

Select Committee on Wind Turbines
email: windturbines.sen@aph.gov.au

22 March 2015

Community submission from the Atherton Tablelands, Far North Queensland

Dear Senator Madigan and Committee Members

Thank you for taking on the huge task of investigating the governance and economic impact of wind turbines. We are pleased to have the opportunity to state on record that our community is being subjected to a poorly planned and ad hoc wind development which is not compatible with the social, economic and environmental well being of the Tablelands.

Far North Queensland is host to Queensland's first wind farm pilot project, the 12 MW Windy Hills (20 x .6MW turbines) near Ravenshoe which is operated by Thai-owned power company RATCH. RATCH also received approval for the 17-turbine High Roads wind farm near Tumoulin in 2011. In its development application, RATCH extolled the benefits of creating a "wind farm node" on the Tablelands which "will allow for the efficient maintenance and operation of the overall project area". RATCH has now submitted a third development application for the 189MW Mount Emerald wind farm on the northern Tablelands between Mareeba and Walkamin. More than 2,500 people live and work within 5km of the site and the plateau is of significant environmental value.

There are numerous peer-reviewed, evidence-based and published research papers which unequivocally show that prolonged exposure to the audible and inaudible outputs from wind turbines adversely affect people's well being. The previous Senate Inquiry into the social and economic impacts of wind farms recorded numerous cases where farming families have been forced to move away from their properties due to the impacts of noise on one or more family members. We don't want the same situation to occur here on the Tablelands, bringing added social and economic stress to rural families, businesses and communities. The reason many Tableland families have remained on the land is they are willing to put up with the lack of services because they enjoy the peace and quiet of the rural lifestyle. Forcing families to sleep away from their properties and travel back to work is not acceptable.

This submission has been prepared with input from a range of community members including conservationists, farmers, tourism operators, researchers, local councillors and many others who are very concerned about the Mount Emerald proposal. While our submission focuses on our local experiences, we think the issues raised here will be pertinent to other wind farms in Australia.

We are very pleased to have the opportunity describe the governance failures and the appalling way our community has been treated by the developers. Our community would welcome a local hearing of the Senate Committee and we would be more than happy to coordinate presentations from a range of stakeholders. We look forward to hearing from you.

Yours sincerely

Steve Lavis

Tableland Wind Turbine Action,

Recommendations

Further research is required

- A proportion of REC subsidies provided to the wind industry should be set aside for urgently needed health studies. Wind turbines should not be approved within 10km of surrounding residences until research into the impacts on health and well being have been completed.
- A proportion of REC subsidies provided to the wind industry should be set aside for independent research into the environmental impacts of turbine construction and operation on EPBC listed species.
- A proportion of REC subsidies provided to the wind industry should be set aside for research into other environmental impacts such as localised climate effects on cloud-stripping and temperature changes.

Planning and assessment

- Planning policies and regulations require urgent review to reflect the unique problems associated with siting, designing, regulating and monitoring privately owned industrial electricity generators such as wind farms. Wind farms should be strictly regulated, they should not be exempt from planning, environmental and noise standards.
- If wind farm developers are found to have provided misleading information to sensitive receptors, the broader community and assessment bodies (eg. incorrect visual representations, claims that electricity bills will be reduced, inadequate noise modeling), planning permission should be automatically refused. In the event the wind farm is already constructed, strict penalties should apply.
- Gag clauses should be illegal.

Economic impacts

- Rural regions which suffer the social, environmental, health and economic costs of wind farms should be adequately compensated by the developers and the metropolitan regions which are demanding their construction.
- In light of federal policies which has resulted in a “wind rush”, the true cost of introducing additional wind energy to the grid and energy markets should be calculated and factored into decisions on whether wind farm applications are needed and whether they should be approved.
- Wind farms should not be sited in prime agricultural areas and near rural residential areas because they jeopardize future growth. Wind farms should not limit development potential of surrounding communities. Rural and other industries that are likely to bring far greater regional economic and employment benefits should be prioritised above wind farms.
- Wind farm developers should be financially responsible for losses of surrounding businesses (eg. aerial agriculture, farmstays). They should either offer legal guarantees there will be no impacts, or compensation provisions should be included in permit conditions. This should include compensating surrounding property owners and local Councils if wind turbines have a negative impact on property values and roads.
- Wind farms are industrial electricity generators and should be rated and taxed accordingly, not as rural holdings. Their profits should be capped at 7 per cent as legislated in Spain, to limit the impacts of wind energy on electricity bills.

Monitoring and compliance

- A proportion of REC subsidies provided to the wind farm operator should be set aside to cover the costs of independent monitoring and compliance.

- Wind farm operators should be forced to turn turbines off in order to undertake monitoring such as the impacts on wildlife and the impacts of noise on surrounding residences. Information about wind speed, direction and other conditions collected by the wind farm operator should be made publicly available.
- Any further approvals of wind farms should include mandatory monitoring of species fatalities by independent researchers and the findings should be made publicly available. Wildlife deaths and fires on site should be publicly available information.

The effect on household power prices, particularly households which receive no benefit from rooftop solar panels, and the merits of consumer subsidies for operators.

- The roll-out of wind power in Denmark and Germany benefited local community cooperatives and farmers, but these days projects are typically developed by large multi-nationals which benefit distant shareholders. Research in the UK has found that wind farm development often takes place in rural, underprivileged areas such as Wales, Scotland and north-east England, rather than the affluent counties of southern England (Cowell, 2012). We believe the Tablelands is entering the same unequal relationship with our affluent southern and coastal neighbours.
- Unlike wind farms elsewhere in Australia where several farmers benefit by leasing land to energy companies, in the case of Mount Emerald the site is owned solely by Port Douglas property developer Port Bajool Pty Ltd, and it was purchased specifically to establish a wind farm in partnership with RATCH.
- The wind industry and environmental groups have been keen to promote the benefits of renewable energy facilities without factoring in the considerable economic, social and environmental costs they impose on rural communities. The Tablelands already has Barron Hydro, Koombaloo Hydro and Windy Hill producing more renewable energy than any other region in Queensland. These facilities have not brought cheaper electricity to the Tablelands. In the case of wind turbines, the electricity is unreliable, the profits go to distant shareholders, and the developers don't even contribute significantly to Council rates.
- At the same time, the Australian Bureau of Statistics paints a grim picture of the Tablelands region as an area of disadvantage. Compared to other regions, there are higher levels of people on low incomes, without qualifications or in lower skilled occupations. Based on indicators such as income, expenditure and assets including wages and rental costs for families, and variables that reflect wealth (for example dwelling size) Tablelands residents have low levels of access to economic resources. They can't afford solar panels, yet they are subsidising solar panels and wind turbines through higher electricity bills.
- We also wish to highlight the frequent incorrect comments made in the media by the Mount Emerald developers and their political allies with regard to the proposal's financial benefits in terms of household energy prices. The developers repeatedly state in the media the proposal will power 75,000 homes, and many residents have the mistaken belief that the turbines will provide free energy and reduce their household power bills (confirmed by reader vox pops in *The Cairns Post* newspaper where people supported wind farms because of their mistaken belief that "free" wind energy will reduce their electricity bills).
- If State or Federal Governments set fair and equitable renewable energy generation targets for all regions, then there might be some argument for the Tablelands accepting the costs of renewable energy. Residents could take part in the conversation about what renewables to commission, where to locate them and which developers to work with, and they could also negotiate the division of benefits and burdens with development partners and across the socio-economic

range. But instead the Tableland communities and environment are having wind farms imposed on them and suffer the costs so that people in capital cities can get a warm, fuzzy feeling about renewable energy.

- The Queensland Competition Authority has stated the Renewable Energy Target has been pushing up the cost of electricity supply, equating to \$81.24 added to an average household electricity bill. The former State Energy Minister stated Queensland has an excess of generated electricity and will not need any more power stations for at least ten years. Queensland exports more power than any other state. Approving more wind farms is forcing expensive, unreliable energy into an oversupplied market. It will mean greater financial burden to households and industries in Far North Queensland and the rest of Queensland.
- The wind resource on Mount Emerald is at its lowest when Far North Queenslanders need it most. Wind monitoring towers recorded significantly low wind speeds during the monsoonal wet season from December to March, when Far North Queensland experiences high electricity demand from air conditioners. On a daily basis, low wind speeds were recorded from about 10am to 5-6pm which also coincides with times of high electricity demand. In addition, the monitoring towers recorded higher wind speeds at night - when residents surrounding the plateau are trying to sleep.
- Current governance and planning processes do not consider the costs of the addition of wind energy to the grid in terms of increasing the complexity of the electricity network and the subsequent costs to electricity consumers. It does not consider the costs of wind energy in terms of devaluing state-owned power generators because energy produced by wind turbines is accepted into the grid ahead of other generators.

The implementation of planning processes in relation to wind farms, including the level of information available to prospective wind farm hosts

MULTIPLE FAILURES IN THE DEVELOPMENT ASSESSMENT PROCESS

- Our community has been appalled by the Mount Emerald planning assessment process. The Mount Emerald Wind Farm proposal lies within the *Mareeba Shire Planning Scheme 2004* and is “code assessable” as a material change of use for a Utility Installation. When the planning scheme was developed, large-scale energy facilities were carried out by government agencies in response to public need, not by the private sector chasing LRET profits. “Code assessable” means that in spite of the industrial scale and impact of the wind farm proposal, the developers aren’t required to go through the usual public consultation, notification and submission processes. Our local community has no opportunity and no legal right to object to the application.
- Acknowledging the inadequacy of the planning scheme, the Council made several amendments (Temporary Local Planning Instruments) to assist in the wind farm assessment. However, the Queensland Government diluted the TLPs in order to expedite the wind farm planning approval. The Queensland Government has also relaxed many of the standard regulatory arrangements for the Mount Emerald developers. For instance, the developers will not be required to have a permit to clear native vegetation under *Queensland’s Nature Conservation (Wildlife) Regulation 2006* because the works will be considered “for the purposes of electrical works”. (When these Regulations were developed, electrical works of this scale were carried out by government agencies in response to public need for power. In this case, additional energy is not required, the developer is building turbines purely to take advantage of Federal Government regulations which assist renewable energy suppliers.) The Queensland Government has also withdrawn the requirement for the turbines to comply with remnant vegetation habitat regulations under the *Vegetation Management Act 2009*, and has refunded the developers’ assessment fee.
- The close relationship between the wind farm developers and the Queensland Government is highlighted by apparent interference by politicians and officers in the assessment process in regard to a related road access issue. The following passages are from Right to Information documents:
<http://services.dip.qld.gov.au/opendata/RTI/dsdip/rti104/DisclosureLogInternalReviewDocumentsForRelease-RTI104.pdf>
 - p.47: “Give me a call if you feel there is anything that DEEDI can do to provide assistance. Even if it is just attending meetings and offering moral support More than happy to see what we can do to speed up the process behind the scenes, kind regards, Paul Fagg, Acting Director, Strategic Projects and Planning”
 - p.50: “tried to get it fast-tracked with DERM” Paul Fagg
 - p.55: Paul Fagg offers to “elevate it” if there is a blockage with DERM
 - p.60: Joint venture partners (Port Bajool) Wendy Morris suggests to her father John that the Council tried to “pull a swifty” over the State by trying to include “future development patterns” in the proposed

wind farm planning scheme amendment. (This may have stopped the wind farm from going ahead.)

p.81 Paul Fagg offers a roundtable of agencies "to put pressure on" ...
"I am more than happy to fly down to Brisbane and stress to Sunwater the urgency of the situation"

p.86: "Does not seem right that you are held to ransom like this. I will keep you posted - I am happy to attend any meetings with DERM as well" Paul Fagg

30/01/12: RATCH asks if Paul Fagg is available to attend a meeting in Brisbane the following day with Sunwater.

30/01/12: Duncan Mortimer from RATCH refers to "our 'friends' at Sunwater" and "your contact in DEEDI" in an email to a RATCH colleague.

p.116: Following a negative article in *The Australian* newspaper about Queensland Health's concerns, Wendy Morris states: "David Kempton and Michael Trout have been in touch this morning re article... their attitude is one of total support" and RATCH media notes were provided to them so they could brief Queensland Health Minister Laurence Springborg.

- We are deeply disappointed that the former State Member for the neighbouring electorate of Cook, David Kempton, appears to have allowed his personal relationship with Mount Emerald joint partners Port Bajool to influence his judgement and ensure his unequivocal support for the proposal. Port Bajool developers John Morris and Jim Noli are Port Douglas-based property developers who live in the Cook electorate. Mr Kempton has publicly supported the proposal and the information above suggests he also worked behind the scenes to smooth the assessment process for the developers. At the same time, Mr Kempton repeatedly refused to discuss the potential impacts with affected residents. Our suspicions increased in late 2014 when it was reported in the media that he had accepted a luxury trip to a Port Bajool resort and had not declared it as required on the Queensland parliamentary register of interests.
- In another example of political interference, the Queensland Government changed the draft Tablelands planning scheme to expedite wind farm planning approvals. The Government changed the fundamental purpose of the proposed *Renewable Energy Facility Code* from "ensuring renewable energy facilities are located appropriately and have social, environmental and economic benefits" to "facilitating the establishment of new or expansion of existing facilities". The Government also removed the requirement for renewable energy facilities to be compatible with surrounding land uses (see related comment above by Wendy Morris) and introduced the clause: "any newly established power generation facilities are protected from incompatible development." This represents a loss of future development rights for properties surrounding renewable energy facilities. Agricultural and tourism industries that are likely to bring far greater regional economic and employment benefits should be prioritised above renewable energy facilities. For instance, it has been widely rumoured that RATCH intends to upgrade and expand the Windy Hill turbines in coming years. Rural industry diversification and ecotourism accommodation in the surrounding area would not be allowed under the new code.

- In contrast to the State Government's planning and assessment regime, we believe the Council planners have generally tried to achieve the best outcomes in terms of the Mount Emerald application, but have been stymied by political and state agency intervention. The developers simply avoided or incompletely answered many of the Council's Information Requests. For instance, they failed to justify why 2km setback distances and noise requirements specified in Victorian and New South Wales wind farm guidelines have not been applied (nine properties with an estimated 59 residents are less than 2km from turbines); failed to justify their approach of generically adding 10dB to establish outdoor/indoor noise values; failed to provide individual assessments of affected residences; failed to explain the weak correlation between monitoring mast wind speeds and the background noise at receptors; failed to provide additional background monitoring for representative dwellings; failed to justify over-reliance on manufacturers' standards rather than actual and modelled operational noise at wind farms; failed to explain how the *State Planning Policy (Noise)* and *Planning for Noise Control Guidelines* will be met; failed to consider wake effects; failed to consider visual impact of access roads; and failed to provide a viewshed analysis.
- Assessment of the Mount Emerald development application has been complicated further by several changes of State Government and Council amalgamation and de-amalgamation. In 2014, the re-established Mareeba Shire Council requested the State Government take over the wind farm assessment due to lack of resources. Given the Government's previous track record, residents don't trust state decision-makers to protect our region's social, economic and environmental interests.
- Just as the developer refused to answer questions raised by the local Council in its Information Request in 2013, the same pattern was repeated in 2014 in the developers' submission in response to the State Government's Information Request. The developers' submissions have not provided additional information, they have simply re-hashed existing reports. The developers failed to demonstrate how they can comply with Queensland's noise regulations, in particular the *Environmental Protection (Noise) Policy 2008*. The developer goes on to state that the noise requirements of Queensland's *Planning for Noise Control Guidelines*, with which other power stations comply, are "not practically achievable". Given the serious failures and omissions in the developer's response to the Information Request, the former Deputy Premier Jeff Seeney informed us in late 2014 he would be seeking further information from the developers before making a decision.
- We were recently informed by the local media that the new Deputy Premier Jackie Trad will make a decision by 17 April 2015. It would seem the developers will no longer be required to provide additional information. We believe the new Government's need to meet the expectations of green voters and to find immediate employment boosts will influence the decision-making process. After conversations with senior DSDIP officers, we have major misgivings about the lack of adequate permit conditions, in particular the lack of internal noise criteria. It was apparent that low frequency noise is not being considered as part of the permit conditions on the grounds that it would be too difficult to measure, ignoring Queensland's *Draft Low Frequency Noise Guidelines* which are applied in similar cases, for example CSG developments which were approved in late 2014.

COMMUNITY CONSULTATION SHOULD BE REGULATED

- Tablelands Wind Turbine Action was formed in 2011 in response to the very poor community consultation undertaken by the developers. The developers have attempted to minimise any opposition by withholding information, incorrectly presenting data and rejecting community concerns about the project. Throughout the planning process, they have tried to keep details as vague as possible and have avoided any meaningful stakeholder engagement. After the first community consultation in March 2011, the number of turbines increased from 74 to 75. When the draft EIS was released, the number decreased to 63 turbines but the turbine capacity increased from 2.0-2.3 megawatts to 3.0-3.4 megawatts. There was no consultation with the community about this substantial change, even though it increased noise levels at more residences.
- The developers promised to keep the community informed of progress, but the exact opposite has taken place. Our first eye-opening experience was when the EPBC Act referral documents were advertised the week before Christmas in 2012. This classic old-school move of seeking public feedback over the Christmas holidays was once popular with Queensland's white-shoe brigade to catch the impacted community and conservationists unprepared. Fortunately we were able to convince the Federal Environment Department to give us an extension and local concerns were included in the Terms of Reference for the EIS. It has now been over two years since the developers formally updated us on the assessment process. The developers have our emails on file but they didn't inform us last year when the draft EIS was released for public comment. They refused requests for more time and once again we had to beg for an extension of time from the Federal Environment Department. Then the developers failed to notify us that they had lodged their response to the Queensland Government's Information Request. It is this ongoing betrayal and disrespectful behavior that destroyed our community's trust in the Mount Emerald developers. They have prepared a very hard road ahead for themselves if the development is approved.
- The developers have continually misrepresented the proposal to all levels of Government. For instance, the draft EIS identified only 118 "receptors" within a 5km radius of the proposed wind farm site. This number does not include numerous Rangeview and Walkamin residents or the Lotus Glen facility (a small township itself with over 1200 staff and inmates). We don't understand why the developers did not accurately portray the number of residents who live within 5km of the proposed site. There are 700 properties listed in the Council ratepayer databases. The developers have had five years to contact each ratepayer and find out how many people live and work on each property. Why hasn't this been done?
- In what seems to be a regular marketing strategy by wind turbine firms, the developers carried out a survey in 2012 and claimed it showed general support for Mount Emerald. Yet 86 per cent of respondents said they knew little or nothing about the proposal. Nearly a third of the 400 respondents live over 20km from the site, and only 17 were under 5km from the site. We have found that the broader community has only a general knowledge about renewable energy and is unaware of the numerous problems with wind turbines that have occurred overseas and in southern states.

- The developers failed to contact and consult the people who would be most affected by the wind turbines. Due to this lack of regard for residents who would be impacted by the wind farm, we door-knocked and mailed surveys to an estimated 700 residential addresses within 5km of the proposed site. A total of 288 surveys were returned. Of these, 264 households (over 90 per cent) opposed the wind farm. They represent 564 adults, 144 children and over 1000 farm workers. Their main reasons are decline in property values, visual impacts, noise impacts, health impacts and environmental damage. Ten households supported and 14 households neither supported/opposed the wind turbines. (See Appendix 1: Mount Emerald Survey Results)
- The community has publicly raised a number of concerns about the environmental impacts, visual/landscape impacts, fire impacts, construction impacts, impacts on agriculture and other industries, etc. The developer's response has been to denigrate us and reject any issues we have raised, despite peer-reviewed research papers and on-ground experiences from southern states and overseas that we have cited. While the developers continue to maintain there will be no impacts, they have not offered legal guarantees or offered compensation provisions for affected local farmers and related agri-business operations.
- Another example of the developers' lack of regard for proper consultation is their statement in the draft EIS that a Community Consultative Committee will be formed and "a possible Chair has been approached and potential members identified". Appointments to these positions should not be up to the developers who will obviously appoint people who will be sympathetic to them.
- Our community is absolutely shocked by the way we have been treated and the very poor standard of community consultation undertaken by the developers. Members contracted international environmental consultants Sustainable Solutions Global Pty Ltd to review the draft EIS documents, and they commented that our community has been treated worse than their clients in developing countries. The developers' actions contravene international conventions such as the World Bank's Free Prior Informed Consent (FPIC) provisions that refer to the rights of local communities to participate in decision-making about issues impacting them. They have contravened our basic human rights.

GAG CLAUSES SHOULD BE ILLEGAL

Some of our most impacted residents feel they are unable to speak out about the Mount Emerald proposal because they signed controversial contracts with joint venture partners Port Bajool, who have developed housing estates in the surrounding area. Some prospective buyers were told by Port Bajool they would not see or hear the wind farm because "sound travels upwards" and they signed away both their rights to object, and their rights to compensation from the developer. You can imagine the shock these buyers received when the wind farm site plans were eventually revealed at a community meeting and they discovered the scale and potential impacts. These same people are now terrified to speak out against the proposal because they may be sued, greatly limiting their capacity to provide open input as part of the community consultation process.

No Objection to Wind Farm

The Vendor discloses that certain feasibility studies and a development application or procedure have been or may be made in respect to the development of Lot 7 SP235244 for construction of wind electricity power generation (by means of a connected group of wind turbine generators, together with associated electrical infrastructure and connection equipment). ***The Purchaser must not object to any application or procedure made or initiated by or on behalf of the vendor or a third party in respect of any use or development of Lot 7 SP235244. The Purchaser acknowledges that the Purchaser will not be materially prejudiced by the development or use of Lot 7 SP 235244 as a “wind farm” for the generation of power.***

ATTEMPTS TO BUY THE COMMUNITY SHOULD BE BANNED

- The Mount Emerald developers have significantly invested in business groups, local government, political campaigns and the media. We don't consider these financial incentives are illegal, but we believe they influence outcomes. For instance, the developers have been significant corporate sponsors of the Mareeba Chamber of Commerce. The Chamber has publicly supported the wind farm and refused multiple requests from affected residents to explain their concerns. The result is that affected residents are avoiding shopping in Mareeba, preferring instead to take their business to Atherton in the neighbouring shire. The wind farm proposal has truly divided our community. Studies elsewhere have found 'enduring and intense social conflict' at a local community level around wind farm developments (Hindmarsh, 2014). Conflict does not go away once the turbines are built; the problems are not resolved.
- Mount Emerald joint venture partners the Morris Family (Port Bajool) are Executive Members of Advance Cairns at a cost of \$20,000 a year. The Mount Emerald Wind Farm was listed as one of the "supporting priorities" of Advance Cairns and was listed in the "Regional Priorities for 2013 Federal Election". The Advance Cairns website promotes the report *Renewable Energy Solutions for Tropical North Queensland* which makes a number of spurious claims about renewable energy reducing costs, increasing the region's self-reliance and providing baseload power. Advance Cairns has misled the regional community about the benefits of wind farms and has compromised its own values by supporting and promoting the business of one of its directors without advising the public.
- It is now common practice for wind farm developers to offer a community benefit fund to build community support and expedite planning approval for wind farm applications. In Wales, 1.8 million pounds per year will be paid by the Pen-y-Cymoedd wind farm. Mount Emerald developers have promised to provide \$200,000 a year - a small amount compared to the wind farm's projected \$30 million annual profit. On face value the community benefits sound very attractive, with promises of funding for emergency equipment, schools and community groups. But these promises also have the potential to sidetrack decision-makers from considering the development on its merits. The promise of community benefits also discourages residents from objecting to the wind farm because they don't want to

deny their community access to the funds. Unfortunately, these funds have also led to bitterness and deep divisions in communities (see for example the views expressed at <http://www.tw312.org.uk>). The reality is these funds won't compensate communities for the economic, health and environmental impacts of the proposal.

- In 2013 the Mount Emerald developers offered nearby Tolga State School \$10,000 before the project had even been assessed. The Parents and Citizens Association declined the donation, a move endorsed by the State Education Department which stated that schools are places for teaching and learning: "They are not to be seen as advocates or otherwise for development applications, individual products, services or commercial enterprise. The school has acted entirely appropriately by declining the offer of a donation." RATCH spokesman Geoff Dutton stated: "We think it's inappropriate that people who are against a wind farm – the very minority of people against this wind farm – should stop the community from being supported by the very generous offers that we've made." It is obvious to us the developers tried to buy community support and win approval for the turbines. They continue to falsely claim that only a minority of people object to the wind farm.

RIGOROUS NOISE ASSESSMENT STANDARDS REQUIRED

- The Council established night-time noise standards of 35dBA at RATCH's High Road wind Farm, yet only two months later RATCH submitted the Mount Emerald application with a proposed noise level of 40dBA. They have continued to demand increased noise allowances, knowing they can't meet the Queensland guidelines and regulations.
- In the case of Mount Emerald, noise monitoring was undertaken prior to any provision of information to the community, and the "sensitive receivers" who were monitored received no information except that a wind farm was planned. Monitoring microphones were set up for two weeks beside gravel driveways, under trees and on opposite sides of dwellings from the wind farm proposal – contravening the draft *National Wind Farm Guidelines* (2010) and other recognised standards. Both local and State Governments have requested long-term noise monitoring at sensitive receivers, but the developers have not complied.
- The developers were asked by the local Council and the State Government to justify their claim that all dwelling structures would reduce noise impacts inside homes by 10dBA. They asked for proper attenuation testing, but instead the developers took external photos of homes (without consultation or permission from the land owners) and assumed standard window sizes, bedroom locations, etc. It is a flawed approach designed to achieve relaxed permit conditions that favour the developers and severely disadvantage residents. Queensland's *Planning for Noise Control Guidelines* uses a 5dB indoors/outdoors noise reduction level. Field testing at other premises in Queensland shows only 1-3dB attenuation. In colder climates, wind farm developers have offered extra cladding, air conditioning and double glazing to help block out turbine noise. But these measures are not appropriate in tropical Queensland where our homes are lightweight constructions designed to capture the breeze and we spend so much time outside on verandahs.

- The Mount Emerald developers have used ISO9613 to predict noise levels coming from the turbines. This standard isn't suited to the steep and elevated site, complex terrain, high wind speeds and the scale of the wind farm proposal. There are serious limitations using this model. The suitability of ISO9613 was raised by the State Government in its information request and the inclusion of a 5dB margin of error was suggested. The Council's expert suggested the noise could vary by up to 10 dB. The developer has not responded to these recommendations.

CONSTRUCTION IMPACTS

- The developers have repeatedly failed to provide information about the construction routes and traffic impacts. They repeatedly promise detailed surveys once the proposal is approved. The developers have had years to work on these details. We conclude they don't want the community, local industries and Councils to know the true scale of the traffic and construction impacts.

EPBC ACT DOES NOT PROTECT ENDANGERED SPECIES

- The Mount Emerald Wind Farm triggered the *EPBC Act* because of the high risk of harm to listed species. Our involvement in the assessment process has highlighted to us some fundamental flaws. We naively assumed the point of the developers providing the draft EIS for public comment is so that local impacts could be better understood by decision-makers. We thought both the positive and the negative consequences of building the Mount Emerald wind farm should be presented. But the EIS does not acknowledge the negative effects on our unique environment and the communities surrounding the plateau. Instead, the EIS focuses on denying impacts instead of avoiding them. The developers dismissed hundreds of issues raised in community submissions. Where an impact has been admitted, the mitigation measures have been laughable. For instance, the chances of successfully clearing endangered animals and plants from the construction site are extremely low, along with their survival if re-introduced.
- It should be noted that there has been no systematic monitoring of bird and bat collision mortalities since the Windy Hill turbines began turning in 2000, over 14 years ago. This information would have helped to inform authorities of the potential impacts at the proposed Mount Emerald site.
- The lack of published data from other Australian wind farms highlights the failure of the wind industry to take responsibility for environmental impacts. In their study of bird strikes, Hull and Muir reported only two wind farms in Australia, Bluff Point and Studland Bay in Tasmania, have made their bird strike data publicly available (2013). Any further approvals of wind farms should include mandatory monitoring of species fatalities by independent researchers and the findings should be made publicly available.

ADDRESS DECLINING PROPERTY VALUES

- The rural residential subdivision of Rangeview has the highest number of quality homes on the Tablelands, with an average property value of \$500,000. Over 400 Rangeview properties are within 5km of the turbine site, and many more are just outside 5km. In recent Planning and Environment Court proceedings (*P v TRC&B*)

real estate agents testified under oath that Tolga properties were already slow to sell because of the proposed wind turbine development. Home owners - who have made a once-in-a-lifetime purchase of the most valuable asset they will ever own - face the prospect of long-term financial hardship. Real estate agents are also reporting difficulties selling properties elsewhere around the proposed Mount Emerald site.

- On the western side of the plateau, official property valuations in Oaky Creek have fallen by 25 per cent, wiping \$1.5 million off their value. These devaluations force other ratepayers living elsewhere in the shire to pay more to cover the Council budget. These hard facts contravene the developers' claims that the proposal "will not impact upon the preferred settlement pattern of the area". Establishing a wind farm effectively constrains the potential for other developments that may be noise-sensitive, such as residential developments and tourist ventures. If the wind farm goes ahead, residents won't be able to subdivide land or build additional houses for their children. This could have significant implications for rural families seeking to subdivide as part of their retirement plans or to set up the next generation of farmers.

NEED FOR BETTER TURBINE SITING CONTROLS

- Australian wind developers repeatedly ignore guidelines and site turbines too close to each other. It is against the law overseas (in Germany for example) which may explain why Australia has a disproportionate number of infrasound and low frequency noise complaints. Australian regulators are not auditing turbine separation distances before or after construction. Locations in Australia which are known to have some closely spaced turbines are Cullerin (NSW), Waterloo (SA), Macarthur and Waubra, (Victoria) however there may be many more, because no one has done a systematic audit. It appears that for the developers, the financial returns from Renewable Energy Certificates outweigh the impacts of turbulence on the environment and the surrounding community. The layout is often chosen at the planning application stage without knowledge of which turbine will eventually be used. Site layout issues such as minimum separation distances are not considered by the consultant acoustician. Once approved, only micro-siting changes of 50-100 metres are allowed and the only stipulation about the final turbine choice is its sound power rating. The developer then goes out to tender for the cheapest turbines. Companies like Vestas, Acciona or Goldwind offer their turbines in accordance with the approved layout. They won't risk the loss of sales by admitting the turbine spacing will alter the sound emissions. Consequently, there is increased stress on turbine components and significantly increased generation of infrasound and low frequency noise.

Adequacy of monitoring and compliance governance of wind farms

- Our local Council knows firsthand – and understands better than any other Government in Queensland - the difficulties of ensuring wind farms are appropriately located, designed and operated to minimise the impacts on surrounding residents, land uses and the environment. The ongoing issues at Windy Hill place a considerable burden on staff resources, as well as significant legal costs that must be borne by the Council (and therefore ratepayers).

- Periodic noise monitoring requirements were not undertaken at Windy Hill Wind Farm from when operation began in 2000 until 2011 when the issue was pressed by the Council due to consistent resident complaints. When it was recommended by Council's noise expert that three turbines should be turned off at night and that RATCH undertake monitoring. RATCH refused and the matter went to the Planning and Environment Court. The case was later discontinued, Council realising the original permit conditions were not strong enough to force the issue.
- As Tableland residents and the local Council are well aware from the Windy Hill Wind Farm, predicted noise levels often fail the 'real life' test and there are no reliable noise mitigation measures after construction apart from turning turbines off, which has proven extremely difficult to achieve here and in wind farms elsewhere in Australia. Non-compliance can be very difficult to prove when you don't control the turbines, and information is not made available by wind farm companies.
- We have experienced a similar lack of cooperation at Mount Emerald, where RATCH refused to undertake noise monitoring at nearby residences. Some of our most affected residents have requested a real-time comparison between the wind speeds on the plateau and at their houses, and to extend the monitoring beyond the nominal two-week time frame to get a better understanding of seasonal and climatic variations. These requests have been ignored.
- The Council asked the Queensland Government to "call in" the Mount Emerald development application assessment because they couldn't afford to undertake the assessment. However, we think it is unlikely that the State Government will agree to fund monitoring and compliance. These costs should be paid by the wind farm company, not by Queensland tax payers.
- We remind the committee of the limitations of *EPBC Act* compliance monitoring highlighted by a previous Senate Inquiry. The Inquiry found numerous plans and compliance returns were overdue, with generally poor evidence of appropriate assessment. In many cases, instances of non-compliance were either not identified by staff or were not referred for assessment and possible enforcement action. Investigations into reported non-compliance with approval conditions were conducted inconsistently. As a consequence, we doubt the department's capacity to ensure the Mount Emerald developers will comply with approval conditions.
- An international study of Environmental Impact Assessments on wind farms highlights some of the monitoring problems, with assessors finding monitoring of impacts after construction was weak and showed a lack of commitment (Jones and Fischer, 2013).

The application and integrity of national wind farm guidelines

The Mount Emerald developers, and indeed local, state and federal governments, have chosen to ignore Australia's *draft National Wind Farm Guidelines* when it suits them. As an example, we found the Mount Emerald visual impact assessment repeatedly contravenes best practice outlined in the National Guidelines.

ADDRESS LANDSCAPE AND VISUAL EFFECTS

- The *National Guidelines* state: "It is imperative to note that mitigation measures are very limited for wind farm development and therefore **general location and site selection** is of utmost importance." The Mount Emerald EIS states: "The regional landscape value of the site, which forms the vegetated hillslopes background to this part of the Tablelands, is recognised" ... "Inevitably, the turbines will have a strong visual presence within and external to the site, given the structures will be situated along a series of ridgelines, which form part of the Great Dividing Range between the natural landmarks of Walsh Bluff and Mount Emerald, at a range of elevations between 700 to 1000m ASL." Yet the EIS declares the Mount Emerald wind farm has been designed "as far as practical" to ensure that existing landscape values and significant natural features are not compromised and the proposal would have "*an overall low to medium visual significance*". Our community categorically rejects this assessment. The reality is the existing landscape values will be severely impacted and there is nothing that can be done to make the turbines smaller or the regional landscape less impacted. The EIS suggests "a number of feasible and direct mitigation strategies may be employed to reduce the potential level of visual significance" yet the mitigation measures offered – such as landscaping around residences - are ineffectual and an insult to our intelligence.
- The developers refer to photomontages which were used at public open days in 2011 and 2012. These types of photo-simulations have been widely condemned for inaccurately representing the impact of turbines (Macdonald, 2007). They reduce the visual effect by making the turbines look three to four times further away from the actual viewpoint, appearing up to several kilometres further back from the 'virtual viewpoint'. A realistic impression of distance and scale is vitally important for our community to properly understand the visual impact and make an informed judgement. Yet the developers misrepresented the predicted impacts in their public consultation documents.
- The developers engaged landscape architect Andrew Homewood to undertake a Landscape and Visual Impact Assessment as part of the Mount Emerald EIS. Contracting a consultant who is regularly employed by wind farm developers may get the developers the answers they want, but it is a fundamentally flawed approach. There has been no attempt to understand what landscape features our community values and the assessment shows blatant bias in trying to minimise the visual impact of the turbines. The *National Guidelines* state that an assessment of landscape character and significance requires direct input from local communities to understand how they value the landscape: "Local communities will provide the main source of information regarding the significance of the landscape in the area." The developers claim they sought views about wind farms through public open days, surveys and individual stakeholder meetings. . We asked to view the detail of this consultation but it has not been provided. As previously mentioned, information at

these open days was inaccurate and misleading. It is one of the reasons most residents deeply distrust the developers. We are not aware of any surveys and we don't believe any effort has been made to seek our community's views on the proposal's visual and landscape impacts. Our survey of residents within 5km of the proposed wind turbines shows the true depth of concern people have about the visual impacts (see Appendix 1: Mount Emerald community survey). The *National Guidelines* ask: "Will the local presence of wind turbines combine to become the strongest characterising influence such that a new or more general landscape character area would be formed?" For those of us who would be forced to live under the shadow of the Mount Emerald turbines, we have no doubt the proposal will drastically and permanently change our landscape. For contentious projects such as the Mount Emerald proposal, the *National Guidelines* suggest appointing a peer reviewer to review the methodology. We believe an external expert should undertake community consultation and independent analysis currently missing from the flawed visual and landscape assessment.

- The *National Guidelines* state that viewshed mapping should be undertaken early in a project to assist professionals and communities in identifying locations from which the development will be visible, and to assist in determining the appropriate boundaries for the study area. There is no indication that a viewshed map has been produced. If it has been produced, it has not been made public. Homewood has applied an arbitrary viewshed of 10km and states that: "a small number of towns and localities occur within and beyond the project viewshed" but does not explain whether the towns of Mareeba, Walkamin, Tolga and Atherton fall within or outside the viewshed. Any community member reading the EIS would assume the turbines will not be visible over 10km away. This is deceptive and certainly not best practice as defined by the *National Guidelines*. As a comparison, Scout Moor Wind Farm in England is visible for 24-32km.
- A viewshed of 10km is misleading. Studies of offshore wind farms by Sullivan (2013) has found that small to moderately sized facilities were visible to the unaided eye at distances greater than 42 km, with turbine blade movement visible up to 39 km. At night, aerial hazard navigation lighting was visible at distances greater than 39 km. The wind turbines were judged to be a major focus of visual attention at distances up to 16 km, were noticeable to casual observers at distances of almost 29 km, and were visible with extended or concentrated viewing at distances beyond 40 km.
- The wind industry's representation of the landscape and visual impacts of wind turbines has been contentious for some time. A study of Environmental Impact Assessments on wind farms in the UK and Germany highlights some of the problems (Jones and Fischer, 2013). Forty per cent of the assessors interviewed found that visual and noise impacts were under-represented by the developers, and it was suggested there was "a deliberate underplaying of the impacts and an overstatement of the benefits". Wind farm assessors commented that visual representations were done using a wide angled camera lens "which reduced the appearance of the wind turbines in the landscape." The authors also noted that: "outdated methods of assessment were used which had not been updated to take into account the fact that modern wind turbines are far bigger than they were when the guidelines were created." Similarly in the Mount Emerald instance, outdated Scottish research from 2002 was quoted by the consultant.

- The developers claim there are no cumulative visual impacts because there are no other wind farms in the immediate vicinity. The *National Guidelines* state that the cumulative impacts of dynamic viewpoints need to be considered. In the case of Mount Emerald, visitors driving along the Kennedy Highway will have views dominated by strings of turbines. The same tourists will also see the turbines from different viewpoints as they visit popular tourist centres of Atherton, Tolga, Kairi and Lake Tinaroo.

ABANDON NEW ZEALAND STANDARDS

- RATCH has continually attempted to use New Zealand wind farm standard 6808:2010 as they are more lenient. The standards are written for the New Zealand legislative framework and don't properly fit the legislative framework of respective Australian States. It is being adopted by states to facilitate the installation of wind farm developments even though it may contravene state noise regulations which are required of all other industries. This is apparently justified by the claim that as wind speed increases at the turbine (creating more noise), there will be a corresponding increase in wind-related noise at residences (supposedly masking the wind turbine noise). This premise is fundamentally flawed. Firstly, the wind at turbine height and wind speed at residences can be very different (ie calm in the valleys below, whilst turbines are turning in high winds higher up). Secondly, WHO has stated that noise will not be masked unless the noise is much louder than the noise being masked.
- The New Zealand Standard 6808:2010 is not relevant to Queensland, which has its own noise regulations. There is no scientific basis for the proposed 40 decibel limit. The New Zealand Standard is based on average noise over time measured outdoors, whereas the Queensland legislation is for a maximum noise level not to be exceeded indoors, especially to protect against sleep disturbance. It appears the only reason the New Zealand standard has been given precedence is to justify non-compliance with Queensland's Environmental Protection (Noise) Policy 2008. It is unacceptable to try to fit New Zealand "high amenity" definitions over state planning policies. There is no comparable "high amenity" code in the Mareeba Planning Scheme. While the blocks around the wind farm site are zoned rural, many have been purchased as lifestyle blocks because of their high amenity, surrounded by natural bush and mountains.

The effect that wind towers have on fauna and aerial operations around turbines, including firefighting and crop management.

EFFECT ON FAUNA

- The Mount Emerald developers want to build a major industrial wind energy facility on an elevated, undisturbed escarpment. The escarpment is part of the Einasleigh Uplands and is surrounded by the Wet Tropics bioregion - both areas of significant endemic flora and fauna. Due to its remote and rugged nature, the plateau has withstood over 100 years of settlement and retained refugial habitat for some of the nation's most endangered animals and plants. Early site investigations discovered the largest known population of endangered Northern Quolls living on the rocky escarpment. The critically endangered Bare-Rumped Sheathtail Bat and internationally listed migratory species such as Sarus Cranes were also recorded

flying above the plateau. Most wind farms around the world are built on cleared and environmentally degraded land. North America's primary management strategy to manage impacts on species of concern is to place wind farms away from areas of high wildlife value (see for example Oregon Columbia Plateau Ecoregion Wind Energy Taskforce 2008, U.S. Fish and Wildlife Service 2012, USDA ForestService 2011a, USDIBLM 2005b, Washington Department of Fish and Wildlife 2009). In both Oregon and Washington state guidelines, developers are advised to develop wind energy facilities on agricultural or disturbed lands. Wind resource modelling of Far North Queensland shows extensive areas that have already been cleared are suitable for modern, large-scale wind turbines. Yet no analysis of alternative sites has been undertaken. The draft EIS has not justified the need to build and operate a wind farm in such a highly sensitive environment.

Quolls

- The Mount Emerald EIS has highlighted the limited knowledge and high levels of uncertainty surrounding the Northern Quoll population. After several years of research, quoll movement, dispersal and recruitment rates, the location of maternal den sites and gene flow mechanisms on the Mount Emerald plateau remain unknown. Because of the animals' unique life cycle (the males die after breeding), these factors combine to suggest a high risk of localised extinction if the plateau is developed. The EIS claims the loss of the Mount Emerald plateau population is not of concern because the Far Northern meta-population will continue to survive.
- Habitat modelling has shown that 72 per cent of predicted high and very highly suitable habitat for Northern Quolls in Far Northern Queensland is found within 55km of the Mount Emerald site boundary. This region is experiencing multiple pressures from rural residential subdivisions and clearing of woodland for intensive farming. Our immediate area is entering a period of development and the wider region is also experiencing rapid change. The proposed Nullinga Dam just 6km from the wind farm site is back on the drawing board. The \$8 billion Aquis mega-resort 50km away is expected to ramp up development and settlement on the northern Tablelands. Will the Northern Quoll meta-population survive these cumulative impacts?
- The developers propose strategies to protect the Mount Emerald quoll population that conflict with the draft *National Wind Farm Development Guidelines* (2010) and the *Northern Quoll Referral Guidelines* in that there has been no attempt to redesign the wind farm layout to avoid areas of high conservation significance. The proposed turbine sites continue to be the rocky ridge areas which are favoured maternal den sites. The developers have presented the same turbine layout with the majority of turbines on rocky ridgelines. They have made it clear that moving the turbines from the ridgelines is economically unviable.
- The *Northern Quoll Referral Guidelines* strongly recommend that all construction activities involving heavy machinery and blasting should be avoided in the breeding season from May to November. But the Mount Emerald developers state it is economically unfeasible to halt construction during quoll breeding times and instead they have offered to trap and remove quolls. No examples have been provided where this technique has been successful at other major construction sites, and no statistics are provided about the percentage success rates. The developers acknowledge there have been no studies in Australia or elsewhere examining the

effectiveness of the use of spotter/catchers to minimize mortality, and “it is likely only a small proportion of all individuals of terrestrial fauna species inhabiting tree hollows, fallen timber, rock piles and burrows are able to be located and removed prior to being killed.” The plateau is an elevated private property owned by the wind farm developers. Without independent observers, no one will ever know how many animals are killed during construction (and operation) of the wind farm.

- The EIS states: “the live-trapping effort will have to be sufficient to ensure the capture of a high proportion of all individuals whose home ranges include the proposed construction areas” (p.117). It also highlights the technical challenges of collaring and tracking quolls in such rugged and inaccessible terrain. Animal welfare is also an issue of concern, with previous research on the plateau injuring and possibly killing quolls.
- The developers claim: “it is not well understood how the Northern Quoll will respond to disturbance associated with construction”. You don’t have to be a quoll expert to conclude the quolls will respond negatively to the use of explosives; rock crushing machines; concrete batching plants; heavy machinery used for construction of roads, infrastructure and towers; large numbers of vehicles; human activity; noise and vibration. If quolls survive the blasting and construction disturbance and remain on the plateau, their breeding season will be interrupted by quoll detection dogs and daily trapping and collaring. Given these heavy-handed “mitigation measures” quolls (including lactating females with young in dens from August to November) are likely to abandon the plateau. They will head into surrounding rural residential and agricultural lands, where they will be exposed to cats, dogs, traffic and baits.
- Researchers have found wind turbine noise is another cause of habitat loss around wind farms. Studies suggest noise increases of 3 to 10 dBA correspond to 30 to 90 per cent reductions in alerting distances for wildlife (Barber et al. 2010). Researchers have suggested that the noise of operating turbines have also led animals to alter other behaviours: in a comparison between a control and a turbine site, animals at the turbine site showed greater vigilance and anti-predator behaviour, which authors concluded was an attempt to compensate for the difficulty of responding to auditory communication within the wind farm site. United States Guidelines state noise should not exceed 10 dB above the background noise level “in or near habitat of wildlife known to be sensitive to noise during reproduction, roosting, or hibernation; or where habitat abandonment may be an issue” (USDA Forest Service, 2011). The Mount Emerald proposal would not meet the US Guidelines.
- In Denmark, a mink farm has reported 1600 stillborn baby minks since four 3MW turbines were commissioned in 2013. The farm’s veterinarian said before the turbines, 6,800 mink would get pregnant and 5-10 would miscarry. This year 320 females had miscarriages. In addition, 963 minks were sterile and another 2,280 rejected male minks and failed to mate. Among those that successfully gave birth, litter sizes dropped from 5-6 pups to 3-4 and there were also numerous birth defects, most commonly the lack of eyeballs. The farm reports the mother minks are also displaying new aggressive actions by attacking their young pups. The veterinarian concluded that there were no other changes in habitat or food that could account for these losses. This report aligns with studies on fish and frogs which have shown that low frequency vibrations affect developing embryos, in particular neural tube defects, left-right patterning and abnormal tails in tadpoles.

The study concluded that low frequency vibrations are toxic to aquatic vertebrates (Vandenburg et al, 2012).

- The developers state that quolls may be excluded by the 55dbA noise at ground level of the operating turbines. The developers do not state how far the 55dB zone will emanate from each turbine under various conditions and do not provide the total area affected. A simple noise contour map of the proposed turbine layout shows most of the plateau is subjected to over 50dB, but does not specify the wind speed. Studies have shown noise levels under turbines have caused increased cortisol levels, behavioural disturbances and lower weight gains in geese (Milokajczak et al, 2013). Aitken et al (1994) speculate that for quolls, the low-frequency part of the hearing range concerns the recognition of adult conspecifics, the mid-frequency is important for the detection of pouch-young, and the upper range may be particularly concerned with prey/predator detection.

Bats

- The developers identified the critically endangered Bare-rumped Sheathtail Bat utilise the site. (Local bat experts are surprised by the absence of other EPBC-listed threatened species, the Greater Horseshoe Bat *Rhinolophus philippinensis*, and that only one Diadem Leaf-nosed Bat *Hipposideros diadema* was recorded.) Due to significant technical problems with detecting equipment, later surveys didn't find further evidence of the Bare-rumped Sheathtail Bat. The developers propose to undertake more research – but only once the proposal has been approved and the wind turbines are built. This irresponsible approach is the antithesis to the precautionary principal and typical modus operandi for wind farm developers: it's about building first and dealing with the biodiversity impacts later.
- The developers' approach is also at odds with internationally accepted strategies of implementing long-term acoustic monitoring in order to assess potential bat fatalities (see for instance Arnett, 2011). Instead, the developers plan to get the turbines up and running, and then count bats killed by the turbines - if they can find them in the rugged terrain. Going through an exercise of finding dead bats once the wind farm is constructed is not a valid solution when populations of endangered bats are so small and restricted in range. Just a couple of mortalities may tip local populations over the edge. Even a small reduction in population size could result in inbreeding depression and a reduction in genetic variation, both of which can lead to extinction.
- Even though the Windy Hill Wind Farm near Ravenshoe is within the distribution range of the Bare-rumped Sheathtail Bat, RATCH consultants stated in the EIS documents that there has been no systematic monitoring of microchiropteran bat collision mortalities since the facility opened over ten years ago. Monitoring would have informed us all of the potential impacts at the Mount Emerald site. The lack of published data from Australian wind farms highlights the failure of the wind industry to take responsibility for its environmental impacts on our unique wildlife.
- Numerous studies have found that pre-construction acoustic monitoring has consistently underestimated bat fatalities from wind turbines. Overseas research suggests bats are attracted to the turbines after they are constructed by a number of possible mechanisms. Bats may be attracted to lights, the sound of turbines, the

motion of turbine blades, novel vegetation such as forest edges created by turbines or roads, insect aggregations around turbines, or an attraction to turbines as potential roosts, mating, or gathering sites. In other words, it is highly likely that bats from areas around the plateau will be attracted to the turbines and killed.

- Clearing tree hollows on site prior to construction has been proposed, but there is no evidence these measures will work in an Australian landscape on listed species with small and highly vulnerable populations. What about bats roosting adjacent to the site? What about the risks of barotrauma from frequent explosives used during construction?

Sarus Cranes

- The iconic Sarus Crane is a migratory species that utilises the area surrounding the plateau for feeding and roosting. A total of 839 cranes were observed during surveys undertaken by the developers, and the average number of cranes recorded on the Tablelands is 858 individuals. Wind turbines and associated turbulence may create barriers to bird movements, with further flying discouraging them from utilizing feeding and roosting grounds around the plateau.
- The Mount Emerald EIS focussed on collision risk rather than the potential for Sarus Cranes to lose substantial habitat by avoiding or being displaced by the wind farm. The EIS states that “specialist studies” were undertaken to investigate the collision risk for Sarus Cranes. In fact, the study is simply the application of a simplistic model that assumes very high avoidance rates of 90 to 95 per cent, which as a result derived a risk of less than one collision a year. The use of this model should be rejected on the following grounds. The author notes the modelling is “best used to evaluate different wind farm configurations” not avian collisions. The author states long-term variations of bird utilisation of the site should be used to achieve accurate collision predictions, yet data used was collected over just 26 days in a 12-month period. The developers have had several years to collect relevant weather, insect and other data, yet the model is overly simplistic and does not consider time of day, local climate and weather such as fog and wind speed, and migratory paths such as movements along ridgelines and foraging habits. The model has been tested against only two wind farms (Bluff Point and Studland Bay in Tasmania) as it would seem no other wind farms in Australia have made their bird strike data publicly available (Hull and Muir, 2013).
- The proposal has the potential to substantially modify and isolate areas of important habitat because of the high risk of Sarus Cranes avoiding or being displaced by the wind farm and associated downwind turbulence. The *Significant Impact Guidelines for Matters of National Environmental Significance* describe an area of important habitat as: “habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species.” “Important habitat” may also include habitat within an area where the species is declining, and crane counters have reported fluctuations in recruitment and numbers visiting the Tablelands during recent years. As so little is known about the population dynamics, the precautionary principle should be applied and the Sarus Crane protected from further impacts.

LOCAL CLIMATE EFFECTS SHOULD BE FURTHER EXAMINED AND CONSIDERED

- A national study of climate change refugia shows the critical importance of high elevation areas such as the Mount Emerald plateau, where the Wet Tropics and Einasleigh Uplands meet (Williams et al, 2013). The authors recommend “management action to facilitate species movement and persistence in these areas.” Yet the developers are proposing a major industrial site on an elevated, undisturbed plateau which is significant refugial habitat for threatened species.
- Research has shown that modern turbines bring heat and moisture from ground level into the atmosphere, and vice versa, for typical downwind distances of 18-23km (Roy, 2012). Wind farms can influence humidity and raise minimum temperatures and reduce maximum temperatures by as much as four degrees. The author concludes: “This study has significant implications for future energy and land use policy ... impacts from wind farms on surface meteorological conditions are likely to affect agricultural practices as well as communities living in residential areas around the farms.” The impacts on the natural environment should also be considered.
- Another recently published analysis of land surface temperatures around large wind farms in Texas from 2003 to 2011 shows wind turbines can produce a night-time warming trend of up to 0.72 degrees per decade (Zhou, 2012). Small changes in humidity and temperature can affect the growth and success of tropical crops by affecting biological processes such as plant dormancy, growth cycles, flowering and fruit set. Like most plants, bananas have a narrow temperature band of ten degrees in which growth is optimized. A variation of four degrees would have serious consequences. It is ironic that Mt Emerald Wind Farm is being proposed at a cost of many millions of dollars to combat climate change, but may in fact ‘change the climate’ of over 13,000 hectares of good quality agricultural land.

FIRE FIGHTING

- The Mount Emerald developers acknowledge that the construction of the wind farm may lead to an increased risk of accidental wild fire and recognise the rugged nature of the terrain and consistent high winds could result in wildfires spreading rapidly into areas where control would be difficult if not impossible (EIS, p.107). The Rural Fire Service issues extreme fire danger warnings each September and warns residents living in the surrounding area: “if you are using machinery, do it in the morning or late at night”. Operating heavy construction machinery on the plateau during this time poses very high risks to surrounding properties and the volunteer fire fighters who try to protect them. Yet primary earthworks are proposed during this time. Building and operating a wind farm in this area is irresponsible and dangerous.
- The majority of the proposed Mount Emerald wind farm site is zoned *Bushfire Hazard Area Very High (potential intensity)* in mapping layers provided with the *Queensland State Planning Policy (SPP)*. The Springmount area is extremely prone to destructive bushfires from about September to December, when native vegetation is dry and electrical storms are common. There have been two major, dangerous fires on the Mount Emerald plateau and surrounding properties in the last couple of years (see North Australian Fire Information www.firenorth.org.au). The SPP

requires the risks associated with natural hazards, such as bushfire, to be avoided or mitigated to protect people and property.

- Wind turbines have been associated with increased fire risk due to lightning strikes. Most tall structures are prone to lightning strikes, but recent published research suggests wind turbines are not only susceptible targets, but may be generating currents that cause the strikes (Montanya and van der Velde, 2014). The probability of this 'upward initiation' increases when the turbines are located on locally elevated terrain, as is the case on Mount Emerald (EWEA, 2013).
- The use of aerial bombing is not allowed around wind farm sites because of the potential damage to wind turbines and associated equipment. The Aerial Agricultural Association of Australia (AAAA) states that: "as a result of the overwhelming safety and economic impact of wind farms and supporting infrastructure on the sector, AAAA opposes all wind farm developments in areas of agricultural production or elevated bushfire risk" (see www.aerialag.com.au). We believe the Mount Emerald proposal will not only lead to an increase in fires, but will significantly constrain aerial fire-fighting assistance.
- Rural fire brigades in Queensland are not responsible for protecting commercial or industrial properties such as wind farms. Brigade insurance is limited to protecting rural properties. Our local brigades have no intention of entering the Mount Emerald site if a wind farm is constructed there. However, there is a significantly increased likelihood that fire brigades will have to attend fires emanating from the site. The information below is summarised from the *Overview of Problems and Solutions in Fire Protection Engineering of Wind Turbines, International Association for Fire Safety Science* (2014):

Large amounts of highly flammable oils and other materials are contained within the nacelle of wind turbines and packed close to potential ignition sources such as overheated mechanical components and electrical connections. The nacelles are made from fiberglass reinforced plastic (FRP) which is flammable and difficult to extinguish due to the epoxy resins. Insulation materials in the turbines are often made of foam, which is highly inflammable and becomes part of the fuel load. Once a fire is ignited, the situation rapidly escalates because of the high wind favoured by turbine locations.

Unfortunately, there are very poor statistical records of wind farm fires, with researchers describing official figures as "the tip of the iceberg". There is very little publicly available scientific information, since much of this information is proprietary. What is widely known, however, is that fire-fighting is difficult. Wind turbines are mostly located in remote locations, further complicating the problem by increasing the response time. Even in the case of rapid detection, the nacelles are so elevated they are beyond the reach of most fire-fighting appliances.

- The construction of wind turbines on the plateau will increase the severity and the potential for damage to the site and other properties. At a turbine fire at another RATCH-owned wind farm at Starfish Hill in South Australia, RATCH would not allow fire crews to approach closer than 1km due to the possibility of blades breaking up

and flying some distance from the tower (Birrell, 2012). There is potential for ground fires to ignite from falling turbine components, expanding to uncontrollable bushfires which then place volunteers and properties in jeopardy. On 22 January 2006, a turbine caught fire during a heat wave at Lake Bonney in South Australia. The wind farm was shut down, leaving 63,000 homes without power and 80,000 hectares of national park destroyed by wildfire ignited by the turbine debris (Border Watch newspaper, 2006). The Vestas turbine worth \$3.2 million was completely destroyed, but the total loss to surrounding communities and the environment far exceeded the cost of the turbine.

- The Mount Emerald Fire Management Plan makes frequent references to the District Fire Warden and the Fire Brigade being invited to attend safety briefings and regular site tours, being provided with relevant site plans, and providing their contact details on signage and to contractors. The local brigades have not been approached by the developers at any time to undertake these duties, and they have no intention of undertaking them. It is not the responsibility of volunteer Fire Wardens to attend these events, they should not be responsible for inductions or any other activities on industrial and commercial developments. Containing fires should be the responsibility of the wind farm operator.

EFFECTS ON CROP MANAGEMENT

- Our region is one of the most productive and profitable farming areas in Queensland. Using a differential global positioning system that is accurate to less than a metre, a local agricultural pilot estimates there are 13,000 ha of arable land within 5km of the wind farm site. (This figure excludes 20 per cent of the area which is under alternative land uses such as landfill, prison, waterways and natural areas.) The majority of the surrounding area is under intensive farming operations and associated agri-businesses such as banana packing sheds and worker accommodation. Some of the farms have rich volcanic soils, but other poorer soils are also farmed because of the reliable water supply provided by the Mareeba-Dimbulah Water Supply Scheme. Bananas, sugarcane, beans, avocados, limes, melons, pumpkins, mangoes, potatoes, onions, peanuts, passionfruit, grass seed crops, coffee and cattle pastures are grown within 20 km of the site.
- We first became aware of the potential impacts of the wind farm on aerial spraying because of a reference in the Mount Emerald development application to agricultural spraying restrictions of up to 5km downwind of the turbines “due to wind shear, turbulence and downdrafts in the wake of the turbine rotors presenting a critical hazard to aircraft such as agricultural aircraft”. The application stated that aerial spraying is conducted in very light wind conditions when the turbines are unlikely to operate, and therefore the impact would be insignificant. However, it is well known to the local community - and stated elsewhere in the developer’s own reports - that the wind farm site on the escarpment is in a different ‘wind field’ to the farms below. In other words, the turbines would often operate when it is calm in the surrounding settled areas. The developers have since submitted an edited aeronautical report that now refers to 600m turbulence from a single turbine, but fails to consider the cumulative effects of such a large, elevated collection of wind turbines operating in a different wind field.
- The cropping mix has changed markedly in recent years as coastal banana farmers move up to this area after being hit by Cyclones Larry and Yasi. The Queensland

Government's latest *Tablelands Agricultural Profile* shows the banana industry is now the most valuable industry on the Tablelands, worth \$95.2 million. These farmers are making major investments on the Tablelands and employ a large number of locals and backpackers. With the recent outbreak of Panama Disease on the Cassowary Coast, the Tableland area is even more strategically important for the entire industry. Banana farmers have legislative requirements to control infestations such as sigatoka and often there are only small windows when they can spray. As previously stated, the Aerial Agricultural Association of Australia (AAAA) opposes all wind farm developments in areas of agricultural production. Aviation associations in the United States also support this position. The AAAA has called for a national moratorium on wind farm developments until a policy on wind farms is established, and for compensation to be paid to aerial applicators.

- The costs of wind farms overseas and here in Australia are externalised onto other sectors, especially agriculture. For instance in the United States aerial spraying costs more on properties around wind farms because the planes take lighter loads, the spraying takes longer and it's much more risky. There is also a greater potential for spray drift and off-target damage. If it is necessary for farming practices and crops to change around the Mount Emerald escarpment, it will involve significant costs to farmers as they redirect their long-term investment strategies. It may also become economically unviable for pilots to be based at the local Atherton and Mareeba aerodromes. The unaffected growers outside the turbulence area will have no other choice but to pay more for pilots elsewhere to travel to our region.

i) any related matter

IMPACTS ON TOURISM SHOULD BE CONSIDERED

- Far North Queensland is one of Australia's most popular tourist destinations, and the tourism industry plays a significant role in the regional economy of the Tablelands. Our natural landscapes and species biodiversity are our greatest drawcards. Tourism organisations in other countries are lobbying their governments for more appropriate siting of wind farms away from scenic areas. The Victorian Government has moved to protect areas of high tourism value from wind turbines, recognising the detrimental visual impacts on the visitor experience. The South Australian wind farm policy was amended in 2012 to establish "character preservation districts" such as the Barossa.
- Tourism studies in Scotland have found there is widespread support not to locate wind farms in designated landscape areas or be visible from these areas (Stevens, 2010). Studies have also shown scale is a material factor affecting visitor perceptions with larger developments (such as the Mount Emerald proposal) causing a higher level of negative reaction than smaller developments. There is evidence of a connection between visitors' perceptions of a destination's image and branding as a 'wild place' and the erosion of this brand as a result of intrusion by industrial developments such as wind farms. The Scottish tourist industry consistently expresses strong concerns about the negative impacts of wind farms on their businesses and, more significantly, on the tourism profile of their destination. Riddington (2008) found that the value of scenery to tourists declines with the construction of a wind farm and states that: "The most aggrieved tourists will relocate to a place without wind farms ... the effects are large enough to make consideration of the implications a formal part of the planning process."
- The Kennedy Highway is the most popular route for people travelling to the Tablelands and the turbines would be clearly visible for at least 20 minutes as visitors travel between Mareeba and Atherton. At least 48 turbines will be visible between Walkamin and Tolga. This is in sharp contrast to the natural experience which draws visitors to the Tablelands.
- A review of images used to depict the Tablelands on tourism destination websites create and substantiate perceptions of the Tablelands as a place with great, unspoilt scenery. Large-scale wind farms such as the Mount Emerald proposal directly conflict with these images and erode the foundations upon which the brand values of the Tablelands is based. The areas surrounding Mount Emerald (the adjacent Mount Baldy mountain bike track network and the Atherton to Mareeba rail trail) are being developed as part of a major tourism strategy to attract cycling activities. These specialist activities are based upon tourists having an intimate involvement with the natural environment. One of the strengths of our area is the absence of dominant and intrusive structures in the landscape. The Mount Emerald wind farm would diminish the 'natural' experience for these emerging markets.
- We note that Mount Emerald Wind Farm Pty Ltd joint venture partners Port Bajool, in particular the Morris family, have close associations with the tourism industry and

are long-term, paid up members of tourism marketing and economic development organisations. We doubt these groups are aware of the negative impacts of wind farms on tourism industries overseas, and we doubt they will speak out against the wind farm proposal. In fact, they will probably submit letters of support for the proposal without properly understanding the economic, social and environmental impacts of the proposal.

- James Cook University research into the visitor experience at Lake Tinaroo (about 15km from the proposed wind farm) found that people are seeking rest and relaxation, to socialise with family and friends, to experience tranquillity, be close to/experience nature and to see natural features and scenery. A large-scale wind farm like Mount Emerald represents an industrialised landscape that directly contradicts these experiences and images, eroding the foundations of the Tablelands brand value.

COMMENTS AND CORRECTIONS RELATING TO KIM FORDE SUBMISSION

- Our group is unsurprised by the submission made by RATCH consultant Kim Forde. Ms Forde has been responsible for the community consultation process for the Mount Emerald Wind Farm, and it is obvious that she wants to vilify us over the community's lack of support for the proposal. As we have seen repeatedly in the local media over the past few months, Ms Forde echoes her employers' lie that there is only "a small group of less than 10 people" against the proposal. The reality is we have hundreds of signed surveys from residents who live within 5km of the site who are strongly opposed to the proposal.
- As a former Windy Hill employee, Ms Forde denies any health or environmental impacts because she has stayed on occasion at a farmhouse on the site. It is well recognised that the health impacts of wind turbines are not felt equally by everyone, and the symptoms can take up to six months of constant exposure. While Ms Forde refuses to accept there have been any issues at Windy Hill, we know there have been problems because we have been contacted both by current residents and former residents who moved away because of the noise and health impacts. (We hope you will come to Far North Queensland so you can hear their stories for yourselves.) It's unfortunate that Ms Forde can't accept there are any negative environmental and noise impacts from wind turbines, even the relatively miniscule .6MW Windy Hill turbines. As you can see from her submission, the Mount Emerald developers have held open days and continually refer people to Windy Hill as an example of what can be expected on Mount Emerald in terms of visual and noise impacts, a grossly misleading comparison.
- Ms Forde states that she conducted eight years of bird and bat monitoring at Windy Hill and there was "no evidence of any significant bird or bat deaths". Yet the Mount Emerald EIS states several times that there has been no systematic monitoring of microchiropteran bat collision mortalities since the facility opened over ten years ago. There are also no records of the operator undertaking any noise monitoring for the first ten years of operation – as required in the permit conditions. Was this while Ms Forde was employed as the Environmental Manager? It would seem that not only RATCH's reputation, but Ms Forde's professional reputation is at stake. If she has data on bat collision mortalities, it should be provided to the Mount Emerald researchers. We hope the committee will see her submission for what it is: an

emotive and subjective submission by a wind industry employee who can't accept any problems with wind turbines and who repeats the views of the wind industry.

- Ms Forde complains the Mount Emerald Wind Farm proposal is being unfairly subjected to more stringent assessment processes compared to other industries. She thinks it should be treated the same as any other business or industry. Perhaps the developers would find it easier if they stopped avoiding the questions asked of them by three tiers of government, and simply agreed to meet Queensland noise standards that other industries must adhere to?

REFERENCES

AEMO (2012) The NEM-wide Historical Information Report (www.aemo.com.au)

Aitken, L.M., Nelson, J.E., and Shepherd, R.K. (1994) Hearing, vocalization and the external ear of a marsupial, the northern quoll, *Dasyurus hallucatus* *Journal of Comparative Neurology* 349, 377-388.

Arnett E.B., Hein C.D., Patterson R. (2011) The Bats and Wind Energy Cooperative: Synthesis of activities (2004-2011), Key Findings and Next Steps. (www.batsandwind.org)

Baidya Roy, S. (2012) *Simulating impacts of wind farms on local hydrometeorology* (www.elsevier.com/locate/jweia)

Barber, J.R., K.R. Crooks and K. Fistrup (2010) The costs of chronic noise exposure for terrestrial organisms. *Trends Ecology and Evolution* 25(3): 180-189. (www.sciencedirect.com)

Birrell (2012) Senate Inquiry submission, Social and Economic Impact of Rural Wind Farms (www.aph.gov.au)

Confederation of Fire Protection Associations in Europe (2010) *Wind Turbine Fire Protection Guideline 22:2010F* (www.cfpa-e.eu)

Cowell (2012) *Wind Energy and Justice for Disadvantaged communities*, Joseph Rowntree Foundation (www.jrf.org.uk)

EWEA (2013) *Lightning Attachment to Wind Turbines in Central Kansas*, conference proceedings

Hindmarsh (2014) *Social Studies of Science*, 44 (2)

Hull, C.L. and Muir, S.C. (2013) *Behaviour and turbine avoidance rates of eagles at two wind farms in Tasmania, Australia*. *Wildlife Society Bulletin* 37(1):49-58.

International Energy Agency (2012) *Energy Security* (www.iea.org)

Jones, J.P. and Fischer, T. (2013) Environmental Impact Assessments for Wind Farms in UK and Germany *Journal on Environmental Assessment Policy and Management* vol. 15 no.2

Kunz, T., Arnett, E., Cooper, B., Erickson, W., Larkin, R., Mabee, T., Morrison, M., Strickland, M., Szewack, J. (2007) *Assessing Impacts of Wind-Energy Development on Nocturnally Active Birds and Bats: A Guidance Document*. Journal of Wildlife Management 71 (8): 2449-2486

Macdonald (2007) *The Visual Issue: An investigation into the techniques and methodology used in windfarm computer visualisations* (www.windaction.org)

Milokajczak et al, (2013) *Preliminary Studies, Growing Geese in Proximity of Wind Turbines* Polish Journal of Veterinary Sciences, vol. 16, no. 4 679-686

Montanya and van der Velde (2014) *Lightning discharges produced by wind turbines* Journal of Geophysical Research

Parsons, S., and Battley, P. (2013) *Impacts of wind energy developments on wildlife: a southern hemisphere perspective* New Zealand Journal of Zoology, 40 (1): 1-4.

Riddington (2008) *The Economic Impacts of Wind Farms on Scottish Tourism* All Energy 08 Conference

Stevens, T. (2010) *Dorenell Wind Farm, Moray: Tourism Impacts and Implications* (www.moray.gov.uk)

IAFSS (2014) *Overview of Problems and Solutions in Fire Protection Engineering of Wind Turbines, International Association for Fire Safety Science, Draft Proceedings of the Eleventh International Symposium* (www.iafss.org)

Sullivan, R. (2013) *Offshore Wind Turbine Visibility and Visual Impact Threshold Distances* Environmental Practice vol.15 no.1

Smallwood, K. (2013) *Comparing bird and bat fatality-rate estimates among North American wind-energy projects*. *Wildlife Society Bulletin* 37: 19-33.

United States Fish and Wildlife Service (2011) *Draft Land-Based Wind Energy Guidelines*. (www.fws.gov/windenergy/docs)

Vandenberg LN, Stevenson C, Levin M (2012) *Low Frequency Vibrations Induce Malformations in Two Aquatic Species in a Frequency-, Waveform-, and Direction-Specific Manner*. PLoS ONE 7(12): e51473. doi:10.1371/journal.pone.0051473

Williams, S. et al (2013) *Climate change refugia for terrestrial biodiversity* (www.nccarf.edu.au)

Zhou, L. (2012) *Impacts of wind farms on land surface temperature* (www.nature.com/nclimate/index.html)