullen Range Wind Farm, wrote to the owner of PW34 to request a noise agreement. The terms of this agreement would be that the owner would agree to the noise limit at his residence being raised from 35 dB(A) to 45 dB(A). The proponent requested this because it wished to use longer blades on the turbines. It wished to use 48 metre blades rather than 43 metre blades. The owner of PW34 refused this agreement.

Nonetheless, when the proponent erected the turbines, the proponent used the longer 48 metre blades. *The proponent used these longer blades, knowing that they would produce noise that would probably exceed the official noise limit.*

Inevitably, the noise impacts at PW34 were intolerable. The owner was forced to put his property on the market.

A purchaser offered to buy the property at the owner's valuation after only a cursory examination of the property. As soon as the purchaser became the new owner, he entered into an agreement with the proponent, so that PW34 became an associated property.

This transaction should be investigated by the Royal Commission to discover whether the purchaser had any pre-existing connections with the proponent.

Whatever the truth of that may be, the fact remains that the original owner of PW34 was forced off his property by the proponent's deliberate actions, both in moving POM_01 closer to the residence, and by using 48 metre blades that were likely to produce noise that would exceed the official noise limit.

The owner of PW34 had spent 14 years improving the property with dams, fencing, etc, and had intended to build a larger house on the property. All that has now come to nothing.

Nothing in the 'regulations' covers this kind of situation. There is no retribution for the proponent, even though a real injustice has been done.

A case of infrasound

The second case that I will describe here concerns infrasound.

When the Gullen Range Wind Farm was approved by the Minister for Planning in 2009, 11 turbines were removed from the northern section of the wind farm by the Minister. This was done to protect the Crookwell aerodrome. The developer, Epuron, appealed the removal of these turbines to the Land & Environment Court, but the Court upheld the Minister's decision.

Close to the airstrip is a private house, owned by a retired aircraft engineer. This gentleman has an aircraft hangar on his property, where he works on aircraft. The hangar is in effect a very large tin shed.

Since the turbines of the Gullen Range Wind Farm have been operating, this gentleman has reported experiencing headaches, nausea, palpitations, and pains in the back of the neck, while working inside the hangar. He is also suffering from some sleep disturbance in his house.

His symptoms are amongst those experienced by people adversely affected by modulating infrasound (see the article by Richard James). Therefore, it seems likely that modulating infrasound from the Gullen Range turbines is resonating inside his hangar.

This remains to be verified. But it will be straightforward to verify it, now that the noise consultant Stephen Cooper (see above) has devised a methodology to identify the 'signature' of a wind farm at infrasonic and low frequencies.

It must be noted that this aircraft hangar is about 4.5 kilometres from the nearest turbine. This obviously raises the issue of what is a safe distance between wind turbines and places of residence or work.

Some neighbours, and some planning authorities believe that a 2 kilometre distance should be sufficient to protect neighbours from adverse impacts. The Australian noise consultant Bob Thorne has suggested, on the basis of his research, that adverse health effects may be felt out to 3.5 kilometres from turbines (see 'Wind Farms: The Potential for Annoyance', pp. 127-133 of Rapley and Bakker eds, 2010). However, the research of Stephen Cooper has demonstrated that the ILFN 'signature' of a wind farm can be identified at 8-10 kilometres from turbines. This certainly fits in with complaints of symptoms from residents at these distances. It also fits in with the lesser rate of decay of infrasound with distance, with the greater capacity of infrasound to penetrate the fabric of buildings, with the potentiality of infrasound to resonate inside buildings, and with the potentiality of modulating infrasound to produce the kinds of symptoms of which neighbours complain.

No doubt, the owner of the aircraft hangar will, in due course, have the necessary acoustic testing done, and then we shall know. The one good thing about this situation is that the

hypothesis can be put to the test, and a definite result obtained.

Stephen Cooper has already verified the hypothesis in his study of the Cape Bridgewater Wind Farm. It is inevitable that further confirmation will now come from similar testing at other wind farm sites. Gullen Range is now a candidate for this.

Having said all that, we must remind ourselves that none of the noise guidelines in use in Australia, or proposed, requires wind turbine infrasound to be projected or measured. Planning authorities universally refuse to recognize that turbine infrasound is a problem. Planning authorities continue to work on the false assumption that inaudible sound cannot affect human beings, even though Professor Alec Salt demonstrated the falsehood of that assumption in 2010, and has continued to demonstrate it in further studies since then.

Therefore, in this second case of infrasound inside the aircraft hangar we have a case where the regulations themselves are inadequate, are in fact ignorant. By being so, the regulations are failing to protect wind farm neighbours from adverse health effects of a serious kind.

To sum up: there are two aspects to the problem of wind turbine ‘noise’. There is the problem of *audible noise*, such as drove the owner of PW34 out of his house, and off his property. And there is the problem of *inaudible sound* that can make living in a house or working in a shed unbearable for some human beings.

Both problems exist. Both can be analysed. Both have been analysed by independent researchers.

The planning authorities pretend that the first problem does not exist by stipulating the use of the units of dB(A), and adopting measuring procedures that conceal the real levels and character of the noise (see above).

The planning authorities pretend that the second problem does not exist by clinging to the false assumption that “what you can’t hear can’t hurt you.”

A thorough and robust review of all the noise guidelines used or proposed in Australia is now indispensable. It is long overdue.

And the noise review must be carried out in combination with the necessary medical research.

Only a Royal Commission can provide the power necessary to overcome the resistance of the wind energy industry, and the ‘regulatory capture’ to which the planning establishment has allowed itself to become subject.

Section C

The Clean Energy Regulator

In this section I deal with matters that fall under your term of reference (b): how effective the Clean Energy Regulator is in performing its legislative responsibilities and whether there is a need to broaden those responsibilities.

I must recount my correspondence with the Clean Energy Regulator (CER), concerning the implications for the CER of the planning fiasco of the unauthorised turbine relocations of the Gullen Range Wind Farm.

The context of this correspondence is constituted by the facts that the proponent of the Gullen Range Wind Farm had built 69 of the 73 turbines in unauthorised positions; that the NSW Department of Planning had stated in public documents and private correspondence that "many" of the relocated turbines were in positions not consistent with the existing approval; and that the NSW Planning Assessment Commission (PAC) had rejected the proponent's Modification Application to seek retrospective approval for this violation of the project approval, or, in the terminology of the Department, to "regularise" the situation.

In my view, it was clear that the proponent had violated the Project Approval, and that this situation continued, as the PAC had refused to give legitimacy to the 69 unauthorised locations.

It also seemed obvious that if the 69 turbine relocations, or even just "many" of them, were not "consistent with the existing approval" (as the Department acknowledged), then the wind farm must be considered to be in breach of the NSW *Environmental Planning & Assessment Act 1979*.

That being so, it seemed to follow, "as the night the day", that the turbines that were in unauthorised locations, and, specifically, in locations not "consistent with the existing approval", must be being operated illegally, if they were being operated. (And they were.)

This set of facts must be of relevance to the Clean Energy Regulator, because the *Renewable Energy (Electricity) Act 2000* (as amended) implies that in order to qualify as an accredited renewable energy power station under the Act, and thus to qualify to earn Renewable Energy Certificates (RECs), a renewable energy power station must comply with all relevant Federal, State or Territory laws. The Act states at Section 30E (3):

> The Regulator, may, by written notice, suspend the accreditation of an accredited power station if the Regulator believes on reasonable grounds that the power station is being operated in contravention of a law of the Commonwealth, a State or a Territory.

For the moment I will pass over the use of the word *may* in the above quotation. I will return to it.

Clearly, the spirit and intent of the Act is to ensure that only renewable energy power stations not in breach of Federal, State or Territory law should receive RECs.

It seemed to be clear that the Gullen Range Wind Farm was in breach of NSW law. Therefore, it seemed to follow that the Gullen Range Wind Farm should not receive RECs, at least not for the electricity generated from those turbines not "consistent with the existing approval".

So far, so good.

I wrote to the Clean Energy Regulator about these matters on 31 October 2014 (N.B. well after the determination by the PAC on 2 October).

In my letter (see attachment) I argued that the accreditation of the Gullen Range Wind Farm should be suspended, because the wind farm was in contravention of NSW law. I recounted the relevant facts, cited the relevant documents, and pointed out that the illegally located turbines were in fact operating. (As early as December 2013 the proponent claimed in a newsletter that the wind farm was contributing to the Renewable Energy Target.)

I also suggested that the CER might investigate the proponent of the Gullen Range Wind Farm for fraud, according to the CER's Fraud Policy Statement. According to this Fraud Policy Statement, fraudulent activity and behaviour include "providing false or misleading information in an application to the CER."

It seemed reasonable to suppose that the proponent of the Gullen Range Wind Farm must have assured the CER that the wind farm was in compliance with all conditions of consent laid down at both Federal and State levels. But, if so, then the proponent's account could not be wholly true, since, in the judgment of the Department of Planning, "many" of the unauthorised turbine relocations were not "consistent with the existing approval".

Once again, we seemed to have an 'open and shut' case. And once again, the conduct of agencies has thrown everything into uncertainty and confusion.

I received an e-mail acknowledgment of my letter, and was promised a response "in due course".

Within a few days I learned from the Department of Planning that Goldwind had lodged a Class 4 action against the Minister of Planning in the NSW Land & Environment Court. The purpose of this action was, evidently, to overturn the PAC's decision on the proponent's Modification Application. In other words, this was a process appeal concerning the validity of the process by which the PAC had arrived at its decision, and

not a merit appeal on the substance of the turbine relocations. If the PAC holds a public hearing, no merit appeal is allowed from its decision.

I then e-mailed Jen Fitzpatrick in the office of the Clean Energy Regulator (fraud@cleanenergyregulator.gov.au) on 10 November 2014. I informed her about this Class 4 action. I suggested to her that the Clean Energy Regulator should focus on the fact that Goldwind had lodged this case at all. I suggested that by lodging the case Goldwind seemed to imply that it recognized that it did not have approval for the location of 69 of its turbines. I suggested that, this being so, the Gullen Range Wind Farm could not qualify as an accredited renewable energy power station, and that there was reason to investigate the proponent for fraud.

In this e-mail I also informed the CER about the deal between Goldwind and Beijing Jingneng to divide ownership of New Gullen Range Wind Farm Pty Ltd, with Goldwind having 25% and Beijing Jingneng having the other 75%.

I pointed out to the CER that on page 4 of the Hong Kong Stock Exchange announcement it seemed to be implied that if the wind farm was not in full commercial operation by 28 May 2015, the deal was off, and that Goldwind would be penalised.

I received another brief e-mail acknowledgment (on 10 November 2014), and another promise of a response “in due course”.

Two months went by without my hearing anything further from the CER.

And so, on 7 January 2015 I wrote another letter to the CER (see attached).

In this letter I informed the CER that in the latest Gullen Range Wind Farm newsletter (December 2014) there was the following statement: “Construction has now finished and the wind farm is in full operation.”

In the light of this claim, I asked the CER three questions:

1. Is the Gullen Range Wind Farm earning Renewable Energy Certificates?

2. If it is, why is it? (as it appears that it does not deserve to do so)

3. Has the CER begun to investigate the proponent for fraud?

I reminded the CER that I had written my original letter on these matters on 31 October 2014, and that since then 9 weeks had elapsed. I informed the CER that I intended to make a submission to the Senate Select Committee on Wind Turbines, and that one of the Committee’s terms of reference concerned the Clean Energy Regulator. I asked for a prompt response so that I could provide the Committee with definite information.

I received two brief e-mail acknowledgments this time (on 14 and 15 January 2015). One

of them stated that a “formal response” was being prepared, and that it would be referred to me “shortly”.

At the end of January 2015 I finally received a 3-page letter from Peter Bache, General Manager of the Investigations and Enforcement Branch of the office of the Clean Energy Regulator (see attached). (The letter is dated 27 January 2015.)

As you will see, this letter from Peter Bache raises some questions as well as answering others.

I will deal first with what Peter Bache says in answer to my three questions:

1. Yes, the Gullen Range Wind Farm is “creating” LGCs (Large-scale Generation Certificates).

2. The wind farm is earning LGCs because at this time the wind farm is an accredited power station and is entitled to “create LGCs.”

3. In response to my query about investigation for fraud, Peter Bache makes the following statement which, for reasons that will appear, I find rather unsatisfactory.

> The Investigation and Enforcement Branch is considering the issues relating to the obligations of the owner and operator of the Gullen Range Wind Farm to provide correct information in its accreditation and reporting processes. The findings and outcome of actions in the NSW Land and Environment Court, the PAC and those of the NSW Department are important considerations in deciding if there has been any potential breach of legislation.

What does this mean? Does it mean that the Investigative and Enforcement Branch is investigating, or that it is not investigating? Is it sitting on its hands until the NSWLEC case is determined? Or until the PAC is invited to make another decision, and does so? Or until the Department of Planning decides to do something? This seems like an indefinite deferral of action, rather than action. It seems to be impossible to know from the above statement whether the Investigative Branch is doing anything or nothing.

I will now consider what Peter Bache says in the body of his letter concerning the general issues that I had raised.

He begins by stating that he is constrained by the secrecy provisions in the *Clean Energy Regulator Act 2011* and the *Privacy Act 1988* from discussing these matters in detail. He says he can only confirm matters that are already on the public record or provide general information.

Privacy provisions are no doubt good things in themselves. But, like all good things, they can be abused. Privacy provisions can be a ‘cover’ behind which public servants can hide when there is something that they do not wish to tell the public. Whether the privacy

provisions are being abused or not in any particular case is impossible to tell because the privacy provisions prevent anything being said. ‘Privacy’ is almost as good a ‘cover’ as ‘national security’.

In this case, I suggest there is a justification for referring this whole matter, including the action/inaction of the Clean Energy Regulator to a Royal Commission. Only in this way will it become possible to know whether the Clean Energy Regulator is acting with propriety or not. There are at least some grounds, which will now emerge, for thinking that the CER’s conduct should at least be investigated.

Peter Bache goes on to say, quite reasonably:

> The Clean Energy Regulator is empowered to administer relevant Commonwealth laws (eg to ensure that a wind farm operator complies with its responsibilities under relevant Commonwealth legislation that the Regulator administers). It cannot interfere in State-based activities. If a wind farm is not complying with State/Territory laws (eg as to planning requirements and noise control etc), it is a matter for the relevant State/Territory to address.

Well, that is all quite acceptable, so far as it goes. The problem is that it hardly goes anywhere. Presumably, we are all aware that there is a division between Federal and State responsibilities.

But, now we come to the crucial claim. Peter Bache continues:

> The Department of Planning and Environment (the NSW Department) is the relevant authority for investigating allegations of non-compliance with that State’s planning permits and laws. The Regulator is in regular communication with the NSW Department. That NSW Department **has not** yet determined conclusively that the Gullen Range Wind Farm is being operated in contravention of NSW law - and it is not the role of the Regulator to stand in the shoes of the relevant State body and decide that a wind farm is being operated in contravention of a State law. Rather, we rely on the advice of the relevant State authority. [bold in original]

So, there we are. According to the CER, the NSW Department “has not yet determined conclusively” that the Gullen Range Wind Farm is being operated in contravention of NSW law. Until the NSW Department does so determine “conclusively”, the CER cannot act.

This is the only definite factual claim in the letter in justification of the fact that the CER has not suspended accreditation of the Gullen Range Wind Farm. The NSW Department, it is claimed, has not found the wind farm to be in contravention of NSW law.

Is this not strange? We know that the Department formed the view that “many” of the unauthorised turbine relocations were not “consistent with the existing approval” as early as December 2013 (see Azmeena Kelly’s letter to Ben Bateman, in Appendix H of

Micrositing Consistency Review, December 2013 (on Gullen Range Wind Farm website)). We know that the Department reiterated this view to the proponent in its letter to the proponent of 26 February 2015. We know that the Department's media release of 28 February 2015 warned the proponent that it faced court action unless it addressed "the findings of a Planning and Infrastructure investigation that found that many of the 73 proposed turbines were constructed in different locations to what was originally approved." We know that in the *Micrositing Consistency Review* (December 2013) the proponent acknowledges that 69 of the 73 turbines have been located in unauthorised positions. We know that the *Secretary's Report* on the Modification Application expresses the Department's view that some of the turbine relocations are not "minor" modifications, and hence are not consistent with the existing approval. Finally, there is Carolyn McNally's letter to me (26.6.14), which I quoted in my original letter to the CER. I stated, "Ms McNally states that in December 2013 the Department sought further information from the Proponent, and 'following the receipt and consideration of this information formed the view that the relocation of many of the turbines was not considered to be consistent with the approval.'" I had received Ms McNally's letter through the post, and not by e-mail, so I offered to send a copy through the post to the CER.

The unauthorised location of the 69 turbines was again indicated in the proponent's Modification Application, which also again indicated the fact that the Department disagreed with the proponent about whether the turbine relocations were consistent with the existing approval or not.

All this being so, how can the CER declare that the "NSW Department has not yet determined conclusively that the Gullen Range Wind Farm is being operated in contravention of NSW law . . . ."? It would appear from a year's worth of documentation that the Department has definitely formed the view that "many" of the turbine relocations are not "consistent with the existing approval". This must mean that the wind farm is in breach of the *Environmental Planning and Assessment Act 1979*.

When a neighbour of mine told Pru Goward, the NSW Minister of Planning, about the CER's claim, in a meeting some days ago, Ms Goward vigorously disputed the CER's claim.

I have left the documentation at Ms Goward's electorate office in Goulburn, and asked for a meeting with her. I am still waiting for her staff to respond. I shall write again to Carolyn McNally. As I learn anything new, I will relay the information to the Select Committee.

But, at present, there appears to be a flat contradiction between the position of the CER, and the position of the NSW Department of Planning.

How could this have come about?

It must be due either to a misunderstanding or to duplicity.

It is hard to see how there could have been misunderstanding. This matter has been in the public domain for over a year. There have been official reports and media releases, and, according to Peter Bache: “The Regulator is in regular communication with the NSW Department.” How could the Regulator be in any doubt that the Department determined as early as December 2013 that “many” of the turbine relocations were not “consistent with the existing approval”. It is simply not credible that there has been a misunderstanding between the CER and the Department.

In her letter to me (26.6.14) Carolyn McNally confirms the communication between her Department and the CER: “In relation to your concerns regarding the generation of electricity by the turbines, the Department has also been in ongoing discussions with the Clean Energy Regulator, and is assisting the regulator in its own investigation into the Gullen Range Wind Farm.”

How could this “assistance” not have communicated to the CER the Department’s view?

If it is a matter of duplicity, then either (i) the NSW Department is innocent, and the CER is guilty; or, (ii) the NSW Department is guilty, and the CER is innocent; or, (iii) the NSW Department and the CER are colluding, and both are guilty.

It would seem that either (i) the NSW Department has fully informed the CER that the wind farm is in breach of the *Environmental Planning and Assessment Act 1979*, and the CER has decided to ignore this; or, (ii) the NSW Department has declined to state officially to the CER that the wind farm is in breach of NSW law, even though the Department has already adopted that position; or, (iii) both parties have agreed that, despite the breach of NSW law, no action will be taken.

Given the privacy provisions, it is impossible for an ordinary citizen to discover what is really happening. What concerns me even more is that it may be impossible for the Select Committee to discover what is happening, since the Committee cannot subpoena documents, or compel witnesses to give evidence on oath.

All this being so, I suggest that if the Select Committee recommend a Royal Commission into wind farm development in Australia, the role and performance of the Clean Energy Regulator, and its relations with State governments, should fall within the Commission’s terms of reference.

In his letter to me Peter Bache offers further reasons why the CER has not yet suspended the accreditation of the wind farm. He states:

> Ordinarily, should the Regulator receive creditable evidence that a power station is being operated in contravention of Commonwealth or NSW law, particularly where that evidence were to be supplied to the Regulator by the relevant State authority (being the NSW Department or another relevant authority), the Regulator would consider suspending the accreditation of the wind farm under subsection 30E (3) of the Act.

But now Peter Bache suggests that in the case of the Gullen Range Wind Farm this procedure cannot be followed because of current legal proceedings. He continues:

> However, this matter is complicated by the fact that there are legal proceedings on foot. A Planning Assessment Commission (PAC) issued a determination on 2 October 2014, refusing to modify the relevant planning application. On 10 October 2014, the NSW Department issued a draft order to the operators of the Gullen Range Wind Farm requiring them to move nine turbines to their originally-approved location. As you are also aware, the operators of the Gullen Range Wind Farm then commenced Class 4 Proceedings in the Land and Environment Court (NSW) challenging the PAC determination. Those proceedings are yet to be heard or determined.
>
> It would therefore be inappropriate for the Regulator to make a decision suspending the accreditation of the Gullen Range Wind Farm at this time.

I submit that all these considerations are completely irrelevant to the CER's deliberations. The proponent's modification application did not concern the question whether the wind farm was in breach of NSW law. A modification application concerns a modification to the originally approved project, and, as such, requires a new assessment and approval. A determination of this matter was made by the PAC. The PAC explicitly declared that it was not concerned with whether the proponent had breached the project approval. The proponent's current Class 4 action does not concern the question whether the wind farm is in breach of NSW law. It only claims that the process by which the PAC arrived at its decision was invalid. Whether the NSWLEC finds for the proponent or not, the finding will not relate to the question whether the wind farm is in breach of NSW law.

Therefore, the whole process that has arisen from the proponent's modification application is completely irrelevant to the CER's deliberations.

The NSW Department's draft order to move nine turbines is incontrovertible evidence that the wind farm is in breach of NSW law.

Later in his letter Peter Bache goes even further in looking for a reason not to take action against the proponent of the Gullen Range Wind Farm. He writes:

> As mentioned above, the NSW Department has not yet determined that the wind farm is being operated in contravention of NSW law. *More importantly, there has been no finding or judgment from any court or tribunal to the effect that the Gullen Range Wind Farm is being operated in contravention of a law of the Commonwealth , a State or a Territory.* (italics added)

The italicised sentence surely raises the stakes even higher, and seems to take the CER outside the scope of the Act. Is Peter Bache really implying that unless an NSW court or tribunal determines that the wind farm is being operated in contravention of NSW law, the CER can do nothing, even if the Department declares that the wind farm is being

operated in contravention of NSW law? This is surely preposterous.

At this point I will remind the Committee of what the *Renewable Energy (Electricity) Act 2000* actually says at 30E (3). It says this:

> The Regulator may, by written notice, suspend the accreditation of an accredited power station if the Regulator *believes on reasonable grounds* that the power station is being operated in contravention of a law of the Commonwealth, a State or a Territory. (italics added)

The Act only requires the CER to "believe on reasonable grounds". There is nothing here about the CER requiring a declaration from the State or Territory government, let alone any need for a finding from a court or tribunal.

The CER has abundant evidence to warrant the belief that the Gullen Range Wind Farm is being operated in contravention of NSW law. It should therefore suspend the accreditation of the wind farm. It does not have to wait for the NSW Department of Planning, or for the NSW Land & Environment Court.

The Committee will remember that the plain sense of condition 1.5 of the Gullen Range Wind Farm Project Approval, and the plain sense of the NSW *Environmental Planning and Assessment Act 1979*, section 75W (2) have been disregarded by the proponent and by the Department, both of whom have felt free to "interpret" those clauses as they wished. Now we have a similar case, where the Federal Clean Energy Regulator appears to have disregarded the plain sense of section 30E (3) of the *Renewable Energy (Electricity) Act 2000*. **There is a fundamental problem here with agencies that arrogate to themselves the right to "interpret" legislation so as to be free to act or not to act, as they wish. This can only be the effect of 'regulatory capture'. I commend this topic to the Committee's attention.**

In relation to the Gullen Range Wind Farm, I submit that the Clean Energy Regulator has long since had sufficient evidence to conclude that the Gullen Range Wind Farm is being operated in contravention of NSW law, and that therefore it is guilty of dereliction of duty for not suspending long since the accreditation of the wind farm, and for not diligently investigating the proponent of the Gullen Range Wind Farm for fraud.

I said I would comment on the "may" in section 30E (3) of the Act. If this "may" only implies that the Regulator must give a proponent the opportunity to defend himself before the Regulator suspends accreditation, then no doubt the "may" is harmless, and indeed proper.

However, if the "may" is used by an irresponsible regulator to avoid suspending accreditation, under the influence of 'regulatory capture', then clearly the use of "may" is undesirable. It would seem that some consideration may need to be given to rewriting the Act, so that its spirit and intent cannot be evaded by an unscrupulous agency.

In relation to this subject, it has been suggested to me by a colleague that the CER should not be free to take the word of an operator that the operator's renewable energy power station complies with all Commonwealth, State or Territory law. Instead, the CER should be prohibited from accrediting a renewable energy power station unless and until the relevant State (or Territory) planning authority issues a certificate declaring that the power station does comply with all State (or Territory) law. This would prevent the State (or Territory) planning authority from prevaricating, and would make it impossible for the operator to commit fraud, at least in this respect. I commend this suggestion to you.

I have replied to Peter Bache's letter (see attached), along the lines described above. I am waiting for a response.

Section D

National Health and Medical Research Council (NHMRC)

In this section I will address your term of reference (c): "the role and capacity of the National Health and Medical Research Council in providing guidance to state and territory authorities".

My discussion must be comparatively brief, and limited to what I take to be essential points.

The principal essential point in my view is that there is ample evidence that the NHMRC's consideration of issues relating to the implications for health of wind farm development in Australia has been unsatisfactory and incompetent at best, possibly negligent. It is hard to resist the suspicion that the NHMRC is yet another agency that does not want to make difficulties for the wind energy industry. We seem to have here yet another instance of 'regulatory capture'.

The NHMRC *Rapid Review* (2010)

In 2010 the NHMRC published a document entitled *Wind Turbines and Health: A Rapid Review of the Evidence*. This document is aptly named, as its bibliography contains only 29 items, 17 of which are the products of the wind energy industry or its supporters, or are products of governments with a pro-wind farm development policy.

This *Rapid Review* was destructively criticised by the Society for Wind Vigilance (www.windvigilance.com) in a study approved by the society's advisory group, which included four distinguished physicians, and two distinguished acousticians. The Society's review, entitled *Haste Makes Waste*, states:

> The "Rapid Review" is an incomplete literature review with no original research. The report is biased from the outset as it seeks to support a restricted and preconceived conclusion. The end result is a deficient public health document.
>
> NHMRC asserts it "... only uses the best available evidence, in the form of peer-reviewed scientific literature, to formulate its recommendations." The contents of the "Rapid Review" reveal a different reality. The list of reference omissions is immense.
>
> The "Rapid Review" places an inappropriate level of credence in wind energy industry produced and or sponsored material to support its assertions. To compound this bias the "Rapid Review" selectively cites references which favour the wind energy industry while inexplicitly [sic] omitting relevant citations which do not.

> The "Rapid Review" is characterized by persistent allusions that people experience adverse health effects due to "attitude", "negative opinions" and "worry". These speculative theories are presented while ignoring authoritative knowledge on the subject of noise and health.

One could hardly imagine a more damning account of professional incompetence and bias.

The *Rapid Review* explicitly claims that "there are no direct pathological effects from wind farms":

> This review of the available evidence, including journal articles, surveys, literature reviews and government reports, supports the statement that: *There are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines*. (italics in original)

However, at a session of the Senate Community Affairs Committee in 2011 Professor Warwick Anderson, CEO of the NHMRC, responding to Senator Fielding's reference to the *Rapid Review'*s claim that there are no adverse health impacts from living near wind turbines, stated:

> I know that the headline on that public statement says that, but the document does not say that. It did say that there was no published scientific evidence at that stage to positively link the two. That is a very different thing to saying that there are no ill effects and we do not say that there are no ill effects. We definitely do not say it that way.

When he gave that answer, Professor Anderson was evidently confused, and could not remember accurately which NHMRC document said what. In fact, it was on the *NHMRC Public Statement: Wind Turbines and Health* (2010) that it was stated: "There is currently no published scientific evidence to positively link wind turbines with adverse health effects."

By contrast, in the document that is the NHMRC's actual report, i.e., *Wind Turbines and Health: A Rapid Review of the Evidence* (2010), the words "there are no direct pathological effects from wind farms" are used not once, *but twice*. On page 2 of that document, the opening paragraph of the report declares: "In particular the paper seeks to ascertain if the following statement can be supported by the evidence: *There are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines*."

And on page 8 of this report the Conclusion states unequivocally:

> This review of the available evidence, including journal articles, surveys, literature reviews and government reports, supports the statement that: *There are no direct pathological effects from wind farms and that any potential impact on humans can be*

minimised by following existing planning guidelines.

It will be obvious that the NHMRC's bias is manifest in that it took as its aim to prove a preconceived conclusion. It did not ask itself what the available evidence suggested, whether there were adverse health effects, or there were not adverse health effects. Instead, the NHMRC looked for evidence that would support the proposition that there are no adverse health effects. This is blatant bias, and methodological absurdity. This error in methodology could surely only come about through bias in favour of the wind energy industry.

In his obvious embarrassment at the Senate Community Affairs Committee Professor Anderson beat a strategic retreat. He stated:

> We regard this as a work in progress. We certainly do not believe that this question has been settled. That is why we are keeping it under constant review. That is why we said in our review that we believe authorities must take a precautionary approach to this.

Well, the fact is that what is stated in the *Public Statement* and what is stated in the *Rapid Review* do not agree. The two documents contradict each other. The *Public Statement* says that there is no evidence to connect wind turbines and adverse health effects. The *Rapid Review* says that there is evidence to support the conclusion that there are no adverse health effects from wind farms. These two statements are logically incompatible with each other.

We surely have here yet another instance of an agency committing a blunder and not having the honesty to admit it. Instead, the representative of the agency plays with words in order to distract attention from the agency's error, and in order to evade the obligation to give a true account of the agency's blunders. We have seen this on a grand scale with the NSW Department of Planning. We have seen it again with the Clean Energy Regulator. Now we see it with the NHMRC. It will be obvious to the Select Committee that wind farm neighbours cannot rely on any of these agencies to speak the truth. They are only concerned with protecting themselves from the exposure of their own errors.

It should be noted that the NHMRC *Rapid Review* is anonymous, and that there is no sign that it has been peer-reviewed. At one of the sessions of the Community Affairs Committee Professor Anderson claimed that the *Rapid Review* was peer-reviewed. And at a session of the Committee on 31 May 2012 Professor Anderson revealed that the peer-reviewers were Professor Simon Chapman and Dr Geoffrey Leventhall. This caused consternation amongst those of us who have been campaigning for justice for the victims of wind farms, since both Professor Chapman and Dr Leventhall have been energetic and outspoken supporters of the wind energy industry for years. Their appointment as peer-reviewers was quite inappropriate. It suggests 'regulatory capture'.

Before we leave the subject of the *Rapid Review*, I will make a few more points.

First, if the position of the NHMRC is now that the question of adverse health effects from wind farms is still an open question, and one requiring further research, how can the NHMRC maintain that “any potential impact on humans can be minimised by following existing planning guidelines”? Clearly, if there is insufficient evidence whether wind turbines cause adverse health effects, how can it be known that existing planning guidelines are adequate to protect neighbours? It must be impossible to know this.

Second, even when the *Rapid Review* was being prepared, there was ample evidence to prove that the noise guidelines in use in Australia to assess wind farm proposals were inadequate to protect neighbours, because those guidelines were based on false assumptions, and did not consider all the relevant aspects of wind turbine noise. Therefore, it was already reasonable to conclude that noise assessments conducted according to those guidelines were likely to underestimate the levels of noise, and to miss altogether some of the characteristics of wind turbine noise (specifically, ILFN and amplitude modulation), characteristics that could already be associated with adverse health effects. (For detailed support for these claims, please see the attached PMLG documents on noise.)

Third, the *Rapid Review* missed completely the research on the sound emissions of wind turbines, conducted for the US Department of Energy by NASA, and by SERI (Solar Energy Research Institute) in the 1980s and 1990s. This research proved the connection between wind turbine ILFN and the symptoms of ill health typically experienced by some wind farm neighbours. This research was originally on the older style of turbine where the turbine blades were downwind of the tower. As a result of this research a new style of turbine was designed with the blades upwind of the tower. Nonetheless, this did not get rid of the problem. It only reduced it. (See the attached article by Richard James (2012).)

The NHMRC’s recent study on wind farms and human health (2012-2015)

In 2012 the NHMRC called for information from interested parties concerning health impacts from wind turbines. The NHMRC commissioned two studies of the available literature in order to determine whether sufficient evidence existed to indicate that wind turbines cause adverse health effects.

The first of these studies was a *Systematic review of the human health effects of wind farms,* undertaken by independent reviewers from Adelaide Health Technology Assessment. This review considered evidence published up to October 2012. This review was released by the NHMRC in February 2014 as a background document, accompanied by *NHMRC Draft Information Paper: Evidence on Wind Farms and Human Health*.

The second review was the *Review of additional evidence for NHMRC Information Paper: Evidence on Wind Farms and Human Health*. This review was carried out by a team from the Australasian Cochrane Centre and from the Monash Centre for Occupational and Environmental Health at Monash University. This review included evidence published

from October 2012 up to May 2014.

In relation to these reviews, the NHMRC has published *NHMRC Statement and Information Paper: Evidence on Wind Farms and Human Health* (February 2015), and *NHMRC Statement: Evidence on Wind Farms and Human Health* (February 2015).

In addition, there are two media releases: *NHMRC's comprehensive review finds little evidence of adverse health effects from wind farms* (11.2.15), and *Clarification of future wind farm research funding* (page last updated 12 February 2015).

I will first comment on the *NHMRC Statement: Evidence on Wind Farms and Human Health*. Then I will make some more general comments on the scope and style of the whole review, and on the composition of the review committee.

First, then, what must strike any reasonable person with a logical mind about the *Statement: Evidence on Wind Farms and Human Health* is the tangle of contradictions into which it gets itself. It either doesn't know what it wants to say, or it is incapable of developing a clear, coherent position. Thus:

At the beginning of the document it is stated in bold: **After careful consideration and deliberation of the body of evidence, NHMRC concludes that there is currently no consistent evidence that wind farms cause adverse health effects in humans.**

Nonetheless, further down, the document states: "There is consistent but poor quality direct evidence that wind farm noise is associated with annoyance. While the parallel evidence suggests that prolonged noise-related annoyance may result in stress, which may be a risk factor for cardiovascular disease, ..."

And: "There is less consistent but poor quality direct evidence of an association between sleep disturbance and wind turbine noise."

So, there is actually consistent evidence of a relation between wind turbine noise and both annoyance, that is capable of causing stress, and sleep disturbance. The fact that this evidence is judged to be "poor quality" is irrelevant. Poor quality evidence that is consistent is consistent. If there is consistent evidence of the adverse health effects of annoyance and sleep disturbance, then it cannot be correct to state that "there is currently no consistent evidence that wind farms cause adverse health effects in humans." Either there is consistent evidence, or there isn't. NHMRC has admitted that there is, but then, for some reason, about which we can conjecture later, it wants to deny that there is.

In the third paragraph of the body of the statement it is stated:

> There is no direct evidence that exposure to wind farm noise affects physical or mental health. While exposure to environmental noise is associated with health effects, these effects occur at much higher levels of noise than are likely to be perceived by people

> living in close proximity to wind farms in Australia. The parallel evidence assessed suggests that there are unlikely to be any significant effects on physical or mental health at distances greater than 1,500 m from wind farms.

I submit that this paragraph makes no sense. Setting aside the question of noise levels, this paragraph suggests both that the noise levels around wind farms are unlikely to produce adverse health effects, and that there are unlikely to be any adverse health effects beyond 1500 metres from turbines. Does the author of this document believe that no one in Australia lives closer than 1500 metres from turbines? If he does, he is certainly mistaken. Why make such a preposterous assumption?

If it is worth stating that there are unlikely to be adverse health effects beyond 1500 metres of turbines, that implies that *within 1500 metres there may very well be adverse health effects*. On the other hand, if it is true generally that adverse health effects from environmental noise "occur at much higher levels of noise than are likely to be perceived by people living in close proximity to wind farms in Australia", what is the point of singling out 1500 metres from turbines as a significant distance worth mentioning?

In the next paragraph it is stated:

> There is consistent but poor quality direct evidence that wind farm noise is associated with annoyance. While the parallel evidence suggests that prolonged noise-related annoyance may result in stress, which may be a risk factor for cardiovascular disease, annoyance was not consistently defined in the studies and a range of other factors are possible explanations for the association observed.

Either there is evidence of an association of wind farm noise with annoyance or there isn't. If there isn't, then the statement should say so. But if there is such evidence, then any further qualifications that need to be made should not be presented as if they negate the evidential relationship that has already been established.

One cannot resist the temptation to believe that the author wants to 'have it both ways'.

There are similar contradictions in the paragraph on sleep disturbance:

> There is less consistent, poor quality direct evidence of an association between sleep disturbance and wind farm noise. However, sleep disturbance was not objectively measured in the studies and a range of other factors are possible explanations for the association observed. While chronic sleep disturbance is known to affect health, the parallel evidence suggests that wind farm noise is unlikely to disturb sleep at distances of more than 1,500 m from wind farms.

If there is an observed association between wind farm noise and sleep disturbance, how can such an observed association be explained by something else? If the sleep disturbance were to be explained by something else, then there would be no association between the wind farm noise and the sleep disturbance. The association would be between the sleep

disturbance and the something else.

Once again, why single out the 1500 metre distance? If sleep disturbance from the noise levels around wind farms is unlikely in general, why mention 1500 metres at all? The suggestion that beyond 1500 metres there will be no problem implies that within 1500 metres there may very well be a problem.

Finally, other claims is this Statement are either unwarranted, or downright false. For example:

> Although individuals may perceive aspects of wind farm noise at greater distances, it is unlikely that it will be disturbing at distances of more than 1,500 m.

If this refers to audible noise in the high frequency and mid frequency ranges, this is just untrue. I know people who live about 2.5 kilometres from turbines, and they have told me that they are disturbed by such audible noise. Audible noise can be increased at residences at night, partly from the reduction of background noise, and partly from temperature inversions. (I will return to these acoustic matters below.)

If the statement is intended to cover low frequency noise and infrasound as well as high and mid frequency noise, then it ignores the fact that ILFN has a much lower rate of attenuation with distance (about 3 dB per doubling of distance) than high and mid frequency noise (about 6 dB per doubling of distance). It also ignores the facts that ILFN can more easily penetrate the fabric of a building than high and mid frequency noise, and that infrasound in particular can resonate inside a building.

Again:

> Noise from wind farms, including its content of low-frequency noise and infrasound, is similar to noise from many other natural and human-made sources.

This is false, and ignorant. Wind turbine sound, at all frequencies, is amplitude-modulated. The amplitude modulation can serve to distinguish wind turbine noise from other naturally occurring noise in the environment. Naturally occurring infrasound, for example, is smooth and laminar. It does not have the pattern of crests, deriving from the modulation, that serve to identify wind turbine noise. The Select Committee may ask any independent acoustician, such as Stephen Cooper, Bob Thorne or Colin Hansen, about this.

Stephen Cooper has devised a method for identifying wind turbine infrasound inside houses, and distinguishing it from naturally occurring infrasound.

Wind turbine noise does resemble the noise from HVAC systems (heating, ventilation and air-conditioning), at least the older style systems that made people sick in the 1970s (see the attached article by Richard James). The fact that those old HVAC systems made people sick is some reason to suppose that wind turbine infrasound may also have the

same effect.

It may be said that at least some of these contradictions arise because the reviewers are considering two or more bodies of evidence (direct and supporting (background, mechanistic, parallel)). But that does not absolve the reviewers from constructing a coherent overall view. If this is impossible, then surely it points to the futility of adopting this research method.

It may be thought that my criticisms are just nit-picking, and of no importance, given the fact that the practical conclusion of this review is that more research has to be done, and the NHMRC is now in the process of commissioning that research.

However, when these verbal contradictions are seen in the context of the substantive deficiencies of these reviews, then they may be seen as symptoms of something more important.

The first substantive criticism that must be made of these reviews is that they are just literature reviews. Wind farm neighbours in Victoria and NSW have been living with the adverse noise and health impacts from wind farms since 2010 (neighbours of the Crookwell 1 Wind Farm in NSW since 1998). Neighbours in South Australia have been living with such impacts for even longer. In 2015 officially commissioned research into such impacts has not yet even begun. The 2010 *Rapid Review* was incompetent and negligent. The 2012-2015 review has arrived at only inconclusive conclusions. It has not established anything that wind farm neighbours have not known about for years. It is outrageous that the NHMRC has so misconducted its own affairs that it is only now beginning to commission the research that needs to be done.

It may be added that in the case of audible wind turbine noise and sleep disturbance a very simple test was available. The NHMRC could have delegated to trained observers the task of living at residences associated with neighbours' complaints (with the consent of owners), for two months in mid-winter, and then reporting on their experiences. To fail to do this, and instead to debate the fine points of statistical analysis of only a few studies suggests an interest remote from the realities of lived experience.

The second substantive criticism of these reviews is that the reviews do not consider the abundant evidence that the noise guidelines in use in Australia are demonstrably inadequate to project or to measure accurately, or at all, all relevant aspects of wind turbine noise, and therefore must be regarded as incapable of protecting neighbours from adverse impacts. If it is known that the approvals granted to wind farms are based on inadequate noise guidelines, then, when neighbours complain about adverse impacts, some credence should be given to their complaints. Instead, neighbours are told that the wind farms comply with their conditions of consent. And that is an end to the matter.

This is an issue that the NHMRC reviews could have explored. They then might have reached the conclusion that there were ample acoustic grounds to suggest the probability

that wind farm neighbours' complaints were justified. Instead, this kind of study has been excluded. (for further comment, see below)

(On wind turbine noise and noise guidelines, see section B above.)

The third substantive criticism of the reviews is that they have totally ignored the research on wind turbine noise, conducted for the US Department of Energy by NASA and SERI (Solar Energy Research Institute) in the 1980s and 1990s. This research was initially conducted on the older style of turbine with the blades downwind of the tower. But subsequent research determined that the results were applicable to the newer style of turbine with the blades upwind of the tower, albeit to a lesser degree. The research established that ILFN from the test turbines did cause in participants the kind of symptoms of which wind farm neighbours complain. (see the attached article by Richard James)

The fourth substantive criticism of the reviews is that they have totally ignored the research of Professor Alec Salt and his colleagues. Professor Salt is a medical researcher specialising in the study of the cochlea. I referred to his work in Section B above. Professor Salt has been publishing in the area of wind turbine infrasound and the potentiality for adverse health effects since 2010. References to his work have been sent to the NHMRC more than once. It is astonishing, and reprehensible that in 2015 the NHMRC has still not taken cognizance of his work.

Professor Salt and his colleague Jeffrey T. Lichtenhan have summarised their research in an article (attached) 'How Does Wind Turbine Noise Affect People?' (*Acoustics Today*, Vol. 10, Issue 1, Winter 2014, pp. 20-28). In this article they describe the ear's response to infrasound, and then note a peculiarity of the impact of infrasound from wind turbines:

> One important aspect of wind turbine noise that is relevant to its physiological consequences is that the duration of exposure can be extremely long, 24 hours a day and lasting for days or longer, depending on prevailing wind conditions. This is considerably different from most industrial noise where 8 hour exposures are typically considered, interspersed by prolonged periods of quiet (i.e., quiet for 16 hours per day plus all weekends). There are numerous studies of exposures to higher level infrasound for periods of a few hours, *but to date there have been no systematic studies of exposure to infrasound for a prolonged period*. (p. 23; italics added)

After describing the processes by which infrasound induces cochlear responses Salt and Lichtenhan state: "We conclude that low frequency regions of the ear will be moderately to strongly stimulated for prolonged periods by wind turbine noise." (p. 23) They then discuss five physiological mechanisms by which such stimulation might have effects. These are: 1. Amplitude modulation: low-frequency biassing of audible sounds; 2. Endolymphatic hydrops induced by low frequency tones; 3. Excitation of outer hair cell afferent nerve pathways; 4. Exacerbation of noise induced hearing loss; 5. Infrasound stimulation of the vestibular sense organs.

They make it clear that these are hypotheses that require research, but they are hypotheses grounded in existing medical knowledge. They write:

> Given the present evidence, it seems risky at best to continue the current gamble that infrasound stimulation of the ear stays confined to the ear and has no other effects on the body. For this to be true, all the mechanisms we have outlined (low-frequency-induced amplitude modulation, low frequency sound-induced endolymph volume changes, infrasound stimulation of type II afferent nerves, infrasound exacerbation of noise-induced damage and direct infrasound stimulation of vestibular organs) would have to be insignificant. *We know this is highly unlikely* and we anticipate novel findings in the coming years that will influence the debate. (p. 27; italics added)

It is mind-boggling that after four years or more of publications by Salt and his colleagues the NHMRC has still not acknowledged his work, and its relevance to the matter of adverse health effects from wind turbines.

It is hard to resist the temptation to think that the 2012-2015 review is an attempt by the NHMRC to divert attention from the gross inadequacies of the 2010 review. The 2010 review was cursory, perfunctory and lax. Therefore, the 2012-2015 review will be extremely rigorous. The only problem with this rigour is that it is so extreme that it has excluded from the review the researches that are of real importance (re noise guidelines, US Department of Energy, Salt).

I attribute no blame to the institutions that carried out the reviews. They no doubt did what they were asked to do. The fault must lie with the NHMRC's review committee. There is an ominous statement in the *NHMRC Statement and Information Paper: Evidence on Wind Farms and Human Health*. It is stated:

> The *Systematic review of the human health effects of wind farms* was undertaken by independent reviewers from Adelaide Health Technology Assessment **under the guidance of the Reference Group**. (bold added)

The Reference Group is the review committee, chaired by Professor Bruce Armstrong. I must make some comments on the composition of this committee.

The review committee consisted of 8 members, including the Chair, Professor Bruce Armstrong.

When the members of the committee were announced, I and others wrote to Professor Armstrong, protesting the inclusion of 3 of the members, as having a conflict of interest (see attached e-mail). The 3 members in question were Professor Wayne Smith, Dr Elizabeth Hanna and Dr Norm Broner.

I pointed out that Professor Wayne Smith, as Director of Environmental Health at the

NSW Department of Health, was already committed to the view that there is no evidence for adverse health effects from wind farms. He indicated this quite clearly at a meeting at the Department of Planning on 18 October 2011, at which I was present. He dismissed the issue, and he and his colleagues walked out of the meeting after only a few minutes. As a potential member of the NHMRC's review committee, his judgment and reputation were at stake, and so it should have been considered that he had a conflict of interest.

I pointed out that Dr Elizabeth Hanna was "on the CAHA [Climate and Health Alliance] e-mail list" (NHMRC website). I suggested that this presumably indicated that Dr Hanna sympathised with the aims and views of the Climate and Health Alliance, which, on its website, clearly wished to favour renewable energy over coal. I now see from the NHMRC's website that Dr Hanna represents the Australian College of Nursing on the Climate and Health Alliance Committee of Management, and has been President of the Climate and Health Alliance since August 2011! As the head of an association that wishes to favour renewable energy over coal, she must have had a conflict of interest, and should never have been appointed to the NHMRC review committee.

I pointed out that Dr Norm Broner's views on low frequency noise were the source of the NSW draft *Wind Farm Guidelines*' treatment of low frequency noise. I pointed out that a reading of Dr Broner's study 'A simple criterion for low frequency noise emission assessment' (*Journal of Low Frequency Noise, Vibration and Active Control*, vol. 29, No. 1, pp. 1-13) showed the following:

(i) Broner offers a simple overall criterion so that planners and proponents will not be put to the trouble of making a detailed spectral analysis of the sounds (p. 1). This is clearly in the interest of proponents, but not in the interest of wind farm neighbours.

(ii) Broner recognizes that ideally the limit for LFN should be an indoor limit, but proposes instead an outdoor limit, because "in planning terms, it is much easier to set criteria for the outside of residences" (p. 1). Again, this is in the interest of proponents, but not in the interest of neighbours.

(iii) Broner wrongly asserts that LFN has been eliminated from wind turbine noise by the shift from downwind to upwind rotors (p. 3). This assertion is quite false, as may be seen from any number of studies of wind turbine sound in the last decade or so. Broner's false notion is certainly in the interest of the wind energy industry.

(iv) Broner assumes that inaudible infrasound is not a problem (p.5). However, this assumption is false, as has been proved by the research of Professor Alec Salt and his colleagues.

I concluded that Dr Broner had already expressed views which objectively favoured developers and proponents, and views some of which were in fact false, while being in the interest of proponents and developers.

The NHMRC's website now declares that Dr Broner has carried out noise assessments on

behalf of wind farm developers.

It was more than obvious at the time that Dr Broner had a massive conflict of interest, and that he ought not to have been appointed to the NHMRC review committee.

In response to my e-mail to Professor Bruce Armstrong I received a letter (see attachment) from Tanja Farmer, Director of Environmental Health and CAM for the NHMRC. In typical bureaucratic style, Ms Farmer ignores all the specifics in my e-mail to Professor Armstrong, and offers only generalities.

Ms Farmer makes the following assertion: “The Chair has reviewed each member’s declared interests and does not consider any of the issues identified present an unmanageable conflict.” I can only suggest that this is a gross error of judgment, and that the Select Committee might like to ask Professor Bruce Armstrong about it.

I submit that the appointment of Professor Smith, Dr Hanna and Dr Broner to the review committee is clear evidence of ‘regulatory capture’.

At the Senate Estimates: Community Affairs Legislation Committee (26 February 2014) Senator Madigan asked Warwick Anderson about the conflicts of interest. Professor Anderson responded only with the usual generalities. While not denying that some members of the review committee might have had conflicts of interest, he suggested that that this might be dealt with by particular members standing aside on particular issues.

When questioned by Senator Madigan as to why the only acoustician [i.e., Dr Broner] on the review committee was someone with strong financial ties to the wind energy industry, Professor Anderson could only reply with a grammatically and semantically incoherent sentence: “He [Professor Armstrong] and I determined that the balance of that expertise against the interests that person had were ones that could be managed within the context of that committee.”

If we assume that what Professor Anderson wanted to say was that Dr Broner’s expertise was so important to the review committee that that importance had to be balanced against Dr Broner’s obvious conflict of interest, then the obvious response to that ludicrous claim must be that Dr Broner was not the only acoustician in Australia with experience of assessing wind turbine noise, and that Dr Broner’s obvious conflict of interest should have excluded him from the review committee.

It is no wonder that Professor Anderson could not manage a coherent sentence, when he was endeavouring to evade the thrust of Senator Madigan’s question.

Before I end this section, I will note one more matter from Ms Farmer’s letter to me. In my e-mail to Professor Armstrong I had raised the matter of the inadequacy of the planning guidelines, specifically the noise guidelines, used to determine approvals for wind farms in Australia. This was an important, indeed crucial issue for the NHMRC to

consider, since the inadequacy of the noise guidelines was *prima facie* evidence for the probably inappropriate location of wind farms, too close to people's homes.

On this issue, Ms Farmer responds:

> This review will not examine best practice approaches to planning, development or monitoring activities related to wind farms as these areas fall beyond the scope of the review and outside our area of responsibility.

I can only suggest that the inadequacy of the noise guidelines is certainly a relevant factor for any inquiry into the potential adverse health effects of wind farms, and that it should not have been excluded from the inquiry. That it was so excluded is entirely the responsibility of the NHMRC. This exclusion was yet another error of judgment.

The malign influence of the NHMRC's failures in respect of the health effects of wind farms can be seen in the fact that State governments use NHMRC pronouncements as 'cover' behind which those governments can justify their own inaction. Thus, I have a letter, dated 7 December 2011, from the Hon. Melinda Pavey MLC, Parliamentary secretary for Regional Health, writing on behalf of the NSW Minister of Health, concerning wind farm development in my local area. Ms Pavey writes:

> I am advised by the NSW Ministry of Health that the National Health and Medical Research Council (NHMRC) conducted a rapid review of the evidence of adverse health impacts of wind turbines in July 2010. This review concluded that "*there are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines*". Of note is that the NSW Ministry of Health endorsed these NHMRC findings. (italics in original)

So, let us consider the situation. Professor Wayne Smith serves as Director of Environmental Health for the NSW Department of Health. He commits himself to the view that there is no evidence for adverse health effects from wind farms. Presumably, he advises the NSW Minister of Health that the NHMRC pronouncements should be accepted. He then serves on the NHMRC review committee, which duly finds that "there is currently no consistent evidence that wind farms cause adverse health effects in humans."

Again: Dr Norm Broner's views on low frequency noise are invoked by the authors of the NSW draft *Wind Farm Guidelines*. Dr Broner's views include the false notions that low frequency noise has been eliminated from modern wind turbines, and that infrasound cannot be considered a problem. Dr Broner then serves on the NHMRC review committee, which ignores the research for the US Department of Energy, and the research of Professor Alec Salt, and duly finds that "there is currently no consistent evidence that wind farms cause adverse health effects in humans."

I submit that the NHMRC's review committee is not a body in which one can have any confidence, nor can one have any confidence in its findings.

I submit that there is ample evidence that the NHMRC is subjected to 'regulatory capture' by the wind energy industry.

If there is to be a Royal Commission into wind farm development in Australia, I would urge that the Select Committee recommend that the NHMRC fall within the scope of that Royal Commission's inquiries.

The NHMRC is now commissioning research into the potential health effects of wind turbines. After all the incompetence and misconduct described above, how can wind farm neighbours have any confidence that this research will be thorough and accurate, and not biased in favour of the wind energy industry? It seems to me that such confidence is impossible.

Will the commissioned research do any of the following?

- Consider the adequacy or inadequacy of the noise guidelines for wind turbines in use (or proposed) in Australia.
- Consider the research for the US Department of Energy, conducted in the 1980s and 1990s by NASA and by SERI.
- Consider the research of Professor Alec Salt and his colleagues on wind turbine infrasound and the potential for adverse health effects.
- Incorporate the methodology of Stephen Cooper, as used in Mr Cooper's recent study of the Cape Bridgewater Wind Farm.
- Ensure that wind farm operators are compelled to turn turbines on and off, as necessary for the conduct of the research.
- Measure wind turbine infrasound out to 10 kilometres from turbines, in connection with the study of adverse health effects within that distance.

Unless the research does all of the above, its value will be correspondingly reduced, and yet more time and resources will have been wasted. Yet again, wind farm neighbours will have been let down.

Section E

Other Agencies

Here I will only add a few comments on other agencies whose conduct has been dilatory, perfunctory or otherwise inadequate in relation to the matter of the regulation of wind farms in Australia, and the protection of neighbours from adverse impacts.

The Federal Government

In 2011 the Senate Community Affairs References Committee conducted an inquiry into 'The Social and Economic Impact of Rural Wind Farms'. The Committee issued a report in June 2011.

Recommendation 4 states:

> The Committee recommends that the Commonwealth Government initiate *as a matter of priority* thorough, adequately resourced epidemiological and laboratory studies of the possible effects of wind farms on human health. This research must engage across industry and community, and include an advisory process representing the range of interests and concerns. (italics added)

Recommendation 5 states:

> The Committee recommends that the NHMRC review of research should continue, with regular publication.

Recommendation 6 states:

> The Committee recommends that the National Acoustics Laboratories conduct a study and assessment of noise impacts of wind farms, including the impacts of infrasound.

In July 2012 the Federal Government issued its official response to the report. The Government responds thus:

> The Australian Government accepts these recommendations [recommendations 4, 5, and 6] in principle.
>
> The National Health and Medical Research Council (NHMRC) is already actively engaged in supporting the assessment of available research on this issue and will shortly commission a comprehensive review of the literature to inform any update to its 2010 public statement. The review will include audible noise, infrasound and

low-frequency noise. A reference group will be established to advise on the review and will include members of the public, industry, researchers, sound engineers/consultants and planning representatives.

The Senate Committee called for research on health effects *as a matter of priority*, i.e., as a matter of urgency. What then happened was that, as we have seen, the NHMRC spent three years doing a literature review that excluded some of the most important relevant research, and that issued in an incoherent and inconclusive report. This exercise in futility was presided over by a 'reference group' on which the only acoustician was an individual with close ties to both the wind energy industry and the planning establishment. The reference group also included a prominent supporter of the idea that renewable energy should be favoured against coal, and an official from a State Department of Health, an official already publicly committed to the idea that there is no evidence for adverse health effects from wind turbines.

Instead of wasting time and resources on a literature review, the NHMRC could have immediately initiated a pilot study of adverse health effects from wind turbine sound energy across the frequency range at a few residences at different distances from actual wind farms. Such a study would not have taken three years to complete, and it would have produced some real results.

Needless to say, the National Acoustics Laboratories have not been commissioned to carry out the recommended noise study.

In effect, the Federal Government has used the adoption of recommendation 5 as an excuse and 'cover' for not adopting recommendations 4 and 6. In other words, the literature review recommended in recommendation 5 has served to distract attention from the fact that recommendations 4 (the health study) and 6 (the noise study) have been disregarded.

I can only suggest that if there is a Royal Commission into wind farm development in Australia, it should consider whether elements in the Federal Government (whether politicians or officials) have deliberately delayed the implementation of recommendations 4 and 6 in order to give more time for the wind energy industry to obtain approvals for wind farms under the current grossly inadequate planning guidelines, so that a substantial wind farm 'fleet' might be built, secured against the possibility of prohibition or constraint from thorough and accurate research into wind turbine impacts.

Civil Aviation Safety Authority (CASA)

I have been assured that you will receive a submission by another submitter in relation to inadequate regulatory governance by the Civil Aviation Safety Authority, concerning the

Gullen Range Wind Farm.

The background to this issue is that when the Gullen Range Wind Farm was approved by the NSW Minister of Planning in 2009, and re-approved by the NSW Land & Environment Court in 2010, 11 turbines were removed from the project in order to protect the Crookwell aerodrome. I believe that the Department of Planning originally wished to remove 21 turbines from the project, but the proponent (Epuron) persuaded the Department to reduce the number to 11.

At the merit appeal in the Land & Environment Court in 2009 objectors who were qualified by their experience in the aircraft industry or in aircraft-related government duties gave evidence that the Gullen Range Wind Farm still posed a threat to aircraft using the Crookwell aerodrome, even if 11 turbines were removed.

The Land & Environment Court chose not to accept their claims, and restricted its determination to ratifying the exclusion of the 11 turbines.

One of these objectors has taken his concerns to CASA, but CASA has, apparently, declared that there is "no safety issue with the Gullen Range Wind Farm".

This objector is of the view that Section 9A of the *Civil Aviation Act 1988* obliges CASA to investigate his claims, and that, therefore, CASA is at fault for not doing so.

Section 9A (1) of the Act states: "In exercising its powers and performing its functions, CASA must regard the safety of air navigation as the most important consideration."

The objector in question will, I am assured, make a submission to you which will contain all the relevant factual information.

I can only request that you consider his submission, and consider whether CASA is yet another agency that has failed to carry out regulatory functions as it ought to have done.

If you do reach this conclusion, then I would suggest that the role and performance of CASA fall within the scope of any Royal Commission into wind farm development in Australia.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Despite the fact that the issues of adverse noise and health effects from wind turbines have been on the national agenda since at least the previous Senate Inquiry into Rural Wind Farms in 2011, the CSIRO has conducted no research into these issues. The only contribution that the CSIRO made to the previous Senate Inquiry was a sociological study into the "social acceptance" of wind farms.

This apathy on the part of the CSIRO towards an important issue of public health is no doubt connected with the fact that the CSIRO contains a unit, the Wind Energy Research Unit, whose functions are, according to the CSIRO's website, to identify wind farm sites, to help to predict their average wind energy yield, and to conduct research into electricity-storage technology.

In other words, the CSIRO sees its role as to assist the wind energy industry.

I submit that the fact that the CSIRO is engaged in research designed to promote and to benefit the wind energy industry, and has failed to conduct any research into the potential for adverse noise and health impacts from wind turbines is clear evidence of bias on the part of the CSIRO, a federal agency.

The CSIRO will no doubt defend itself by claiming: "With global warming a recognised environmental, social and economic concern, the development of science-based alternative forms of energy that are reliable, efficient and profitable is a national priority." (WERU webpage)

In other words, the CSIRO, like other government agencies, must conform its conduct to the implementation of the Renewable Energy Target. The Renewable Energy Target ensures that a bias in favour of the wind energy industry is implanted in such agencies.

Please note that, according to the quotation above, the Wind Energy Research Unit is concerned that wind energy should be "reliable, efficient and profitable." WERU is evidently not concerned that wind energy power stations should be *safe* for the neighbours who have to live beside them.

I submit that this is blatant and gross bias, and I urge the Select Committee to question the CSIRO about this bias.

If the Select Committee forms the view that the CSIRO is biased in the matter of wind farm development, then I would urge that the role and performance of the CSIRO fall within the scope of any Royal Commission into wind farm development in Australia.

State Departments of Health and Departments of Environment

At State level, Departments of Health and Departments of Environment have been remiss in ignoring the plight of adversely impacted neighbours of wind farms, and, directly or indirectly, assisting wind farm companies to inflict those adverse impacts on neighbours.

Departments of Environment have devised or adopted noise guidelines that are incapable of measuring accurately, or at all, the whole range of relevant sound characteristics of

wind turbine sound emissions, and so are incapable of protecting wind farm neighbours from adverse impacts. The Departments of Environment have then recommended these inadequate noise guidelines to the Departments of Planning. The Departments of Planning have used the inadequate noise guidelines to grant approvals to wind farm projects, and to find such wind farms to be in compliance, despite the fact that the wind farms are causing serious disturbance to some neighbours, and causing some neighbours to abandon their homes. All complaints are routinely dismissed.

Departments of Health have, as we have seen, taken 'cover' behind the inadequate and compromised reports of the NHMRC, and used these reports as a justification for inaction.

It is surely obvious that at State level Departments of Environment, Health and Planning are colluding to protect themselves and each other, and to protect the wind energy industry, from adverse criticism that might expose these parties to damaging litigation.

I can only urge the Select Committee to do whatever lies within its powers to open up these matters to critical examination.

The role and performance of State Departments of Environment and Departments of Health, as well as Departments of Planning, should certainly fall within the scope of any Royal Commission into wind farm development in Australia.

The Environment Protection Authority of South Australia

The South Australian EPA deserves special mention, as it devised the so-called *South Australian Noise Guidelines* (2003), and made the inadequate revision of these guidelines in 2009. These noise guidelines are responsible for most, perhaps all, of the suffering of wind farm neighbours in South Australia and in NSW. The South Australian EPA has never admitted the gross defectiveness of these noise guidelines. (See the PMLG document *Deficiencies of the Noise Guidelines Adopted, or to be adopted by NSW* (2013))

The role and performance of the Environment Protection Authority of South Australia should certainly fall within the scope of any Royal Commission into wind farm development in Australia.

Ministers, Tribunals, Courts, etc

It should go without saying that if there is to be a Royal Commission into wind farm development in Australia, it must investigate the role and performance of those office-holders and bodies authorised to grant or refuse planning approvals for wind farms.

These will include Ministers of Planning, planning tribunals and panels, and planning and environment courts.

The willingness of these authorities to grant inappropriate approvals, in defiance of the accumulating evidence of potential adverse impacts for wind farm neighbours is reprehensible and shameful. A day of reckoning must come.

A note on the media: The Australian Broadcasting Commission

I realize that the Australian Broadcasting Commission can hardly fall within the purview of an inquiry into regulatory governance. However, it is worth noting that the ABC is another statutory body that is guilty of gross bias in the matter of wind farm development in Australia. Here is not the place to justify this claim, if indeed it needs any justification, given the daily broadcasting of the ABC's mentality.

If a regulatory agency is reluctant to enforce regulations against a wind farm operator, that will be all the easier in a 'climate of opinion' that favours such privileging of the wind energy industry. The 'climate of opinion' is largely the product of the media, and in the formation of the 'climate of opinion' the national broadcaster must be considered to play a major role, simply because it is the national broadcaster.

It is, therefore, reasonable to believe that the laxity that has been displayed by regulatory agencies, both at state and at national levels, has probably been facilitated by the strong pro-wind energy bias of the ABC. The regulatory agencies might very well expect that any slackness of regulation on their part would not meet with very stringent criticism from the ABC. And that in fact has been the case. Attempts by myself and others to interest the ABC in failures of regulation of the wind energy industry have met with very little success.

Therefore, if there is to be a Royal Commission into wind farm development in Australia, that Commission must consider the role and performance of the media, and especially of the national broadcaster, the Australian Broadcasting Commission.

Conclusions and Recommendation

There have been the following failures of regulatory governance of wind farms in Australia:

1. The planning guidelines, more especially the noise guidelines, are incapable of protecting wind farm neighbours from the risk of adverse noise and health impacts.

2. As a result of the use of inadequate noise guidelines in Australia, many wind farms have been inappropriately located, too close to people's homes.

3. The whole development of the wind energy industry in Australia, under the misguided and unjustifiable patronage of federal and state governments, has been premature and reckless, since comprehensive medical research into potential adverse health effects of wind turbines has not yet been conducted. Moreover, sufficient background research in acoustics and in psycho-acoustics had already been carried out long ago, sufficient to make a *prima facie* case that such adverse health effects were probable.

4. At state level, government departments (environment, health, planning) have been remiss and irresponsible in failing to consider the accumulating evidence of the possibility, and indeed the actuality, of adverse noise and health impacts.

5. In the case of the Gullen Range Wind Farm in NSW, the NSW Department of Planning is guilty of an egregious failure of compliance monitoring, on a colossal scale, insofar as 69 of the 73 turbines have been built in locations not authorised by the Project Approval. The NSW Department knew for over a year (and could have known 6 months before that) that the turbine footings were in the wrong place, but it failed to order the proponent to cease construction, and it failed to order the proponent to relocate unauthorised turbine footings and turbines. The proponent of the Gullen Range Wind Farm has violated the Project Approval on a massive scale, and the NSW Department of Planning has utterly failed to prevent this. It has not even tried to prevent it.

6. Although it is certain that the Gullen Range Wind Farm is in contravention of NSW law, specifically, the *Environmental Planning and Assessment Act 1979*, the Clean Energy Regulator has failed to suspend the accreditation of the wind farm. The wind farm has been earning Renewable Energy Certificates for over a year, even though, presumably, it is not entitled to do so.

7. The Clean Energy Regulator claims that it cannot suspend the Gullen Range Wind Farm's accreditation unless and until the NSW Department of Planning determines "conclusively" that the wind farm is operating in contravention of NSW law. The NSW Minister of Planning disputes this version of events, and claims that her

Department has told the Clean Energy Regulator everything it needs to know. Either the Clean Energy Regulator or the NSW Department or both are at fault.

8. The NHMRC has displayed consistent bias in favour of the wind energy industry since the time of the notorious *Rapid Review* in 2010. This bias is seen in the inappropriate use of personnel with close ties to the wind energy industry or the planning establishment, or persons with a strong and outspoken public position in support of the wind energy industry. The NHMRC's 2010 review was incompetent and negligent. The 2012-15 review has produced only an incoherent and inconclusive report, and was a waste of time and resources. On past performance, it is impossible to have any confidence in the adequacy of any research commissioned by the NHMRC.

9. The Federal Government has been dilatory in implementing the recommendations of the previous Senate inquiry, recommendations the Federal Government professes to accept "in principle".

10. CASA has failed to investigate air safety issues at the Gullen Range Wind Farm, even though these issues have been brought to CASA's attention by persons with appropriate qualifications and experience.

11. The CSIRO is manifestly biased in its support for the wind energy industry, and its complete failure to conduct any research into the possibility of adverse noise and health impacts from wind turbines.

As I suggested in my Introduction, the explanation for all these failures of regulatory governance is almost certainly the commitment of federal and state governments to the Renewable Energy Target. The implementation of this policy requires the rolling out of wind farms, and this is impossible unless planning standards are so lowered as to allow wind farms to be approved in locations favoured by the industry, which are also locations already settled with a human population. Wind farms are approved too close to people's homes, with the inevitable result of adverse noise and health effects.

The Renewable Energy Target is not the only political issue to corrupt political life and political discourse in Australia over the last twenty years, but it is certainly one that has had this effect.

In addition, in the case of planning authorities' reluctance to modify existing approvals, the motive is undoubtedly fear of litigation by developers. But this only indicates how the planning legislation has been written to favour developers. Developers must feel safe that once they have their approvals, nothing can alter them. Only in this way can they feel safe to invest their capital. But this only means that the State governments are more concerned to protect investors' capital than to protect ordinary citizens' health and well-being.

At present, wind farm neighbours cannot depend on federal or state governments, or

federal or state agencies to protect their legitimate interests, their health and well-being. If the Select Committee can do anything to change this situation, a concerned minority of Australians will be very grateful.

Recommendation

I urge the Select Committee to recommend that there be a Royal Commission into wind farm development in Australia.

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