

I object to this Project. It should not be approved. The EIS is flawed and inadequate.

My specific objections are outlined below. The proponent should be required to answer each of them.

Traffic and Transport

The external transport route in so far as it relates to the Yarrabin Road heavy vehicle route.

- Reported **existing traffic volumes** on the road are **NOT** for this section of the road – they relate to the sealed portion of the Yarrabin Road which is the light vehicle transport route. This section of the road, which runs through my farm, is not sealed, is largely unfenced, and is quite narrow. **Locals rarely see 5 or 6 cars a day.** The proponent has failed to bother to obtain accurate existing traffic volumes for this area of the local roads which will bear the primary impact of the traffic changes.
- The projected traffic volumes after construction are **way too low** even though they sit at 400 plus. The EIS contains no definite detail in relation to waste transport, sand, cement, water and aggregate much of which will pass over the heavy vehicle route. We can expect far more than 400 vehicles a day passing through our farm.
- The proponent has **not disclosed the major issue relating to the heavy vehicle transport route i.e.** that the existing road, which is a Council road (MWRC) is often not on the “paper” crown road. It was formed decades ago in this rural and isolated countryside over the most convenient route and not where the crown road should be. As the Department requires that transport routes occur on legal roads, this means **landowners or lessees (of which I am one) are potentially looking at the relocation of the roads which run through their properties.** The proponent should explain why this issue is not disclosed in the EIS.
- The proponent has **not obtained the consent of local landowners** (including myself) to access or to be on, private land for the road upgrade. **The EIS should not have been filed, and certainly should not be approved, until consents are obtained.** If this EIS is approved, I and my family, together with other local landowners, will remain in limbo in relation to our futures. This is the situation we have been in for the last three years. **It contradicts all of the Department’s guidelines concerning acceptable practices for proponents dealing with communities impacted by wind farm developments and it should be put to a stop now by not approving the EIS until these consents are obtained.**
- In addition to issues arising from the relocation of the crown road, some of the work to upgrade the road (the work of transforming a narrow dirt road into a safe, sealed road with bends removed, crossings upgraded etc.) will **require access to private land and the acquisition of either title or easement rights.** **The proponent has consistently refused to engage with landowners in relation to these matters in a meaningful or specific way.** The particulars of the heavy duty route have not altered since the Scoping Report was filed. The technical annexure to this EIS is three years old. But the proponent still finds that it is too early to deal with the impacted community. Perhaps this is because the proponent intends to get the Wind Farm approved and on sell it so that he won’t have to deal with the impacted community – they can remain in limbo.

- Both the relocation of roads and the upgrading and sealing of the road will have **extensive deleterious flow on effects for myself and other landowners.**

For myself, our farm will become virtually unworkable unless the road is fenced (to which the proponent does not commit), internal stock travel lanes for mustering are built to replace forty years of mustering along the now proposed heavy vehicle route and new dams are built to deal with the fact that stock will no longer have access to traditional watering spots. These matters have been ignored by the proponent at all times and are not considered in the EIS.

- There has been no Assessment of numerous impacts arising from the heavy duty route. Specifically -
 - Notwithstanding assertions to the contrary, there has been no adequate assessment of **the biodiversity impact** of the destruction of “*extensive clearing*” which will in fact be necessitated by the road upgrade. Apparently, EcoLogical were told of both proposed potential transport routes but at the time their apparent assessment took place the proponent did not know (and apparently still does not know) where the road will actually be located and the extent of the upgrade works required. **There is no evidence that any adequate assessment has occurred.**
 - There is no assessment of the impacts on **European heritage** of the road upgrade. There are a number of woolsheds and work sheds on the road which constitute an important part of the pastoral history of the Central West. There are also important ruins associated with the gold mining history at Yarrabin including the remains of an old stamper.
 - There is no assessment of the impacts on the **agricultural enterprises** through which the route runs including sheep breeding, goat breeding, sheep and cattle grazing, hay making, olive growing and olive oil production and garlic production. There is no assessment of the impacts on **animal husbandry and business practices** generally.
 - There is no assessment of impacts on residents and **residences**. The **road community has not been considered in the social impact assessment** in the EIS. Apparently the upgrading of the road from 5 or 6 vehicles a day to 400 plus, is not sufficient to make the road community part of the “*local context*” for consideration of social impacts.
- There has been no proper assessment of the **cumulative impacts** for landowners on the external transport route. The landowners who are not in immediate proximity to the windfarm have been disregarded for cumulative effects.
 In this way, the proponent escapes assessment of the cumulative impacts that this Project will have. **Many, if not most, of the landowners will not only have the impact of some views of the Burrendong Wind Farm and all of the impacts of its construction, they will be towered over by the Piambong Wind Farm to the East (estimates of dozens of visible turbines) and be able to view the Uungula Wind Farm to the West.** I personally will have wind farms to the south, east and west, wind farm traffic through the middle of my property and adjacent to the working sheds and stock yards. When the Burrendong Wind Farm construction is complete, the road will have the ongoing traffic from the

Phoenix Pumped Hydro Project which Andrew Wilson has stated will be using the Yarrabin Road for its construction also.

Engagement and Consultation

The proponent has failed to engage in accordance with the Guidelines, the Best Practice Charter for Renewable Energy Projects and Ark Energy's goals.

In relation to the heavy duty vehicle route:

- The proponent has specifically **not** engaged, or attempted to engage, with the residents and landowners on the heavy transport route in any general or comprehensive way. All residents and landowners along the route will be specifically impacted by the proposed changes but the proponent has not spoken to all of them **and is on record as having, prior to the exhibition of the EIS, ignored requests and communications from a number who have sought meetings.**
- Those to whom the proponent has spoken have **not** been kept “**well informed**” or “**up to date**” on developments. To the contrary, the proponent has consistently operated by advising landowners and residents that it is **uncertain of the impacts which the upgrades will have and cannot clarify them until the final road design is established.** This point is never reached.
- The External Route Study which is attached to the EIS is dated 1 December 2020. It is addressed to Epuron. The proponent has known **for over 3 years** that the Yarrabin Road Option 2 was inevitably going to be the heavy vehicle route for the construction of the wind farm as well as for all vehicles that were essentially other than light vehicles. The proponent has known for nearly the same period that MWRC requires the road to be sealed. **There is nothing in the EIS or its attached reports in relation to the road which has not been known to the proponent for a long time.** Notwithstanding sending drones over private property without permission from or notice to landowners, and despite being in receipt of detailed engineering reports in relation to the proposed upgrades, the proponent **consistently refuses** to tell residents and landowners what the likely scenario is for their property, what the implications are of that scenario, and what the time frame is for its development.

As long as the road issue remains unfinalized, landowners are left in limbo, not knowing how their business plans or their homes will be impacted and unable to move forward with either.

- **The proponent has not been transparent.**
The proponent has consistently **minimized** obvious significant impacts suggesting to road residents and landowners that these proposed works are minimal, and little more than a minor road upgrade. There are a number of residences very close to the proposed “minor road upgrade” and to the hundreds of vehicle movements which will occur when the road upgrade is completed.

Not only are none of these impacts considered in the EIS (see below), none have been admitted or discussed in dealings with landowners.

Nor has the proponent at any stage entered into meaningful or honest discussions with relevant landowners about the compensation to which they might be entitled for private land acquisition. A number of residents whose houses are right next to the road have been told “We’re not in the business of buying property.”

- **The proponent has not been honest and ethical in its dealings.** The proponent has made **false statements** to impacted residents about the development of the road and the processes relating to it.

There are a number of examples which could be provided. I would include amongst them, **filing an EIS based on false existing transport levels for the Yarrabin Road when the proponent and its employees have travelled the road and photographed the road** on many occasions over the last three years but have apparently failed to notice that there is virtually no traffic.

The major complaint is that **Andrew Wilson has deliberately misused the crown road issues to raise an innuendo that MWRC will resume private land against the will of landowners and by compulsory acquisition if no arrangement is reached between the landowner and the proponent.** MWRC has in fact repeatedly stated that this is **not** the case.

Mr Wilson’s comments in relation to the **potential compulsory acquisition of the road by MWRC are at best duplicitous.** They have been made to private landowners but also publicly. Mr Wilson told a public meeting that the “*position was complicated*” and that there were *discussions* with Council about “*compulsory acquisition.*” The innuendo was intentional and straightforward – **if residents didn’t agree to the access sought by the proponent, their land would be compulsorily acquired.**

When the heavy vehicle transport route was raised at a CCC meeting, Mr Wilson **repeated the lie** on public record saying that there had been *discussions* with MWRC about compulsory acquisition. When this led to the General Manager of MWRC protesting to the CCC, **the Minutes of the relevant meeting were altered.**

Mr Wilson’s conduct is such that **he has failed to meet any reasonable standard of honesty, transparency and ethical conduct required by the Department, by the Clean Energy Council and by Ark Energy itself.**

More generally:

- **The proponent has failed to engage with the site holders at the Cudgegong River Holiday Park.** The Wind Farm abuts this popular and much loved recreational area on the Burrendong Dam waters. It has existed, in one form or another, for many decades. It is a regular holiday area for many in the local community enabling access to a “beach,” swimming, fishing, boating and enjoyment of outdoor activities.

The proponent has publicly stated that it has engaged with the Park in relation to potential accommodation for workers.

Site holders at the Park however, have no knowledge of the project. Most have had their sites for many years. There are more than 240 unpowered

sites for caravans or campers. No steps have been taken by the proponent to ensure that these impacted members of the public are aware of the project.

- **Undertakings** given to residents in proximity to the windfarm in relation to carrying out **visual assessments have not been kept.**
Ark have consistently belittled the interests of landowners who do not live full time on their properties or have not obtained approvals for their accommodation.

Noise Assessment

1. All of the output predictions in Noise Assessments are based on a putative turbine model. The traditional rationale has been that there may well be changes in the models and types of turbines available to the developer when it reaches the tendering process associated with pre-construction. It has not been the practice of proponents to then consider the noise impacts of detailed design changes or turbine type. There is generally little or no consideration of a different turbine, layout, site effects, tonality or low frequency noise in the EIS.

The present EIS is a case in point. **The proponent makes no attempt to pretend that the WTG model will be known until well after the consent stages.**

“Flexibility” is apparently required (the absence of any firm detail) until well after the consent process has been completed. The proponent states that *“the Project described in this EIS is indicative only and subject to a detailed design process.”*

The Project was in fact “indicative only” at the Scoping Report stage. The community is entitled to expect that something more definite would form the basis of the EIS. Different models and different specifications are used for different assessments throughout the EIS. The sound power output, the hub heights for visuals and the calculation of ghg emissions are all based on different models. **The proponent should explain why this is the case.**

There can be **no certainty** or transparency in relation to any of the noise predictions contained in any given Noise Assessment because the chosen turbine for the project may be entirely different. It has also created the perception that this is yet another way in which proponents in general and Ark Energy in particular are not genuinely accountable for the noise impacts of the wind farm as the Assessment in any given instance may be unrelated to the ultimate project turbine.

It is undoubtedly the case that there are likely to be changes in models and types of turbines available to a developer post-approval. The wind industry is not unique as an industrial developer in facing this position. But it is a fraud on the communities surrounding wind farms if approvals are granted without the developer being required to demonstrate to the satisfaction of the EPA and the Department that **the projected sound levels of the chosen turbine are at or lower than the levels set out in the EIS.** The EIS is **required** to include completed technical studies including an accurate noise assessment. Little wonder communities despair when consideration of matters such as accurate sound power levels and tonality are relegated for consideration (compliance testing only) after approval.

The same reasoning applies to the wind farm **layout and turbine placement** – matters directly impacting on potential sound output.

The approval of the Burrendong Wind Farm must be conditional upon the proponent demonstrating to the satisfaction of the Department and the NSW

EPA that the sound levels of the chosen turbines in the finalized layout will be at or lower than in the EIS. This condition must be satisfied before construction can commence. It is not a compliance issue. It is a condition of approval.

2. "Flexibility" means that the chosen turbine for **emissions calculations** is the Vestas V112-3.3MW WTG. However, the chosen turbine for **sound power levels** is the EnVentus V162-6.2MW. **The proponent should explain why it has not attempted to provide ghg calculations for the same turbine it has chosen for its inputs into sound power levels. It should provide ghg calculations for the EnVentus V162-6.2MW.**
3. The EnVentus V162-6.2MW has a quoted sound power maximum which is **less than other wind turbines in the EnVentus range**. It is clearly possible that the selected sound power output may not in fact apply to the chosen turbine. **Without any commitment from Ark Energy that the installed turbine will be the V162-6.2MW then the sound power levels should be adjusted to reflect the largest wind turbine option that could be installed plus an uncertainty level of 2dB.**
4. Sound Power output predictions are able to be manipulated if they are not accurately applied to the actual conditions of the wind farm. SA 2009 explicitly states that a **conservative approach** should be used to determine the overall predicted level.

Sound output measurements for a particular turbine are carried out on a single turbine under pristine conditions with clean airflow. It is well understood that in reality, this is not the way the turbine will be operating. There will be "**site effects**" arising because the turbine is not placed on a flat plane and because it is not placed in a location isolated from other turbines. Turbines grouped in a wind farm mean turbulent air and this means a greater sound output. Turbines placed on ridges mean that the topography impacts the wind flow – the wind blowing up the hill and onto the blade increases the sound output. Site effects can alter the sound power plateau which may otherwise occur when wind speed increases and sound power levels can continue to increase rather than plateau.

As Professor Colin Hansen wrote in 2012:

"If you have turbulent inflow, due to terrain or due to an upwind turbine creating turbulence for a turbine that is directly downwind of it, and if you have several of these, the actual noise generated by the turbine is much greater than the noise that is used in the calculations. The noise that is used in the calculations is something the manufacturer provides, which they have measured on a turbine on flat ground and with no turbines upstream."

*.the effect on receiver noise levels of the sound power of the turbines reported by manufacturers not being representative of the actual sound powers generated at a particular site under worst case operating conditions should be required as part of the documentation which would affect the uncertainty of the noise predictions. **Wind farm developers should also be required to submit compliance data from other wind farms in similar terrain that show the difference between predicted and measured noise levels...."***

Time and time again, notwithstanding that SA 2009 requires a conservative approach, there is no proper consideration of the site effects at a particular wind farm and their impact on predicted sound output levels.

It is not possible in the present case, to have any certainty that the predicted output levels have taken account of relevant site specific effects. The ridge lines and valleys of the extensive wind farm area are complex. The information provided by Marshall Day in relation to relevant adjustments is insufficient to enable scrutiny to assess that the actual conditions of the wind farm are reflected in the noise modelling. There can be no confidence that the modelling is accurate. In the presence of this uncertainty, it should be assumed that a minimum 2dB increase applies.

5. SA 2009 (ISBN 978-1-876562-43-9) was updated by the South Australian EPA in November 2021. The ISBN number did not change. This has created a situation where **proponents choose those aspects of the input parameters which suit them**. The technical requirement of the Noise Bulletin is that the 2009 document is prescribed in NSW – not the document as amended or updated by other jurisdictions.

SA 2009 accepts the use of the CONCAWE noise prediction model and ISO9613-2. SA 2009 requires the application of “**hard ground**” (**zero ground factor**) as the input parameter for ground effect. In the two recent wind farm developments (Thunderbolt Wind Farm and Winterbourne Wind Farm), soft ground was used by Sonus as the input parameter. **This can typically make a difference of underestimating the sound level by 10dB or higher as there is reduced absorption with hard v’s soft ground.** The use of the soft ground input variable is directly contrary to the requirements of SA 2009..

Marshall Day have chosen to apply ISO 9613-2 and G=0.5 as the appropriate ground characterisation. This is strongly disputed. It does not accord with the Guidelines. SA2009 requires the use of hard ground (G=0%). The use of hard ground increases the predicted sound level significantly. The application of a UK practice is wrong.

6. SA 2009 has a section dealing with negotiated agreements with wind farm developers:

*‘The criteria have been developed to minimise the impact on the amenity of premises that do not have an agreement with wind farm developers. Notwithstanding this, the EPA cannot ignore noise impacts on the basis that an agreement has been made between the developer and the landowner. **Developers cannot absolve themselves of their obligations under the EP Act by entering into an agreement with a landowner.***

If it is shown that a development is having an ‘adverse effect on an amenity value of an area that ... unreasonably interferes with the enjoyment of the area’, then appropriate action can be taken under the EP Act.’

This requirement is quite clear and its effect is that there is an **obligation on developers to satisfy the planning authority that negotiated agreements deal with noise issues for hosts and non-associated land owners**. This requirement is typically dealt with by the developer asserting that there is an agreement in place. This bare assertion does not explain or address how any adverse noise impacts have been addressed.

It is not an answer for the developer to state that Negotiated Agreements are confidential. It is open for identities and commercial information to be protected

whilst still requiring the proponent to establish how adverse noise impacts have been addressed. Continuing to accept the developer's blanket assertion that "all is well because we have an agreement" is a breach of the Department's responsibility to assess the project in accordance with all applicable planning requirements.

Negotiated Agreements must demonstrate how adverse noise impacts have been addressed. The proponent has failed to satisfy this requirement.

Further, the proposed Guidelines clearly require that Negotiated Agreements outline **the nature of the impacts to which the landowner is agreeing**. Marshall Day wrongly state (and assume) that landowners with neighbour agreements have consented to any noise impact that occurs. This is not the case and their **Noise Assessment should be required to consider both the nature of the impacts which are consented to, and the adequacy of mitigation measures**.

7. As Marshall Day state, "there are limitations on the accuracy of the prediction method used" for the purposes of predicting low frequency noise. There can be no confidence in the calculation method. The proposed Guidelines state that appropriate care needs to be taken *as wind at microphone height can influence the measured levels. The performance of the selected microphone / wind screen combination needs to be considered so that data potentially affected by wind induced noise across the microphone can be excluded*. There is no information in relation to the selected microphone included.

Marshall Day have also failed to take into account, or give credibility to, relevant, recent Australian research concerning amplitude modulation and low frequencies. Research results in relation to AM are beginning to emerge from studies funded by the NHMRC and the Australian Research Council.

Research led by Flinders University studied three wind farms over one year using acoustical and meteorological measurements. It established that:

- AM noise occurs **two to five times more often during the night time than the day time**.
- AM worsens at sunset and at sunrise.
- AM can be detected for up to 60% of the night time at distances around 1 km from a wind farm and at 50% of residences within 2 km. **At greater than 3 km, amplitude modulation continued to occur for up to 30% of the night time**.
- Residents living downwind and cross wind were most impacted.
- There was an increase in AM depth in the data recorded indoors.

In addition to the emerging results from the Wind Farm Noise Study, in late 2017, there was fiercely contested litigation in the Commonwealth Administrative Appeals Tribunal involving the Waubra Foundation. Lengthy expert evidence, under oath and subject to cross examination, was given by Mr Christopher Turnbull (Sonus), Dr Bruce Rapley, Dr Robert Thorne, Mr Steven Cooper, and Mr William Huson (Les Huson & Associates) in relation to wind farm sound and infrasound. The findings of the NHMRC literature review, together with a Denmark literature review and Health Canada studies were examined in detail.

The Judgment, delivered by the Deputy President of the Tribunal, decisively concluded:

“(469) **The propositions which are supported by the preponderance of relevant expert opinion, and which we accept on that basis**, include the following:

- A significant proportion of the sound emitted by wind turbines is in the lower frequency range, i.e. below 20 Hz;^[358]
- The dB(A) weighting system is not designed to measure that sound, and is not an appropriate way of measuring it;^[359]
- The most accurate way of determining the level and type of sound present at a particular location is to measure the sound at that location;
- The best way of accurately measuring WTN at a particular location is through ‘raw’ unweighted measurements which are not averaged across time and are then subjected to detailed “narrow-band” analysis;
- When it is present, due to its particular characteristics, low frequency noise and infrasound can be greater indoors than outdoors at the same location, and can cause a building to vibrate, resulting in resonance;
- Humans are more sensitive to low frequency sound, and it can therefore cause greater annoyance than higher frequency sound;
- Even if it is not audible, low frequency noise and infrasound may have other effects on the human body, which are not mediated by hearing but also not fully understood. Those effects may include motionsicknesslike symptoms, vertigo, and tinnituslike symptoms. However, the material before us does not include any study which has explored a possible connection between such symptoms and wind turbine emissions in a particular population.^[360]

8. The Assessment of **impacts from construction traffic on the heavy vehicle route is fatally flawed and needs to be redone**. The assessment depends on increases in road traffic flows. As outlined above, the existing traffic flow for the heavy vehicle route has never been accurately recorded. The proponent has taken a generic figure for the Yarrabin Road (obtained from traffic figures recorded by MWRC from the sealed portion of the road) and wrongly applied it to the heavy vehicle route. On an average day, there are **less than half a dozen vehicles on the heavy vehicle route** and the bulk of these are local farmers moving between lots. The entire **traffic noise assessment is wrong**. The proponent should provide a corrected assessment based on actual existing traffic flows.
9. The Traffic Noise Assessment does not take into account a number of dwellings which are either within, or as good as within, **the traffic setback distances** required. These are homes in which families are living including families with children. They exist in reality, but apparently not for the proponent.

Other Matters

The loss of biodiversity from this project is huge. There will be a significant loss of koala habitat. The project should not be **approved without further and more detailed studies in relation to the koalas**. EcoLogical recorded the call of a male koala but concluded that there was no significant population or habitat. The community knows that the koalas live in the project area. They have been recorded at different times. By its own admission, EcoLogical was unable to cover much of the

relevant areas (which were attended only over the warmer months for a small portion of the year).

This project should not be approved. I reserve the right to add further material to this submission.

Margaret Conn