Planning Services
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Attention: Executive Director, Resource Assessment and Business Systems

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Note: Please delete my personal details before publication

[redacted]

RE: Jupiter Wind Farm Proposal SSD 13_6277

Executive Summary

I write this submission in connection with the above planning application. I have examined the plans and I know the site well. I am a landholder (195 acres) on Watson Road, WARRI next to the proposed wind farm site. My dwelling (refer figure 1) is within 600 metres of one of thirteen, 173m high wind turbines in the Southern Precinct of the Jupiter Windfarm development that will include eighty-eight turbines in total.

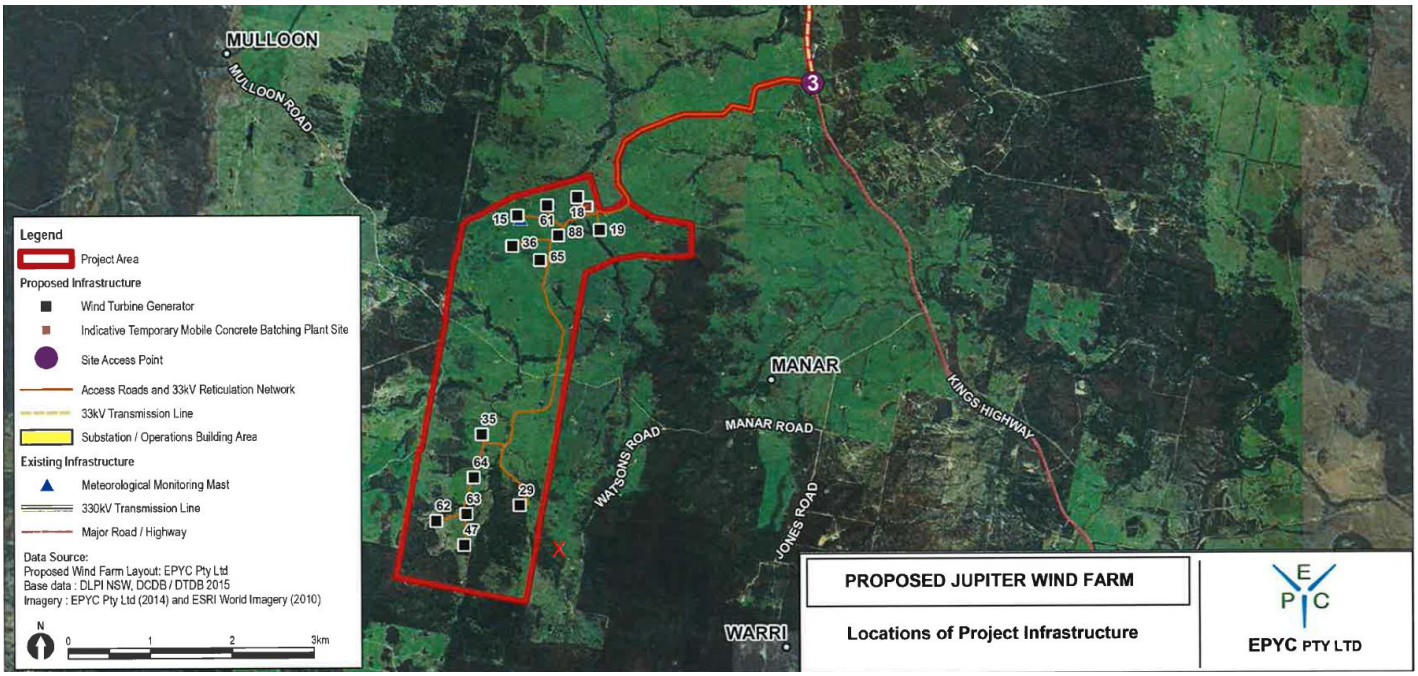


Figure 1: Southern precinct of the proposed Jupiter Windfarm development where I have added an X to show the existing dwelling and infrastructure.

I wish to **strongly object** to the Southern Precinct portion of the Jupiter Wind Farm development and feel that EPYC has consistently failed to address the requirements identified in the Secretary's Environmental Assessment Requirements (SEARs) and Environmental Impacts Statements provided to them. Based on the EIS, my concerns are outlined below:

- In relation to general requirements, EPYC are required to provide supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and land use (**including nearby residences and approved residential developments or subdivisions**), the number of turbines within 2km of a dwelling or approved dwelling, and the location/siting of the development (including associated infrastructure) in the context of this existing environment;

  As you will see in Figure 1 on page 1, my residence is located within 600m of proposed Wind Turbine Generator (WGT) T29 in the Southern Precinct of the proposed development. I placed the red cross on the above map to provide adequate perspective on the location of my residence. Since EPYC have failed to contact me to discuss the impacts and provide adequate risk mitigation solutions from living so close to the development.

  I have a mailbox at the start of Manar Rd, a post office box located in Bungendore and plenty of locations to leave a "calling card" at my residence should EPYC have been serious about providing complete baseline data and contacting **ALL** residences impacted by the development. The only correspondence I received from them was an unaddressed Christmas card at the end of last year (2016) in my mailbox on Manar Rd.

- EPYC is required to provide a statement of the objectives of the development, including a description of the strategic need, justification, objectives and outcomes. They have stated that:

  "The Project will make a substantial contribution to renewable energy generation in NSW and to the achievement of Federal and State policy objectives. In addition to delivering clean energy, the Project will deliver significant economic benefits at the local, regional and broader State level, particularly through the creation of construction employment opportunities and increased demand and support for local goods and services.

  I support the need to source alternate energy generation solutions within Australia. Based on the research I have undertaken to produce this submission there are significant amounts of research both for and against windfarm developments. The creation of construction employment opportunities was also cited by EPYC as a benefit.

  My concern is that wind turbine generation in Australia is relatively new and as such sufficient evidence is not yet available to confirm or deny various claims regarding the health and safety implications of living next to a wind farm. However, there is a growing body of evidence gathered from internationally available research identifying serious medical conditions living and other safety risks, working or visiting within 10km of operating wind turbine developments, and with increased risks to those who reside much closer to a wind farm.

  As this development is considered to be the most urbanised wind farm development in Australia at present, it seems reasonable to fully understand and validate the evidence with a view to developing unbiased, suitable, robust standards and protocols to protect Australians living in the vicinity of wind farms before approving the Southern Precinct development for which my dwelling is currently within 600m of the proposed turbines in that precinct.

During construction, the Project (based on 350 MW capacity) is expected to create a total economic impact in the local and broader area in excess of $318 million through a combination of direct Project expenditure and flow-on effects through production and consumption induced demands for local goods and services. In addition, it is estimated the Project will generate of the order of $7 million per annum direct expenditure in the local / regional area, and of the order of $21 million per annum total economic impact through direct, production and consumption induced impacts across the local / regional area.

The Project will also diversify existing income streams for involved landholders, provide financial benefit to neighbouring landholders through the Benefit Sharing Programme, and contribute financially to the provision and enhancement of community facilities, projects and Council funded local infrastructure projects through the Community Enhancement Fund."

It is known that income generation from construction projects are short lived and operational income pails in significance. Should research be undertaken to adequately determine the health and safety impacts of wind turbines and it is proved that there are massive health implications, without addressing those risks adequately before approving this development in the long term the much needed public funds would be redirected into the health sector.

- The EIS must include an assessment of the following, among other things:
  - Aviation Safety: potential impacts on aviation safety, including cumulative effects of multiple wind farms in the vicinity, potential wake/turbulence issues, the need for aviation hazard lighting, considering nearby aerodromes and aircraft landing areas, defined air traffic routes, aircraft operating heights, approach/departure procedures, radar interference, communication systems, and navigation aids.
  - Bushfire Hazards: identify potential hazards and risks associated with bushfires/use of bushfire prone land, including the risks that a wind farm will cause bush fire and any potential impacts on the aerial fighting of bush fires incorporating options to switch off turbines during bushfire, and demonstrating compliance with Planning for Bush Fire Protection 2006

I have an extensive background in Emergency Management from being a member of the NSW State Emergency Service (SES) for over 16 years. I have attended many bushfire emergencies, the most recent being mid-January 2017 when my neighbour's property was threatened by the Mount Fairy / Currandooley fire.

The proposed project area for the Jupiter Wind Farm is located in the Southern Tablelands region of NSW, approximately 40km from Goulburn and 6km south-east of the Tarago township. The site extends south along the Braidwood-Goulburn Road and beyond the Kings Highway. The Environmental Impact Statement (EIS) states that:

> *"A large portion of the area under investigation is clear and predominantly used for grazing and other agricultural activities. This location was identified by specialist consultants as a prospective wind farm development site based on its potential wind regime, accessibility to the electricity grid, as well as the road access to the area."*

Approximately 75% of land surrounding the proposed **Southern Precinct** project area, which includes my property, is heavily wooded, rugged, inaccessible bushland that forms part of a local conservation network with existing nearby Wildlife Refuges and Conservation Agreements within Australia's Great Eastern Ranges (GER).

- The EIS states that:

  "Local aerial application operators consulted in previous studies have stated that a wind farm would, in all likelihood, prevent aerial agricultural operations in that particular area, but that properties adjacent to the wind farm would have to be assessed on an individual basis. Consultation with local aerial application operators has been undertaken during preparation of the impact assessment, however formal correspondence in response was yet to be received at the time of finalisation of the EIS."

The failure of the EIS and EPYC Pty Ltd to consult with AAAA and local aerial application operators is a significant omission from the EIS and in my opinion shows a complete disregard for the safety of landholders adjacent to the proposed site, both in terms of bush fire risk and management of substantial areas of land by the adoption of aerial application methods.

The Rural Fire Service is relying more and more on aerial firefighting capabilities. This is particularly important to know given that I live in a significantly fire prone area, which due to the topography only has one access and egress road out of my property and the Southern Precinct development and as such increases the reliance on aerial firefighting.

If the Jupiter Wind Farm is approved, the NSW Government will be eliminating the capacity of firefighting entities to access this vitally important resource because a NSW Government planning minister approved industrial wind turbines in zoned rural and semi-rural areas without consideration for the significant additional resources that would be required to defend rural land holdings and residences in a newly zoned and dangerous industrialised environment.

The EIS indicates that an assessment of the potential bush fire risks was undertaken by ERM and determined that risk of fire from wind farm developments is considered low.

By simply using Australian based data to significantly downplay the risk of fire as minimal is a youthful attitude to the safety of residents in and around the Southern Precinct development. While there are indeed changes in the wind farm industry, the number and size of new windfarm developments (developed and proposed), the configuration of the develops and purported climate change affecting fire behaviour over the past ten or more years it is naïve to think that adequate fire mitigation strategies have been identified by EPYC EIS. Particularly given the vegetation and dense bushland surrounding the Southern Precinct of the project.

I think it is also naïve of EPYC to think that the risk of a wind turbine causing a bush fire is insignificant given that the consequences of a bushfire in the Southern Precinct are severe and the likely loss of lives, infrastructure and livestock is increased due to its remoteness and poor accessibility. That's the kind of statement I would expect from someone that is detached from the environment they are operating in and lacks the knowledge gained of the hazards living in a rural community.

I bet they wouldn't want to be the one living around a windfarm development in a high fire prone area where the developer has presented inadequate fire mitigation and or fire-fighting capabilities simply monitoring the situation remotely presuming that to be adequate to control a fire that starts. It takes just ONE spark or ember to have catastrophic consequences to life, property, livestock and wildlife in and around the Southern Precinct of this development.

Even by their own admission in the EIS, "A fire under the influence of wind may travel fast in an easterly or south easterly direction, reaching assets before fire fighters can attend the scene." My dwelling, and other infrastructure is situated 600 metres to the south east of the Southern Precinct development and is well within aerial firefighting exclusion zones. As such it is placed under even greater risk and should be a serious consideration to decline the planning approval for the Southern Precinct of the development.

- Part 7 of the EIS addresses aerial agriculture aircraft operations and the views of the Aerial Agriculture Association of Australia (AAAA) are noted. The AAAA has a Windfarm Policy (dated March 2011) which states in part:

  > *"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."*

  AAAA has developed the National Windfarm Operating Protocols (adopted May 2014). These protocols note the following comments:

  > *"At the development stage, AAAA remains strongly opposed to all windfarms that are proposed to be built on agricultural land or land that is likely to be affected by bushfire. These areas are of critical safety importance to legitimate and legal low-level operations, such as those encountered during crop protection, pasture fertilisation or firebombing operations."*

  I note that EPYC Pty Ltd has not had any formal correspondence with AAAA as part of the preparation of the impact assessment.

EPYC has failed to meet the Director General's Requirement to consult with adjoining and affected landowners as stated in the Planning and Infrastructure correspondence regarding DGRs for Jupiter Wind Farm (SSD 13_6277) dated 31 January 2014.

Insufficient information has been provided to non-wind farm associated neighbours located within 2km of the development. In fact, I reside within 600m of one of the proposed wind turbines and EPYC have failed to return phone calls or provide appropriate literature as outlined in their community consultation and engagement process.

In the EIS windfarms were identified as having minimal impacts on Electro Magnetic Interference (EMI) and Electro Magnetic Frequency (EMF) due to the distances from the proposed location of the turbines to dwellings within the assessment area. I am very reliant on many telecommunication services, outlined below:

- In my capacity as Director if ICT Services for the Australian Medical Council I am required to remotely support the organisation 24 x 7. In order to do this, I am totally dependent on reliable fast connections to the wireless internet (as ADSL is not available in my area) and mobile phone services at my dwelling.
- As an active member of the NSW State Emergency Service, I have a reliance on mobile phone coverage to be contactable for emergency activations and broadcast service such as radio and television transmissions to keep abreast of emergency situations.
- As a landholder and resident in a bushfire prone area I rely heavily on those forms of emergency broadcasts to protect my life, assets and livestock.

It's clear from the supplied documentation that due to my close proximity to the proposed wind turbines these services will be impacted, which will severely affect my ability to operate in this capacity.

EPYC has provided details of the transport management plan between the main Precincts and local towns. However, it does not adequately address traffic and transport assessment information for the Southern Precinct development particularly where the internal access road crossed the gazetted public road (Manar Rd) to ensure the safety of the community

It fails to adequately identify up front how EPYC plans to build, manage and maintain internal access roads in areas that are subject to flooding and areas where accessibility is difficult for 4WD vehicles let alone Restricted Access Vehicles transporting large heavy turbine components, including 63 metre blades, nacelles and towers.

This EIS fails to recognise, my property and my neighbour's properties, that have been purchased as **lifestyle blocks or small holdings** within the area that does not generate a sustainable income but instead to provides the quiet tranquil picturesque country living that we purchased the properties for. These properties derive their value for its amenities and ecological characteristics and also in the area surrounding the Southern Precinct plays an important role in managing and conserving native wildlife and vegetation in multifunctional rural landscapes.

The key notes from Urbis independent report commissioned by the NSW Department of Planning and Environment to determine impacts on property values around wind farm developed indicated that while the public supports the need for wind farms that support reduces by 14% when in close proximity to the development. The report also notes unexpected decline in value of lifestyle blocks around wind farms.

While it is acknowledged that EPYC have engaged the services of a number of formidable consulting companies that have provide detailed reports regarding most aspects of the EIS requirements set out by the DG in June 2014, September 2015 and March 2016 there is an obvious bias towards the developer to the detriment of the residents, including myself, surrounding the Southern Precinct development of the proposal. It is a culmination of EPYC's failure to adequately engage the community, truly understand the environment the Southern Precinct development will be operating in and more importantly adequately address and eliminate serious risks to people's lives, property and livestock that the NSW government should reject the planning application for the Southern Precinct of the Jupiter Wind Farm Development.

My decision is based on the following detailed analysis of all aspects of the EIS material and supporting documentation provided by EPYC that was made available under the Major Projects section on the NSW's Department Planning and Environment's website.

Bushfire Hazard

I have been a member of the NSW State Emergency Service (SES) for 16 years. I have attended many bushfire emergencies, the most recent being mid-January 2017 when my neighbour's property was threatened by the Mount Fairy fire.

I note in the EIS that just 2 Development Assessment and Planning Officers from the NSW Rural Fire Service (RFS) were consulted as part of preparing the EIS. The EIS notes that:

> *"These officers advised that wind farms are considered to be an advantage to RFS operations because they generally require a cleared area, a water supply and provide improved access to the project area."*

This simplistic statement does not truly reflect the situation presented with the proposed Southern Precinct of the Jupiter Windfarm proposal. There is currently only one road in and out of the area due to the heavily wooded mountainous terrain. The windfarm development proposal shows **no significant increase in access to the area** meaning that only a single access and egress route remains to my property, surrounding properties and the Southern Precinct of the Jupiter Windfarm.

A map of the area (refer figure 2) sourced from the Queanbeyan Palerang Council's online mapping tool[1] clearly shows the mountainous terrain around the proposed develop my property, identified as Lot 3 DP 607 6990 and Lot 1 1163552 on the map, and the Southern Precinct portion of the proposed Jupiter Windfarm development, that restricts access to my property and the proposed Southern Precinct. The darker shading signifies the dense mountainous bushland.

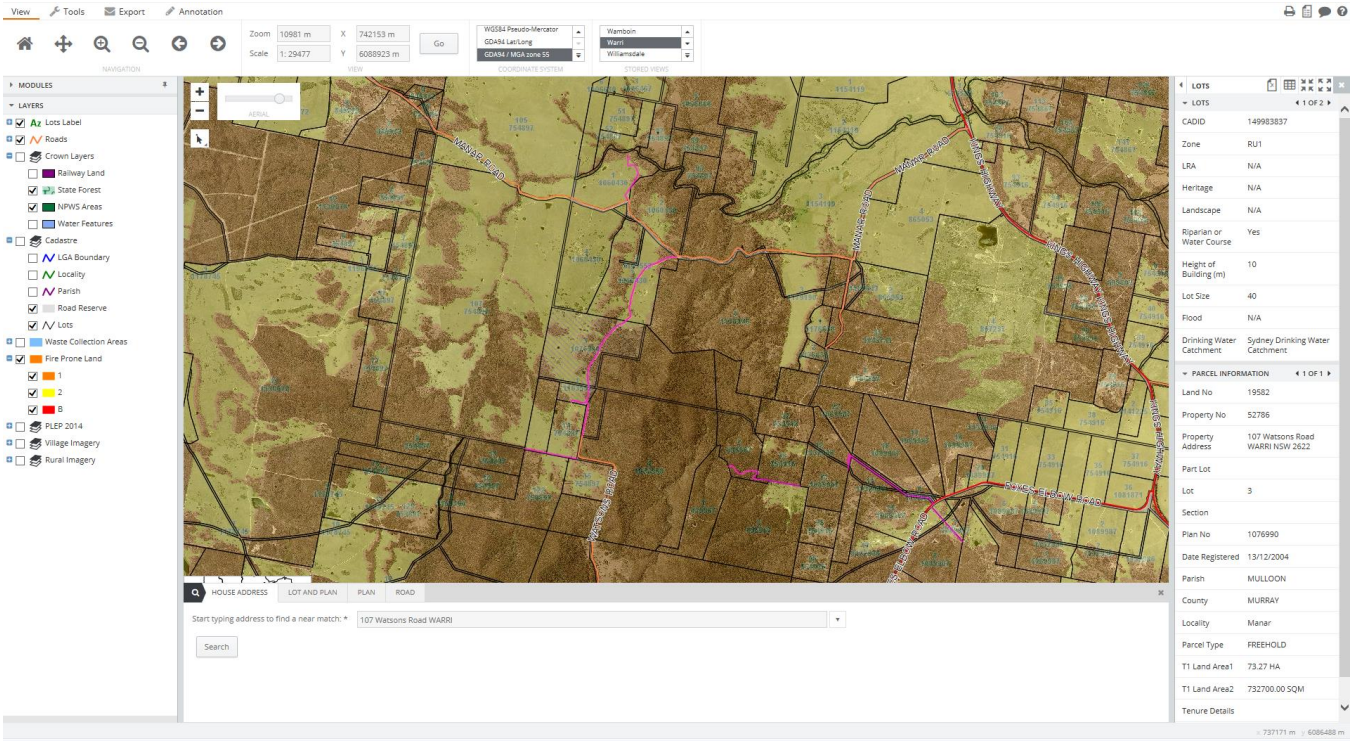


Figure 2: Aerial view of the heavily wooded mountainous topography, depicted by the darker shading, in the fire prone area around my property and the Southern Precinct of the proposed Jupiter Wind Farm.

[1] https://maps.qprc.nsw.gov.au/intramaps80public/default.htm?project=Palerang%20Public

Overlaying the Fire Prone Land on the same map (refer figure 3), it clearly identifies that the entire area is considered fire prone. The orange sections present a significantly higher fire risk, as they are reflective of the inaccessible mountainous terrain and presents a significant higher fire risk.

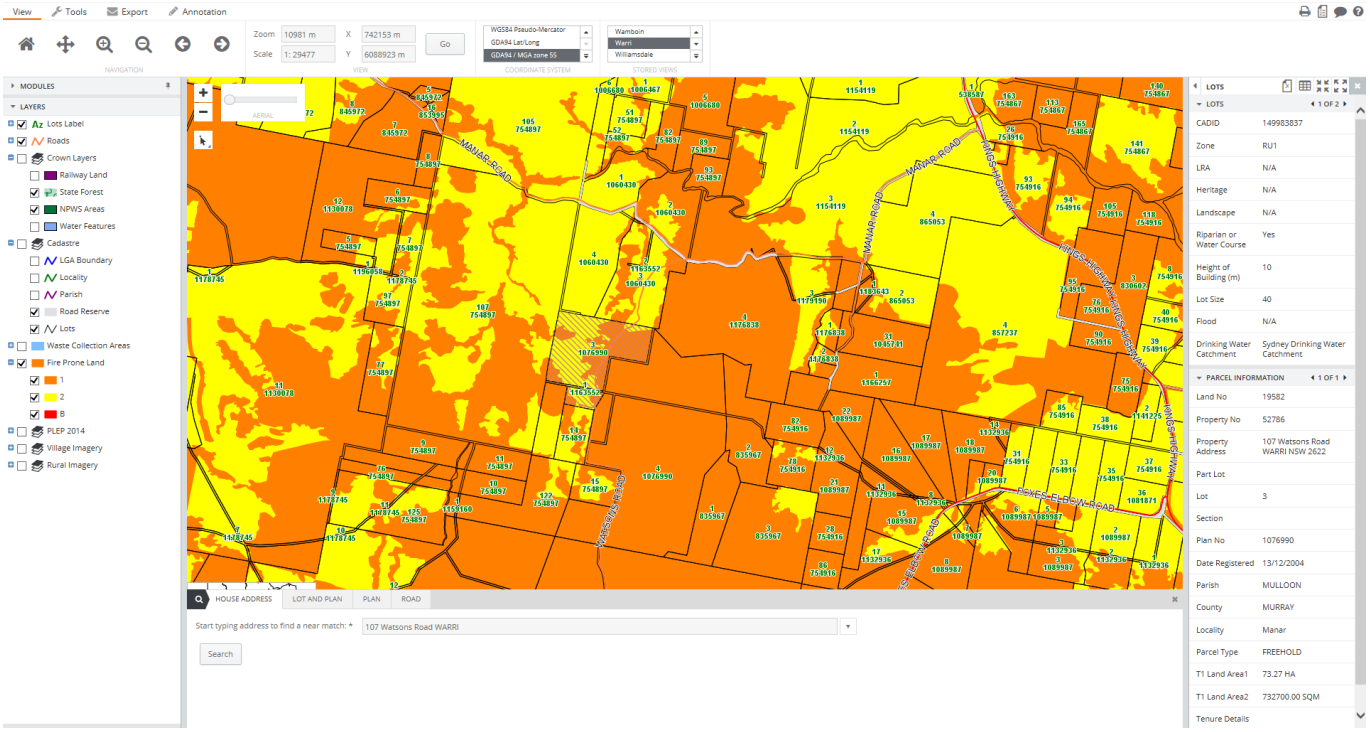


Figure 3: Degree of fire prone land of the surrounding land around the Southern Precinct of the proposed Jupiter Wind Farm

Current firefighting strategies are inadequate to protect people living in the vicinity of wind energy developments from raging fires in our often hostile Australian climate.

It is only a matter of time before there is going to be a catastrophic fire that could have been avoided, because proper due diligence by all responsible authorities has been ignored.

Planning authorities MUST NOT site wind turbines in areas where there is a high fire danger and risk to life and property.
Credit: Communities burned by turbines, Australian Industrial Wind Turbine Awareness Group

The past month and a half of extreme weather conditions and high fire dangers across the Braidwood-Bungendore-Mount Fairy region, have once again heightened awareness of the dangers and difficulties of fighting fires in rural, semi-rural and rural residential areas.

The recent Mount Fairy fire in this area was controlled by water bombing aircraft. This saved our lives, livestock and homes, except for one property. Due to restricted access from the topography of the area in and around my property and the proposed Southern Precinct Jupiter Windfarm development there is currently a heavy reliance on water bombing aircraft to fight fires in the area. Regardless of the ignitions source, if a fire were to start near the proposed turbines, water bombing aircraft could not be utilised due to the increased risks of accidents and collisions flying around wind turbines particularly in poor visibility. Additionally, water bombing aircraft deploy large volumes of water and this water impacting on wind turbines would bring the turbines down with the force of the water.

If the Jupiter Wind Farm is approved, the NSW Government will be eliminating the capacity of firefighting entities to access this vitally important resource because a NSW Government planning minister approved industrial wind turbines in zoned rural and semi-rural areas without considering the considerable additional resources that would be required to defend rural land holdings and residences in a newly zoned and dangerous industrialised environment.

Having experienced numerous bush fires, I am deeply concerned about the real and present increased additional dangers the Jupiter Wind Farm will impose on our community with decreased firefighting protections due to the high and prohibitive risks of using aerial firefighting in and around wind turbines.

Over recent weeks, aerial water bombing has been critical in containing fires in areas very similar to the site of proposed Jupiter wind turbine development. If the wind turbine development had already been in existence aerial water bombing would not have been able to be utilised and fire would likely have continued to spread out of control, destroying life, more homes, property and livestock.

As stated by the NSW Rural Fire Service:

> *"Aircraft are one of the most essential tools of the Rural Fire Service. [2]"*

The EIS states that:

> *"The objectives of this assessment are that:*
>
> - *No human life is lost or person injured as a result of bushfire arising from the construction, operation and maintenance of the Project; and*
> - *Infrastructure and property offsite is not significantly damaged from bushfire arising from the construction, operation and maintenance of the Project"*
>
> *"The wind farm will be subject to round-the-clock **remote monitoring** by specialist technicians. This remote monitoring will enable rapid response to maintenance and or emergency issues (including bushfire), and if necessary will include the ability to shut down any and all WTGs on-site. "*

I fail to see how remote monitoring will provide rapid response to emergency issues requiring adequate fire suppression and protection, given the speed at which fires travel and the fuel characteristic surrounding the Southern Precinct of the development. Particularly as turbines HAVE been known to catch fire and THROW flames some distance.

Some keys facts:

- 50 Turbine fires per 300,000 turbines per year –the Southern Precinct backs onto bushland connected with the Tallaganda National Park. Four recorded fires in SA (NB the graphics of an exploding turbine – not good Jan if given the vegetation and terrain in the Southern Precinct).
- Evidence supports that wind farm have contributed to the fire sparks traveling further
- The AAAA recommends wind turbines are place in a line rather than clustered
- In January 2017, a strategy was introduced with the SA bush fires for the turbines to be turned off to allow the water bombing planes to be able to fly through the wind farm to drop their water and to help contain the fire spread

These points alone are sufficient to highlight concerns and safety to lives, livestock, wildlife and a higher risk to loss of property.

[2] Reference: www.rfs.nsw.gov.au/dsp_content.cfm?cat_id=1120

The EIS uses the history of fires of wind turbines in Australia, which currently has a virgining windfarm capability. In fact, it has referenced ten and twelve-year-old material collected from The Government of South Australia from 2004 and The Australia Institute in 2009.

The EIS states that:

> *"The Australia Institute (2006) describe the fire risk associated with wind farms as minuscule provided the wind farm is properly constructed and managed. They determine that fires caused by WTGs are very rare and pose little risk to surrounding property. While it is possible for a catastrophic failure to cause fire within the WTG mechanism, the system is designed to contain fire and the likelihood of fire commencing from a tower equipment failure is much lower than from a faulty header or other farm machinery.*
>
> *The Government of South Australia (2004) also conclude that with normal maintenance and servicing practices in place, a wind farm will not pose an increased fire hazard to the host community and further that there has never been an incident involving a member of the public during normal operation."*

By simply using Australian based data to significant downplay the risk of fire as miniscule is a youthful attitude to the safety of residents in and around the Southern Precinct development. While there are indeed changes in the wind farm industry, the number and size of new windfarm developments (developed and proposed), the configuration of the develops and purported climate change affecting fire behaviour over the past ten or more years it is naïve to think that adequate fire mitigation strategies have been identified by EPYC EIS. Particularly, given the vegetation and dense bushland that surrounds the Southern Precinct of the project.

It's also naïve to think that the risk of a wind turbine causing a bush fire is insignificant given that the consequences of a bushfire in the Southern Precinct are severe and the likely of loss of lives, infrastructure and livestock is increased due to its remoteness and poor accessibility.

I bet you wouldn't want to be the one living around a windfarm development in a high fire prone area where the developer has presented inadequate fire mitigation and or fire-fighting capabilities simply monitoring the situation remotely presuming that to be adequate to control a fire that starts. It takes just ONE spark or ember to have catastrophic consequences to life, property, livestock and wildlife in and around the Southern Precinct of this development.

EPYC consultants appear to have analysed a lot of information regarding bushfires based on outdated models a point reinforced by a long term Rural Bushfire fighter recently heard on the ABC, bushfire patterns are changing. The fires are becoming more severe and not following the previous expected patterns.

G J Gray, a Professional Forrester for 37 years, active member of Bushfire Committees and Chairman of the Southern Region Fire Association until it was disbanded, stated in submission to a House of Representative Select Committee on 'recent bushfires in 1997 stated that, *"Planning for fire management MUST be undertaken for the 'worst possible' fire danger." and* "From a firefighting safety perspective there is only a small window of opportunity for successful suppression before fire crews have to be withdrawn due to the rapid escalation of fire."

According to its own submission in the EIS, *"A fire under the influence of wind may travel fast in an easterly or south easterly direction, reaching assets before fire fighters can attend the scene."* My dwelling and supporting infrastructure is situated (600 metres) to the south east of the Southern Precinct development and is <u>located within aerial firefighting exclusion zones</u>. As such it is placed under far greater risk than areas within the Northern Precinct of the development.

<u>Consultation</u>

The EPYC Visual Impact Study of the EIS identifies that the extent and nature of appropriate mitigation measures for private receptors should be subject to consultation and agreement with individual property owners. A recommendation that EPYC has failed to comply with by not consulting with the property owner closest to the proposed wind turbines in the Southern Precinct of the development. This is a strong indicator that EPYC is completely disconnected from the community that is impacted by this development and shows bias towards simply benefiting their shareholders.

The EIS states that the benefit of the development will be to diversify existing income streams and provide financial benefit to neighbouring land holders:

> *"The Project will also diversify existing income streams for involved landholders,* ***provide financial benefit to neighbouring landholders through the Benefits Sharing Programme****, and contribute financially to the provision and enhancement of community facilities, projects and Council funded local infrastructure projects through the Community Enhancement Fund."*

As a resident significantly impacted by the Southern Precinct development it is not unreasonable to have expected EPYC to maintain transparency throughout the process and to have contacted me or returned phone calls to discuss all aspects of the project including resolution of any concerns and associated remedies and participation in any Benefit Sharing Programmes.

The Community Newsletter issued on 1 February 2014 in the Consultation Material in Annex C of the EIS states that:

> *"The ownership of the land and property details were obtained through public sources. This information was used to assist in finding the owners contact details for further correspondence."*

I have both a letterbox at the start of Manar Rd and an Australia Post post office box in Bungendore where no such information has been received. Had a representative attended the property there is also numerous places that a calling card, note of some kind or letter could have been left in my absence since I commute to Canberra daily to attend fulltime employment. Public information days prove ineffective if details of the meetings are not made available to affected landholders. Incidentally, the only contact I have had from EPYC is an unaddressed Christmas card I received in my mailbox located at the beginning of Manar Rd. This indicates that I am easily contactable had EPYC made the effort during the development of the EIS.

This further highlights EPYC's failure to comply with the DG Requirements communicated to them on 3 June 2014 to consult with **all** residents in the project area and advise of that involvement.

From the consultation materials provided in Annex C of the EIS it seems that cursory efforts were made in relation to the Southern Precinct of the development for which I am significantly impacted with a majority of the information covering the larger Northern Precinct development.

EPYC has failed to meet the Director General's Requirement to consult with adjoining and affected landowners as stated in the Planning and Infrastructure correspondence regarding DGRs for Jupiter Wind Farm (SSD 13_6277) dated 31 January 2014.

Insufficient information has been provided to non-wind farm associated neighbours located within 2km of the development. In fact, I reside within 600m of one of the proposed wind turbines and EPYC have failed to return phone calls or to provide appropriate literature as outlined in their community consultation and engagement process.

Health and Noise (including Infrasound) Assessment

In Australia, the jury appears to still be out as to the health effects of Wind Generator Turbine (WGT) Windfarms actually causing health and life changing effects on those living and working in dwellings in close proximity to these WTG Farms. However, as a concerned landowner who has a dwelling within 600 meters of a proposed WTG it is imperative that I don't expose myself or any others including the lives of my animals to the possibilities of suffering from WT Syndrome disorders.

In other parts of the world, legislation has been developed to protect people's health from the effects of the well documented evidence confirming WTG's do cause a number of serious and severe health issues from the effects of **Infrasound** (both audible and inaudible lower frequency noise) – which can cause unpleasant sensations including pressure and vibration, at sound levels which may not be audible. It is well documented that complaints of severe sleep deprivation, severe chronic stress, and disabling vestibular dysfunction symptoms (dizziness, vertigo, etc.) do occur. I know it can vary from site to site depending on site topography, the height and number of turbines, inter-turbine distances, and the distance between turbines and dwellings.

The EIS Noise report states that:

> *"Low frequency noise is not usually demonstrated to be a problem with modern WTGs. Aerodynamic noise levels from a modern WTG in the low frequency range are generally less dominant than noise in the midrange frequencies from 200 Hz to 1000 Hz [31], which are more prominent."*

In researching my concerns relating to possible associated health issues where WTG Farms are introduced in close proximity to dwellings I have discovered that there are a plethora of eminent medical practitioners, psychologists, neurophysiologists, medical physicists, scientists, and engineers in biomedical and acoustical engineering fields who fully support that there is definite factual evidence reinforcing the causation theory between the onset of severe health conditions for those people in close proximity of installed WTG's Farms caused by Infrasound.

The research I have read is well documented and supported by peer review, retesting and replication studies by others, which makes me believe there is already clear documented evidence that people living and working in close proximity of under 2km of a WTG Farm, are likely to be subjected to adverse health issues once WTG farms are installed and these serious health issues could extend as far away as a 5km radius.

In fact, the evidence is so compelling that 188 eminent experts put their signatures to an open letter **dated 18th July 2016** that was sent to the World Health Organisation (WHO) Panel who are in the process of developing Environmental Noises Guidelines for the European Region as a regional update to the WHO Community Noise Guidelines. Those signatories were supportive of the WHO to develop new guidelines that would take into account the investigation of adverse health issues in local residents following the construction of wind turbines.

Before the WHO guidelines are completed **the Polish Government** has **accepted the recommendations of the Position of the Polish National Institute of Public Health – National Institute of Hygiene on Wind Farms[3],** who are of the opinion that wind farms situated too close to buildings intended for permanent human occupation may have a negative impact on the comfort of living and health of the people living in their proximity.

The health risk factors are identified as follows:

- the emitted noise level and its dependence on the technical specifications of turbines, wind speed as well as the landform and land use around the wind farm,
- aerodynamic noise level including infrasound emissions and low-frequency noise components,
- the nature of the noise emitted, taking into account its modulation/impulsive/tonal characteristics and the possibility of interference of waves emitted from multiple turbines,
- the risk of ice being flung from rotors,
- the risk of turbine failure with a rotor blade or its part falling,
- the shadow flicker effect,
- the electromagnetic radiation level (in the immediate vicinity of turbines),
- the probability of sleep disruptions and noise propagation at night,
- the level of nuisance and probability of stress and depression symptoms occurring (in consequence of long exposure), related both to noise emissions and to non-acceptance of the noise source.

[3] http://www.pzh.gov.pl/en/position-of-the-national-institute-of-public-health-national-institute-of-hygiene-on-wind-farms/

In the Institute's opinion, the laws and regulations currently in force in Poland (regarding risk factors which, in practice, include only the noise level) are not only inadequate to facilities such as wind turbines, but they also fail to guarantee a sufficient degree of public health protection. The methodology currently used for environmental impact assessment of wind farms (including human health) is not applicable to wind speeds exceeding 5 m/s. In addition, it does not take into account the full frequency range (in particular, low frequency) and the nuisance level.

The Institute is aware of the fact that owing to the diversity of factors and the complicated nature of such an algorithm, its development within a short time period may prove very difficult. Therefore, what seems to be an effective and simpler solution is the prescription of a minimum distance of wind turbines from buildings intended for permanent human occupation. Distance criteria are also a common standard-setting arrangement.

Having regard to the above, until a comprehensive methodology is developed for the assessment of the impact of industrial wind farms on human health, the Institute **recommends 2 km as the minimum distance of wind farms from buildings**. The recommendation was derived from a critical assessment of research results published in reviewed scientific periodicals identifying all potential risk factors and minimum acceptable distances shown below:

Acceptable Distance	**Risk Factor**
0.5-0.7 km	Audible noise level (dBA) meets the current acceptable values (without taking into account adjustments for the impulse/tonal/modulation features of the nose emitted)
1.5-3.0 km	Modulation low frequencies and infrasound noise levels
0.5-1.4 km	Turbine failure with a broken rotor blade or its part falling (depending on the size of the piece and its flight profile rotor speed and turbine type)
0.5-0.8 km	Ice being flung from rotors (depending on the shape and mass of ice rotor speed and turbine type)
1.0-1.6 km	Noise nuisance level (between 4% and 35% of the population at 30-45 dBA) for people living in the vicinity of wind farms
1.4-2.5 km	The probability of sleep disruptions (on average between 4% and 5% of the population at 30-45 dBA)
2.0 km	The occurrence of potential psychological effects resulting from substantial landscape changes (based on the case where the wind turbine is a dominant landscape feature and the rotor movement is clearly visible and noticeable to people from any location)
1.2-2.1 km	Shadow flicker effect (for the average wind turbine height in Poland including the rotor of 120 to 210 m).

The above actions by the Polish government clearly demonstrates once again that these medical issues surrounding wind farms are not whimsical nor are they a mere fallacy of any individual. The Polish decision is based on their examination of supporting evidence by well documented research, peer review, and retesting by eminent experts - seeking and challenging the answer to whether Infrasound can impose public health issues on a community who live within close proximity to where the introduction of wind farms occurs – the evidence was sufficient for the Polish government to impose these safety measures in protecting the public health of Polish citizens.

The Australian Government's funded National Health and Medical Research Council are less supportive to the Polish findings, they are still undecided about the level of impact of wind farms have on public health for those who reside within a radius of 1500 meters to where a Wind Farm. However, **the NMHRC acknowledges the measurement of health effects attributable to wind turbines to those who live within the 1500meters and for them to be very complexed and they do not dismiss the research that is available to date.**

Public health related issues brought on by the introduction to Wind Farms to humans and animals should now be considered as factual occurrences that are happening here in Australia. As Australian wind farms are no different to their overseas counterparts, and the weak denials and arguments in the EIS by Jupiter's is at best extremely poor and is rather insulting to intelligence of the community affected by the proposed Jupiter Wind Farm development.

At the present time there is no requirement for infrasound to be monitored near wind farms and it could be argued that it is also very difficult to measure, especially in the presence of wind that will also generate infrasound of the same or higher level when it passes through trees or blows over a house. It is however evident that without a new multidisciplinary research linking engineers with medical and health scientists where noise date and health information are recorded simultaneously for people living close to and far from wind farms. Only such detailed research can help provide an answer to this challenging and perplexing problem.

As a landholder with a dwelling that is within 600 metres from the turbines in the Southern Precinct, I am seriously concerned and alarmed by how this EIS has made public health concerns a cursory part of their investigations which to me reads like a tick and flick approach to get their EIS across the line of planning authorities.

As stated earlier in my submission there has been <u>no-one from Jupiter or it's EIS contractors</u> that have made any approach to me to assess my dwelling - even though my dwelling and property is the one that is located the closest to the proposed turbines for the Southern Precinct of the Jupiter project. Furthermore, my dwelling has not been marked or recorded in any of the topography maps submitted in this EIS.

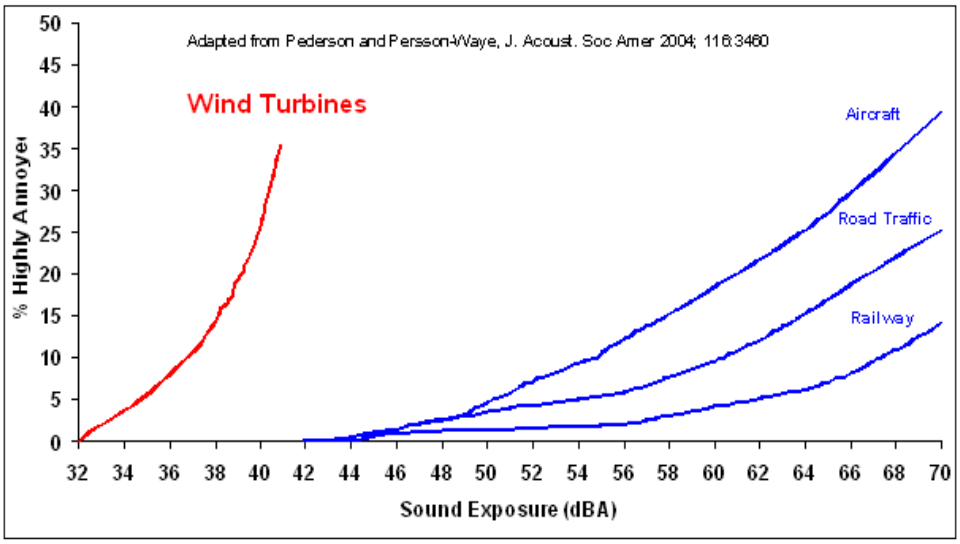
The EIS Noise report states that:

> *"Low frequency noise is not usually demonstrated to be a problem with modern WTGs. Aerodynamic noise levels from a modern WTG in the low frequency range are generally less dominant than noise in the midrange frequencies from 200 Hz to 1000 Hz [31], which are more prominent."*

My research on Infrasound structure and how its impact on a person's wellbeing I am leaning towards it being an irritating noise and I put it in the same category as a loud annoying audible noise. There are numerous psychological research studies that demonstrate when people experience discomfort like being too hot or being too cold or are irritated by sound their concentration levels will diminish, and they are unable to focus on what needs to be done until the obstacle/annoyance is removed, and their comfort level is restored to 'feeling normal'. Infrasound is documented at certain levels to cause physical discomfort, and it will affect the way one feels, and how they are able to focus - it is my understanding from reading the literature that is available on Infrasound it is this continuance of personal discomfort that is likely to lead to other health related issues like lack of sleep, vertigo and depression just to name a few.

If infrasound (wind turbine syndrome) is to be recognised as 'real health related occurrence' and is indeed a threat to the public health of a community living in close proximity to a wind farm, then I believe the Infrasound is likely to be exacerbated even further as the Jupiter proposal could create refractive sounds on the Tallaganda National Park escarpment and neighbouring properties where it could amplify the infrasound even further.

The following graph helps to highlight and put noise into perspective the seriousness of actual sound annoyances. I identify and relate this to when I use to live in Sydney where I would wait to catch a train at Sydenham Railway Station into the city on almost a daily basis – when standing on Sydenham station I would find myself constantly cringing as the aeroplanes flew over to land at Mascot Airport. Those aeroplanes would have been flying at a comparable or even slightly higher height to a WTG that are proposed for the Jupiter wind farm project. From studying the findings of the graph it makes me believe that the constant noise caused by Infrasound has to be detrimental to any persons' health over time. It is for this reason why the Polish Government has taken such dramatic action of imposing such restrictions as recommending wind turbines to be 5kms from a building.



Dr Alec Salt commented the following "*So putting up wind turbines, which are known to generate infrasound, near peoples' houses and to expect to NOT cause problems in my view is the height of insanity. It is just generating more and more people with problems.*"

"*If you look at the relationship between annoyance and different noise sources, you can see that wind turbine noise is clearly "different" from other types of noise. Comparing with aircraft, automobile or rail traffic wind turbine noise at about 30 dB lower levels (40 dBA rather than 68 dB A or higher) annoys 30 % of people. There are attempts to justify the increased annoyance by other (e.g. visual) factors but the possibility remains that the noise itself could be more annoying, due to the* ***infrasound that is present in the noise but which is excluded from the A-weighted measurement."***

<u>Audible Noise impacts</u>

EPYC has provided a Noise Impact Assessment where noise receptors were placed in various locations around the proposed development site. The pink squares in the map below indicate the location of the noise loggers. My dwelling is 600m east of the turbine labelled T29.

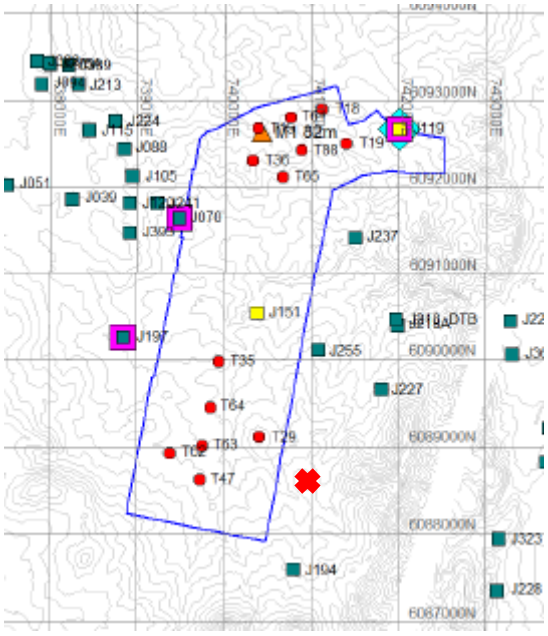


Figure 4 – Noise loggers located on the western and northern side of the southern precinct indicated by the pink squares and the location of my dwelling indicated by the red cross.

Having a dwelling that will be 600 meters from the closest turbine makes me believe that the concern for a person's health is not being assessed properly in the EIS as there were no measures undertaken from my dwelling and property which is in an elevated position and is the closest dwelling to the turbines in the Southern Precinct. See map in figure 1 on page 1.

This analysis has failed to:

a) **Capture noise impact analysis on the eastern and southern side of the Southern Precinct portion of the development where there is a higher chance of noise refraction from the mountainous escarpment in that area**

b) **Consider the noise impacts on my dwelling 600m away on the eastern side of the development next to turbine T29**

c) **Acknowledge the constant noise generation by a WTG as opposed to the irregular noises created during strong winds and occasional farming practices such as slashing and farm equipment noise**

The EIS states that construction noise will only be temporary. Development of the project is expected to be ongoing for two years. Two years is significant amount of time to be "temporarily inconvenienced" by "temporary construction noise" given that the EIS does not identify the actual planned works within each precinct.

DNV GL, conducted the sound analysis for EPYC and concluded the following scenarios:

1. All 88 wind turbine generators (WTGs) operating in their normal, unconstrained noise operation mode for all operating periods. Where exceedances of noise compliance limits are predicted to occur at dwellings, it is understood that the Proponent will pursue negotiated agreements with these affected landholders, in addition to those already made with the current involved landholders.

   These results indicate that the wind farm noise is predicted to exceed the A-weighted dB (dBA) compliance limits at six non-involved landholder dwellings.

DNV GL, stated that It is understood that the Proponent will pursue suitable negotiated agreements with the affected landholders to allow the dBA limit exceedances. EPYC have failed to include my dwelling in the analysis and have failed to adequately consult, so it is pretty safe to assume that they will not be provided me with adequate compensation in this instance.

2. 74 WTGs operating in their normal, unconstrained noise operation mode for all operational periods, and 14 WTGs of the same type as the unconstrained WTGs operating in a noise-reduced operation mode for all operational periods.

3. 80 WTGs operating in their normal, unconstrained noise operation mode for all operational periods, and eight WTGs will shut down or idle during the wind speed range where the wind farm noise is indicated to exceed compliance limits.

DNV GL, concluded, that for Scenarios 2 and 3, the wind farm noise is predicted to be compliant with noise limits for the 24-hour period for all dwellings neighbouring the proposed Project, for all operating wind speeds. However, the absence of sound measurements on the southern and eastern side of the Southern Precinct where reflective sound is more likely, reduces the credibility of this statement.

EPYC provides no clear information regarding the adequate management of construction noise such as blasting. With their continued failure to comply with the DG Requirements, how can they be trusted to conduct adequate assessments and apply suitable mitigation strategies during the details design phase if the Southern Precinct portion of this project is approved?

Electromagnetic Interference (EMI) & Electromagnetic Field (EMF) Assessment

This section of the EIS covers radiocommunication services operating in the area, including television broadcasts, fixed point-to-point links, fixed point-to-multipoint links, CB Radio and mobile phones, emergency services, satellite television and internet, radio broadcasting and trigonometrical stations (i.e. trig points), which are all of concern to me living within 600m of a WTG.

I am very reliant on many telecommunication services, outlined below:

- As the Director of ICT Services for the Australian Medical Council that services clients all around the world, it is important to maintain ICT systems 24 x 7. The small ICT team is required to provide 24 x 7 support 7 days a week. As such, I rely heavily on wireless internet (as ADSL is not available in my area) and mobile phone services at my dwelling.
- I am also a member of the NSW State Emergency Service, for over 16 years, where there is a reliance on mobile phone coverage to be contacted for emergency activation in addition to radio and television transmissions to keep abreast of emergency situations.
- As a landholder and resident in a bushfire prone area I rely heavily on those forms of emergency broadcasts to protect my life, assets and livestock.
- I rely on point-to-point Citizen Band handheld radios when working around the property for safety purposes and ease of communicating when working around the property.
- The Anderson trig point is also located on my property, but it currently does not host any surveying equipment.

Telstra is the telephone provider I use for phone, mobile and internet services as they provide the best coverage in the area, albeit patchy in the lower sections of my property. I access the Variable Area Satellite Telecommunication (VAST) network for free to air television and Foxtel as a paid satellite service with the satellite dish used for both VAST and Foxtel neatly located on the top of the shed. My dwelling resides on an elevated section of the property, which currently affords me quite reasonable access to all these services.

As an example, the EIS states that:

> *"A review of mobile phone towers in the vicinity of the Project indicated that the nearest tower is located approximately 5 km from the PA and therefore large scale interference to mobile phone signals is unlikely.*
>
> *Review of network coverage maps indicates variable coverage across the PA, ranging from good to marginal coverage, with some areas requiring an external antenna to receive coverage. In general, for areas of good coverage, interference to mobile phone signals is considered unlikely."*

I currently receive excellent telecommunication coverage as my dwelling is located on a 790m high elevation. The nearest WTG is planned to be located 600m from my dwelling and as such is likely to be impacted. The EIS does not identify adequate mitigation measures to address impacts to the radiocommunication services that I heavily rely on. Its focus is on television reception and fails to address the more important and critical mobile phone and internet services.

Had EPYC have made reasonable efforts to contact me they would have easily identified the impacts instead of dismissing them as 'unlikely'.

Transport Assessment

The EIS goes into great details to identify the major roads and other intersections significant the development will impact. However, nowhere in the EIS does it mention the intersection on Manar Rd that cuts through the northern and southern sections of the Southern Precinct. This road is used by residents on a daily basis to commute to work. While it only makes up 15% of the total trips required to complete the entire development it still provides a significant impost and presents a hazard to local residents. The table below was extrapolated from Volume 5 Annexes H to O and enhanced to identify the impact on Manar Road.

Plant	Access Location	No. Turbines		Total No. trips	Trips per Access Point	No. Turbines southern section Southern Precinct		Trips Across Manar Road
		No.	Percentage			No.	Percentage	
Southern Precinct	Via Kings Highway	13	15%	19,976	2,951	6	46%	1,362
Northern Precinct Access 1	Via Braidwood-Goulburn Rd	36	41%		8,172	N/A	N/A	N/A
Northern Precinct Access 2	Via Braidwood-Goulburn Rd	39	44%		8,853	N/A	N/A	N/A
	Total	**88**	**100%**		**19,976**	**6**	**3%**	**1,362**

Creation of the table, was a simple exercise which seems to have been excluded from the EIS.

It perhaps seems insignificant compared to the overall project, but it is the only road in and out of the area and as such increases it's important to local residences and highlights the lack of concern for the safety and consideration for the local community that should have been included in the EIS. As such the EIS has failed in its duty of care to local residents to outline planned traffic management regimes for a small gazetted public rural road.

Refer images below identifying the section of Manar Rd (also known as Mulloon Rd when accessing it from the Bungendore end of the Kings Highway) where the northern section of the Southern Precinct of the development cuts the gazetted public road to access the southern section of the development. There are no plans identified in the EIS to manage this section of road and ensure there is no increased risk of damage to vehicles or loss of life both during construction and normal operational activity.

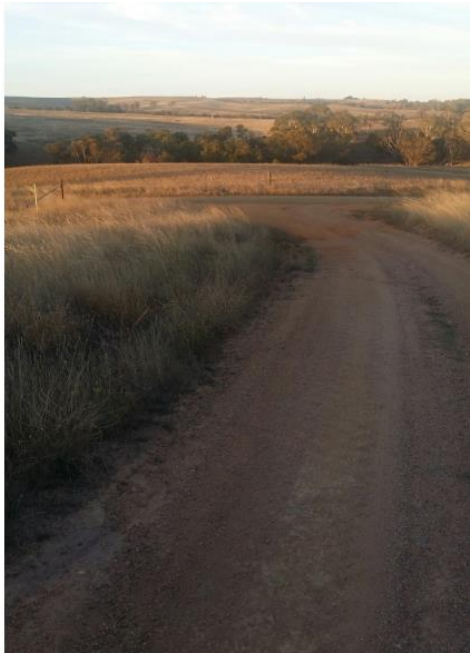


Figure 5 – The access road intersection for the southern section of the Southern Precinct development.

Figure 6 – A google map image of the intersection in Figure 5 on Manar Road, that intersects the southern and northern sections of the Southern Precinct. Note, Manar Creek at the top of the image is an environmentally sensitive area that construction and operational traffic will need to cross within the Southern Precinct of the development.

Figure 7 – The area identified in the norther section of the Southern Precinct showing one of the creeks that the access road must cross, which has not been discussed in the EIS. It's also worth noting that some aboriginal artefacts were discovered along this creek (Manar Creek).

Figure 8 – The Southern Precinct access point from the Kings Highway. The management of which has not been covered in the EIS.

Figure 9 – part of the elevated terrain the internal access roads in the northern section of the Southern Precinct development must traverse.

The EIS fails to adequately address traffic and transport assessment information to ensure the safety of the community by excluding the impact of construction and operational traffic within the Southern Precinct of the development and also fails to identify how the dirt access roads are going to be maintained to a safe and acceptable level.

It also fails to adequately identify up front how EPYC plans to build, manage and maintain internal access roads in areas that are subject to flooding and areas where accessible is difficult for 4WD vehicles let alone Restricted Access Vehicles transporting large heavy turbine components, including 63 metre blades, nacelles and towers.

Economic and Visual Impact

The Jupiter Wind Farm Development has been identified as the most urban wind farm in NSW meaning that it has an effect on more people residing in the area than any other development. This is important because the Urbis report commissioned by the NSW Office of Environment and Heritage in 2009 "*may not significantly impact rural properties used for agricultural purposes"*, but "*lifestyle properties within 500 metres of a wind farm experienced lower than expected property values*".

The EIS states that:

> "*Farm land within the PA is predominantly used for commercial grazing with isolated lots used for personal cropping. The hill formations consist of both cleared and light density tree coverage."*

This statement fails to recognise, my property and my neighbour's properties, that have been purchased as **lifestyle blocks or small holdings** within the area that does not generate a sustainable income but instead to provides the quiet tranquil picturesque country living that we purchased the properties for. These properties derive their value for its amenities and ecological characteristics and also in the area surrounding the Southern Precinct plays an important role in managing and conserving native wildlife and vegetation in multifunctional rural landscapes.

The EIS also states that:

> *"moderate / high and high visual impacts are limited to dwellings within 1 – 3 km of the WTGs. The highest impacts are associated with dwellings that are located on elevated ground with panoramic views over the surrounding rural landscape."*

It also states that:

> *"Detailed consideration of potential mitigation measures (for all dwellings within 3 km of a WTG as per the SEARs) was undertaken, which determined that the impact ratings for individual dwellings were able to be reduced however, Moderate/High ratings were still recorded for 14 dwellings. Screening vegetation and other potential mitigation measures have been considered and will be evaluated further in consultation with affected landholders and/or the broader community during public exhibition of the EIS and continue through the detailed design phase of the Project."*

The fact that only dwellings within 1 – 3km of the WTGs was assessed indicates to me that my property was not assessed as it is less than 1km away from the proposed WTG.

The EIS leaves mitigation of visual impact open for at least 14 of the properties, 15 if you include mine, where adequate mitigation strategies have not been identified up front. If the project is approved without having the strategies in place and given their history of extremely poor community engagement, it is considered highly probable that EPYC will be unable to suitably address the visual impact issue and with the project approved the affected land holders will have no recourse.

The Visual Impact Study fails to clearly articulate the location and subsequent impacts of the 33kV transmissions lines and poles of particular concern to the Southern Precinct, which has been identified in the EIS as potentially requiring above ground infrastructure given the terrain. Sample images have been provided that don't adequately represent some of the impaired views resulting from this development. The EIS states that:

> *"If constructed aboveground, the poles associated with the 33 kV transmission line are likely to have moderate visual amenity impacts on limited sections of Goulburn-Braidwood Road and the Kings Highway, especially when combined with cumulative views of the poles and WTGs together, contributing to the overall sense of new development."*

The EIS also states that:

> *"The EIS discusses radar activated lighting that would diminish any night time visual impacts."*

The supporting material provided neglects to adequately inform the community on how these mechanisms actually addresses the criteria and community concerns and as such lends themselves to further mistrust, disrespect and lack of confidence in concern for the local community that they are far removed from in their ivory towers located in Sydney.

The EPYC EIS is incomplete and fails to identify those land holders that are significantly impacted by the project. They have inadequately addressed appropriate visual impacts and there is a highly probable risk that if the project was approved the development would go ahead without suitable mitigation strategies in place and the affected landholders will have no recourse as a result of the development approval.

The Visual Impact Study and montages have focused on the impacts of the wind turbines and failed to consider the visual impacts of the above ground sections of the 33kV and 330kV transmission line towers extending from the Southern Precinct where underground infrastructure is not possible due to topographical and other constraints.

Jupiter Windfarm montages have not been provided for all properties and landholders impacted by the development and as such fails to comply with the community consultation requirements required by the DG. The montages are also misleading and inaccurately reflect the true scale of the development outlined by the Department of Planning and Environment Director General.

Blade and Ice Throw

In Europe the list of incidences and their causes over a 10-year period has been identified as:

1992 - 2005

Fault / Cause	Blade Failure	Structural Failure	Fire	Ice Throw	Environmental Damage	Component Failure	Driver Distraction	Fatal Accident	Grand Total
Fire	1								**1**
Mechanical	3	4	3			1			**11**
Human Error							4		**4**
Storm	12	11							**23**
Lightning	22	2	6						**30**
Cold Weather	1								**1**
Wind	4								**4**
Not identified	36	15	20	18	6			1	**96**
Grand Total	**79**	**32**	**29**	**18**	**6**	**1**	**4**	**1**	**170**

Blade Loss or Failure by the following group:- www.auchencorth.org.uk/documents/safety.pdf

It is likely that there will be more similar incidents in other continents with the increase to the numbers of wind turbine developments. For obvious reasons, not all incidents are reported and obtaining full information not an easy task.

Loss of structural integrity of a blade following a lightning strike is a common cause of failure and combustible material used in the manufacturing process is often ignited. Very often, the turbine continues to turn, fanning the flames as it does so until the blade disintegrates, throwing large pieces of burning material a considerable distance. Because of the height, there is normally no way to extinguish the fire and it is left to burn out, and all that the authorities can do is withdraw to a safe distance. Failure of the brake mechanism or gearbox is another common cause of blade failure. The brake mechanism is designed to stop the turbine turning when the wind is at a level such that the turbine has to shut down for safety reasons.

The gearbox is used to develop useful electricity from the turbine as it turns at relatively low revolutions. If either of these fails, the turbine is able to revolve at many times its normal speed, which imposes loads on the blades well in excess of what was designed.

The tips of a blade rotating out of control could be travelling at almost 1000 mph, and when suddenly detached from the rotor have an enormous amount of kinetic energy and momentum. Scientist have identified that the velocity of the blade rotation is also a factor when considering the distance, a blade can be thrown, not just the height and length of the blade.

Based on the blade throw formula there are many instances of large sections of broken blade being thrown 400m to 600m, and in one incident, a piece of blade was found almost 1000m from the turbine. Offshore wind farms have a mandatory safety zone of 500m all around the site. In Germany, the authorities are in the process of introducing regulations for a 600m safety zone. In the United States, some wind farms must maintain a half-mile safety zone from public areas or buildings.

My property is located in a frost prone and occasional snowfall area. In areas of cold climate, ice can accumulate on turbine blades and break off the machine with drops in temperature, unexpectedly. It is known that Ice throw is a possible risk that poses a threat to surrounding residents of a wind turbine field not dissimilar to blade throw.

The ice fragments from the rotor are thrown off from the operating turbine due to aerodynamic and centrifugal forces or they fall down from the turbine when it is shut down or idling without power production. It depends upon the weather and especially the wind conditions, on the instrumentation of the wind turbine's control system, and on the strategy of the control system itself.

By its own admission the Blade Throw Risk Report conducted by DNV GL is incomplete as it relied on information provided by EPYC (the "Customer") and did not conduct a detailed and comprehensive assessment of the dwelling area in each location. As such my dwelling that is located 600m away from the nearest WTG was not included in any assessments. It provides insufficient details to confirm the basis of the calculations used to determine the true throw distances and impacts on landholders residing next to wind farms.

The EPYC EIS also fails to acknowledge that the more windfarms that are being developed the more occurrences of blade throw are being identified.

The EPYC report also fails to identify any risk mitigation strategies or control systems in place with regard to ice throw in an area that is known to have, at times, heavy frost.

EPYC have demonstrated a complete lack of knowledge regarding the area the windfarm is to be operated in. It is often subject to morning frosts and on occasion heavy snow, that has collapsed a number of trees as a result. The EIS fails to identify the risk of Ice Throw, which can be as dangerous as blade throw. Adding to the concern EPYC has in regard to the safety of landholders affected by this development, particularly the Southern Precinct.

Shadow Flicker, Blade Glint and Blade Strike

EPYC enlisted the services of Environmental Management Services Australia Pty Ltd, who sub-contracted DNV GL to provide a report on the impacts of Shadow Flicker. DNV GL explained that shadow flicker involves the modulation of light levels resulting from periodic passage of rotating wind turbine generator (WTG) blades between the sun and the observer. Again they have based their assessment on dwelling locations provided by the customer, which from all material reviewed excludes my dwelling. As such, rendering the analysis incomplete.

Draft New South Wales Planning Guidelines recommend a shadow flicker of 30 hours per year, which translates into 2.5 hours a month, which translates into .04 hours a week, which translates into 0.006 hours a day or 36 minutes a day. The actual limit is reduced to 10 hours per year or 12 minutes a year. Mitigation strategies identified to reduce or eliminate shadow flicker and blade glint are:

- Installation of screening structures or planting of trees to block shadows cast by the WTGs
- The use of control strategies which shuts down selected WTGs when shadow flicker is likely to occur
- Relocation of WTGs

Throughout all of the material EPYC has failed to identify my dwelling and property as existing and as such has not adequately provided <u>ANY</u> mitigation strategies in regard to Shadow Flicker and Blade Glint that will affect me.

<u>Biodiversity and Heritage Assessment</u>

The EIS states that:

> *"Whilst this Project will contribute to cumulative land clearing impacts in the vicinity, the contribution is very small and the majority of the surrounding area is an agricultural landscape that has been subject to significant prior disturbance and modification."*

As is the theme throughout the entire EIS, the desktop exercises and cursory reviews of the surrounds within the Southern Precinct of the project does not capture an adequate picture of the area. The EIS consistently says that the landscape has been subject to significant prior disturbance and modification. Yet surrounding the southern precinct there are heavy stands of wooded mountainous terrain that are gazetted wildlife refuges and corridoes that are critical for the maintenance of ecological processes including allowing for the movement of animals and the continuation of viable populations. Wildlife and bushland has a symbiotic relationship to promote health and viability for both plants and animals. In fact, our bushland cannot remain viable and healthy into the future without the interaction of native wildlife!

In regard to biodiversity the EIS continues to state that the impacts are likely to be negligible and low, but it fails to clearly articulate how those rating have been derived. In one statement the EIS says that "This Project combined with those wind farms that are close (i.e. less than 15 km away) (e.g. the Capital and Woodlawn wind farms), will contribute to regional ecological impacts and yet in the following paragraph The nearest wind farm is approximately 6 km away from the Project (distance between respective Project Area boundaries), which is considered sufficiently distant that it is likely that these wide ranging birds and bats will spend the vast proportion of their lifecycle in areas without WTGs.

In the EIS EPYC recommends that the results of operational bird and bat carcass monitoring from wind farms within the area are pooled to give an idea of the cumulative strike risk. It seems to me that undertaking this approach is the equivalent of shutting the gate when the horse has bolted!

As with the entire EIS for the Southern Precinct of the Project EPYC have failed to undertake adequate research and analysis of the native endangered flora and fauna within the project area and surrounds showing a complete disregard for

The EIS identifies the BioBanking Assessment Methodology to determine that the Project will require 1,430 ecosystem credits based on three which are:

- Fauna species:
  - Speckled Warbler (Chthonicola sagittata)
  - Eastern Bentwing-bat (Miniopterus schreibersii subsp. oceanensis)

- Flora species:
  - Hoary Sunray (Leucochrysum albicans subsp. albicans var. tricolor).

Interestingly, when Springwell Wildlife Refuge was established in 2008 the Eastern False Pipestrelle (Falsistrellus tasmaniensis) was also identified as a vulnerable species located within the area, but it has not been included in the EIS and as such does not seem to have contributed to the BioBanking Assessment.

A research review published in January 2016 in Scientific American has reported bats fly around trees and eat insects, however, the big metal trees with spinning blades has been attributed as the largest cause of mass bat mortality around the world. The flying animals run into spinning blades, or the rapid decrease in air pressure around the turbines can cause bleeding in their lungs.

A more detailed assessment of the impacts on the vulnerable ecology around the Southern Development and appropriate mitigation strategies is required to ensure the sustainability of the environment within the Southern Precinct of the development.

The recent Mt Fairy (Currandooley) and Carwoola fires illustrated the severity of impact, perishing or severely injured by fire, on a large number of wildlife that live in the native bush and grasslands. As discussed earlier the Southern Precinct portion of the development resides in a very high fire prone area and inadequate measures have been identified to protect the vulnerable species around the development.

EPYC commissioned Environmental Resources Management (ERM) Pty Ltd to conduct a Heritage Assessment required by the Department of Planning and Environment. Both a desktop review and field survey was conducted. After reviewing the material, including the maps provided in the ERM report, it is clear to me that the Southern Precinct is the area within the project area that is likely to have the most significant heritage and archaeological significance. It is also noted in the report that due to dense vegetation it a field survey could not be done.

The EIS states that:

> *"A field survey of the PA was undertaken in September of 2014 and identified one previously unrecorded Aboriginal heritage site (JWF1) (refer Figure 12.2) and two areas of Potential Archaeological Deposit (PAD) (JWF PAD1 and JWF PAD2) (refer Figure 12.4).* ***Until further archaeological subsurface testing is undertaken (which would be conducted if disturbance of these areas cannot be avoided during the detailed design phase of the Project) to assess the size and nature of any potential surface or subsurface archaeological deposits, these areas represent a moderate level of archaeological significance.****"*

Due to the size and nature of the project, the risk of destroying areas of archaeological value in the Southern Precinct of the project to make way for access roads and infrastructure is significant. As such, at a minimum a more detailed review / field study of the areas in the Southern Precinct of the project should be conducted.

<u>Auditing and Compliance Provisions</u>

It is clear throughout the planning process that EPYC has had a demonstrated history of poor planning and compliance with the planning requirements for a State Significant Development project such as the Jupiter Wind Farm proposal. It is concerning that at this stage of the assessment process they have still failed to adequately address community concern and document and communicate adequate mitigation strategies, particularly in relation to the Southern Precinct portion of the project. Should the Department of Planning and Environment approve this development there is a clear lack of responsibility and accountability to ensure the health, safety and well-being of the local community heavily impacted by this major development.

Conclusion

In conclusion, my research has found there to be a significant amount of information both supporting and opposing windfarm developments. Given the immaturity of the industry in Australia and the associated lack of expertise there appears to be a reluctance to test and validate appropriate standards and protocols to ensure the safety and wellbeing of the Australian community who are impacted by Wind Turbine developments. The focus tends to be on taking sides rather than gathering unbiased conclusive evidence. While doubt remains this issue will continue and questions unanswered.

As this development is considered to be the most urbanised wind farm development in Australia at present these concerns should be fully understood and validated with a view to developing unbiased robust standards and protocols to protect the Australian Community in order not to set untenable precedence before approving the Southern Precinct development for which my dwelling is currently within 600m of the turbines in that section.

I draw this conclusion based on the following red flags that have been raised as I undertook a detailed review of the EIS material provided by EPYC. While they have enlisted the services of a number of experts in their field the lack of local knowledge, particularly with regard to the Southern Precinct portion of the project I belief it has had a detrimental impact in ensuring the DG requirements have been adequately addressed to mitigate the risks to myself and my community associated with this project.

In addition to this the EIS is flawed, inadequate and void of meaningful responses for the following reasons:

1. EPYC have failed to consult not only with myself, who will be significantly impacted personally living less than 600m away from the closest wind turbine, but also a number of experts on:
    - Aerial firefighting and aerial application operators
    - Appropriate fire mitigation and survival plans around the Southern Precinct of the development that presents a significantly higher fire risk
    - Adequate noise levels monitoring and mitigation strategies (particularly infrasound) and echo refraction
    - Associated health implications to people and animals living close to wind turbines
    - Degradation in property values and the saleability for a significant amount of time, if not permanently

2. Wind turbines in rural and semi-rural areas impose a significant new risk to firefighting and as a potential ignition point, so the NSW Government would be negligent to approve such an industrialised development in a high risk bush fire area. By their own admission it is acknowledged that fire travels fast in a south easterly direction reaching assets before fire fighters can attend the scene. My life is therefore, is being placed under a greater risk since I live 600 meters south east of the Southern Precinct development in an area where the terrain and accessibility provides additional challenges when fighting fires.

3. There is a growing body of evidence gathered from clinical and acoustic research available internationally, the following serious medical conditions have been identified in people living, working, or visiting within 10km of operating wind turbine developments:
    - chronic severe sleep deprivation;
    - acute hypertensive crises;
    - new onset hypertension;
    - heart attacks (including Tako Tsubo episodes);

- worsening control of pre-existing and previously stable medical problems such as angina, hypertension (high blood pressure), diabetes, migraines, tinnitus, depression, and post-traumatic stress disorder;
- severe depression, with suicidal ideation;
- development of irreversible memory dysfunction, tinnitus, and hyperacusis (a collapsed tolerance to usual environmental sound).

4. EPYC's cursory assessments and careful placement of measuring devices appear to be weighted for providing favourable outcomes for continuing the development rather than painting a true picture and providing suitable mitigation approaches.

5. I currently rely heavily on excellent telecommunication coverage and I have not been reassured by any of the EIS that appropriate measures have not been put in place to ensure I continue to receive the same level of service following development of the Southern Precinct.

6. Approving the Jupiter Windfarm development will substantially increase the risk of the loss of life, homes, property, rural infrastructure and livestock. Particularly, as EPYC have failed to adequately assess all risks associated with the project, including but not limited to hazards associated with health and welfare, flying projectiles, traffic management, construction noise and vibration, and local emergency management.

I would have preferred to have had someone from EPYC offer to buy me out at the pre-windfarm development market value than have to take up this fight to protect my health, lifestyle, wellbeing and animals.

The EIS says that the project has to be weighed up against the impost on the local community with the benefits of the wider community to implement a renewable energy solution. If this is true, the development would be more suited to a less urbanised environment where the benefits for the government will not be counteracted by the increased strain on the health budget or at the cost of human lives and livelihoods.

I have no confidence EPYC will adopt adequate measures at any other stage of the project based on their failure to recognise my dwelling as being significantly impacted, and the number of attempts they have had to obtain planning approval for this development - even following advice from your Department.

I thank you for undertaking the proper due diligence with regard to the Jupiter Wind Farm Development and I look forward to the provision by you of fully researched analysis independent of the developer, in relation to my concerns outlined in this submission to establish there will be no detrimental impacts to myself, my community, my property, my animals and local wildlife.

Finally, **I do not support and therefore strongly object to** EPYC in any aspect of their current EIS to proceed with the development of the Southern Precinct of the Jupiter Wind Farm Proposal SSD 13_6277

I have made no reportable political donations in the previous two years nor am I a member or past member of any anti wind farm action group.

Yours sincerely,

Karen Anderson,
Landholder

Sourced from: Nina Pierpont's paper: - Wind Turbine Syndrome - A report on a Natural Experiment

APPENDIX A: Australian Industrial Wind Turbine Awareness Group

14th January 2013

Media Release

"Communities Burned by Turbines"

EXTRACT

Aircraft support firefighting efforts not only by water bombing, but by supporting back burning and hazard reduction operations, reconnaissance flights, air attack supervision and conducting medical evacuations.

Fires can strike quickly and be incredibly dangerous.

Aggressive initial attack is the key strategic principal that most fire authorities now pursue. The utilisation of firefighting aircraft in this initial attack is an important strategic approach as they have the capacity to react quickly and decisively to fires in most terrains, which also assists ground crews in containing fires.

Whilst each wind turbine development and situation would have varying operating implications, it is very clear that wind turbine developments impose significant threats to the ability to safely operate aircraft in the vicinity of the turbines, especially under the extreme conditions associated with bush fires in Australia.

The pilots operating the water bombing aircraft are highly qualified and will always consider the degree of risk associated with infrastructure, and the conditions in which they are flying. They will always put the safety of themselves and their aircraft first.

Heavily laden fire or spray aircraft have imposed limits on their manoeuvring ability and must be operated very conservatively. Along with the increased risk of accidents and collisions given the height of the turbines, turbulence and visibility due to smoke and the known interference wind turbines produce on hampering radio reception, no professional pilot would take the risk of flying within what they deem a safe distance of the proposed development.

Essentially fires that burn near industrial wind turbine developments can only be fought by ground crews and aerial support when the fire has travelled a safe distance from the turbines. That may include having to let the fires burn through turbine clusters, increasing the ferocity of the fire and making its containment on the downwind side of the cluster all the more difficult and dangerous.

A sad fact is that we know that aerial fire-bombing is essential to fight fires in our harsh climate and landscape and can prevent the loss of life, home, property and livestock.

APPENDIX B: "Wind Warning to World Health Organization-Europe (turbine health effects in the crosshairs)"

19th July 2016

Communication

EXTRACT

A number of experts, and concerned individuals who have gained some expertise in this field have sent an Open Letter to members of the panel welcoming the investigation.

Christine Metcalfe, U.K. spokesperson for the group said today:

'Complaints of adverse health impacts from those forced to live close to wind turbines continue to rise. These involve both audible noise including low frequency noise, and inaudible noise below 20 Hz, known as **infrasound**. Both audible and inaudible lower frequency noise can cause unpleasant sensations including pressure and vibration, at sound levels which may not be audible.

Complaints of severe sleep deprivation, severe chronic stress, and disabling vestibular dysfunction symptoms (dizziness, vertigo etc.,) abound, with problems varying from site to site depending upon local topography, height and number of turbines, inter-turbine distances, and the distance between turbines and homes. The common thread to the reported symptoms (known as "noise annoyance") is the activation of the ***startle reflex,*** which can be triggered by acoustic, vestibular, and tactile stimuli - which if activated together can have a synergistic effect[4].

To argue that the sleep disturbance, physiological stress and vestibular dysfunction symptoms and their serious long term adverse health consequences don't exist or are caused by scaremongering is neither scientifically correct, nor morally or ethically defensible. This is particularly the case on the part of medical or acoustical professionals, in view of both their training, and their respective professional obligations to protect the health and safety of the public.

Despite mounting anecdotal and academic evidence, no health monitoring is underway nor mitigation against adverse health effects following the construction of wind turbines which remains shockingly absent from planning guidelines in many European countries. It is imperative that new guidelines encourage governments better to safeguard the health of their citizens.

We remain hopeful that the panel's deliberations will result in tough new European guidelines which in turn will prompt a serious worldwide examination of all aspects of this problem, including the widely-reported effects on animals. Although not part of the current WHO remit, there is an urgent need for governments not to abrogate responsibility for examining rising numbers of reported effects on wildlife and domestic animals.

[4] Neurosci Biobehav Rev. 2002 Jan;26(1):1-11. Tactile, acoustic and vestibular systems sum to elicit the startle reflex. Yeomans JS[1], Li L, Scott BW, Frankland PW. http://www.ncbi.nlm.nih.gov/pubmed/11835980

We also trust and hope that the panel will issue stringent guidelines to European governments to ensure that those whose health is currently badly affected can look forward to some 2 workable mitigation or removal of implicated turbines. Only then can future populations be protected from suffering the hell that has been inflicted upon some wind farm neighbours.'

The German Medical Assembly meeting in Frankfurt last year called on the German government to conduct urgent scientific research into reported noise issues.

It is crucial to stress the wind turbine's specific noise character. It is already known that the so called 'annoyance' level at 40 dBA from wind farms is comparable to 55 dBA from traffic noise, and this has recently been attributed in part to amplitude modulation by experienced acousticians such as Dr Geoff Leventhall (UK)[5], (8) Dr Paul Schomer (USA, former Director of Acoustic Standards) and Steven Cooper (Australia).

Wind turbine noise emissions comprise a number of features including a complex and vibrant sound mix, cylindrical sound propagation and refraction from the high levels, distinct peaks at the blade pass frequency, high proportion of infrasound and low frequency noise, and the sharp noise level in quiet areas especially during nights and cold seasons. *It highlights strongly that wind power sound has a very characteristic sound profile, and that this must be specifically considered in the new regulations.'*

And on animals:

A study of badgers notes the paucity of data existing with which to assess the effects of wind turbines noise on terrestrial wildlife, despite growing concern about the impact of infrasound from wind farms on human health and well-being. It features the stress hormone cortisol levels of badgers living in close proximity to wind turbines:

> *'We suggest that the higher cortisol levels in affected badgers is caused by the turbines' sound and that these high levels may affect badgers' immune systems, which could result in increased risk of infection and disease in the badger population'.*[6]

Another study on effects on pig-rearing in Poland was conducted to assess the effect of rearing pigs at three different distances from a wind turbine (50, 500 and 1000 m) on the physicochemical properties and fatty acid composition of loin and neck muscles. Avoiding noise-induced stress is important not only for maintaining meat quality but also for improving animal welfare.[7]

[5] http://parlinfo.aph.gov.au/parlInfo/download/committees/commsen/076b72db-0da0-4ca6– bffe–b0a0cea05550/toc_pdf/Senate%20Select%20Committee%20on%20Wind%20Turbines_2015_06_23_3580_Official.pdf;fileType=application%2Fpdf#search=%22committees/commsen/0_76b72db-0da0-4ca6-bffe-b0a0cea05550/0000%22

[6] Wind turbines cause chromic stress in badgers (Meles Meles) Journal of Wildlife Diseases, 52(3), 2016, pp. 000–000 _ Wildlife Disease Association. June 2016 Roseanna C. N. Agnew,1,2,4 Valerie J. Smith,3 and Robert C. Fowkes1 www.jwildlifedis.org/doi/abs/10.7589/2015-09-231

[7] 10.The effect of varying distances from the wind turbine on meat quality of growing-finishing pigs. Ann. Anim. Sci., Vol. 15, No. 4 (2015) 1043–1054 DOI: 10.1515/aoas-2015-0051. Małgorzata Karwowska, Jan Mikołajczak, Zbignie, Department of Meat Technology and Food Quality, University of Life Sciences in Lublin, Skromna 8, 20-704 Lublin, Poland www.wind-watch.org/documents/page/

Dr Mariana Alves-Pereira of the Lusofona University in Portugal has been researching vibroacoustic disease since 1980 initially focussed on the low frequency noise (LFN) that impacted aeronautical technicians. Late in 2013, she presented a case study from Portugal where a family had been exposed for seven years to LFN caused by the operation of nearby wind turbines. Testing showed the increase in LFN inside the home was associated with turbine operation. Medical tests showed the people who were living inside the home had impaired brain function in relation to responding to stimuli as well as their control of breathing. The syndrome is known as Vibro-Acoustic Disorder.[8]

[8] Vibroacoustic disease: Biological effects of infrasound and low-frequency noise explained by mechanotransduction cellular signalling. Progress in Biophysics and Molecular Biology, Volume 93, Issues 1–3, January–April 2007, Pages 256-279 Mariana Alves-Pereira, Nuno A.A. Castelo Branco www.sciencedirect.com/science/article/pii/S0079610706000927

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