

Wind Farm Noise Monitoring Questions:

1. Who is Sonus and explain how it is an independent contractor when it is being paid by Someva/Wind Energy Partners Pty Ltd, and how long has it been incorporated for?

Wind Energy Partners (WEP) Response:

From Sonus's website:

“Sonus is an acoustic consulting firm based in Adelaide, South Australia. Sonus was formed by Chris Turnbull in 2002 to provide specialised consultancy services around Australia in the following areas:

- environmental noise
- building acoustics
- occupational noise
- vibration

Sonus enjoys a national reputation for delivering high quality acoustic advice for a range of major projects.”

Sonus have been formally engaged by WEP to complete an assessment which is compliant with the specific SEARS for The Project, the *Wind Energy: Noise Assessment Bulletin for State significant wind energy development December 2016* and the 2009 South Australian document *Wind farms – environmental noise guidelines*.

2. What other wind farm projects has Sonus monitored for?

Wind Energy Partners Response:

Sonus has significant experience in the assessment of Wind Farms, including:

Starfish Hill
Kemmiss Hill
Troubridge Point
Waitpinga
Snowtown II
Barunga
Clements Gap
Nalpa

Taralga (NSW)
Brown Hill Range
Badgingarra (WA)
Willogoleche
Nilgen (WA)
The Bluff Range
Yaloak Estate (Vic)
North Brown Hill

[Canunda](#)
[Carmody's Hill](#)
[Wattle Point](#)
[Barn Hill](#)
[Vincent North](#)

[Naroghid \(Vic\)](#)
[Mt Bryan](#)
[Ararat \(Vic\)](#)
[Hallett Hill](#)
[Woolsthorpe \(Vic\)](#)

3. Is Sonus contracted to offer both pre and post audio wind farm noise analysis?

Wind Energy Partners Response:

Per the response to Question 1, Sonus have been formally engaged by WEP to complete an assessment which is compliant with the specific SEAR's and inform the Environmental Impact Assessment for the project. Any additional noise assessment required post determination will be let at that time.

4. Has Sonus monitored for a wind developer that did not reach final construction?

Wind Energy Partners Response:

From the list of projects provided in response to Question 2, the following projects have not yet gone to construction at the time of response:

- [Kemmiss Hill](#)
- [Waitpinga](#)
- [Nalpa](#)
- [Carmody's Hill](#)
- [Barn Hill](#)
- [Vincent North](#)
- [Nilgen \(WA\)](#)
- [Yaloak Estate \(Vic\)](#)
- [Naroghid \(Vic\)](#)
- [Mt Bryan](#)

5. Can Sonus demonstrate whether the audio information that it has gathered for a wind farm developer ever contributed towards a wind project being rejected on pre-wind farm noise analysis?

Wind Energy Partners Response:

The noise monitoring and noise predictions regularly result in the initial layout for a wind farm exceeding the objective noise criteria. Where this occurs, changes must be made to the turbine model or layout, so that the objective criteria are achieved. Occasionally, these changes contribute to the wind farm no longer being viable.

6. Can Sonus demonstrate whether the audio information that it has gathered for a wind farm developer ever contributed towards the micro placement of turbines before a wind projects construction?

Wind Energy Partners Response:

As noted above, the noise monitoring and noise predictions regularly result in changes being made to the layout to reduce noise.

7. How will daily on-site construction noise affect a background noise reference point over a six-week monitoring period? What considerations will be made (if) landholders agree to be monitored for noise during a construction period? Can an alternative location, in proximity to properties be determined?

Wind Energy Partners Response:

The noise loggers will be deployed for a 6-week period to obtain baseline noise data and the existing environmental noise conditions for a given location. The noise logger's location on a property is ideally placed between the residence and the wind farm, and in consultation with the host landowner so that it is out of the way for landowners. It is not clear to if the "daily on-site construction noise" is referring to construction on the wind farm site or construction at the residence. If it is construction at the wind farm site, then the construction period is unlikely to coincide with the background noise monitoring. If it is construction at the residence due to works being undertaken at the time of background noise logging, then an alternate location (or time) might need to be determined in consultation with the landowner.

8. Please confirm that it will take a maximum of three hours over three separate visits during the six-week logging period, and will you arrange an appointment before arriving, as members have already had an unannounced visit?

Wind Energy Partners Response:

In consultations WEP have held with landowners on hosting noise loggers, WEP have proposed a single visit by a WEP or Sonus representative to check the correct operation of the noise logger during the logging period. In total we expect that installation a check and removing the device will take a maximum of 3 hours.

WEP will consult and agree with the host landowner on their communication and access requirements for undertaking the checks during the logging period.

We have contacted multiple neighbouring landowners with regards to hosting noise loggers, sometimes by contacting them via email or phone call (if we have these details), others by visiting their residence if no contact details were available.

9. Will landholders need to sign an agreement to receive the equipment and will signing this agreement be interpreted as being supportive of the wind farm proposal?

Wind Energy Partners Response:

Landowners will not be needed to sign an agreement to host a noise logger. Hosting a noise logger will not be interpreted as being supportive of the wind farm proposal. Landowner's may discuss this directly with Sonus if this is a concern.

10. Please explain how logging wind speed at a property contributes towards the wind farm noise monitoring results?

Wind Energy Partners Response:

The noise logging undertaken at a property is used to determine the background noise in the environment without the influence of any wind turbines. Where there is high wind speed at microphone height, there is the potential for the microphone to be influenced by the pressure of the wind directly on the microphone rather than noise in the environment. This effect is minimised by using large wind shields (foam microphone cover) but there is still the potential for wind on the microphone to influence the result for some periods. The measurements of wind speed at the residential property are used to identify these periods so that this noise is eliminated.

11. How does the audio data collection factor in the noise impact from the

proposed wind farm at a two-storey height when the equipment is mounted at ground level?

Wind Energy Partners Response:

The noise monitoring is used to measure background noise from sources such as wind in trees. As the distance between the noise sources (trees etc) and ground or upper levels is not significantly different, it is not expected that the background noise levels would be different. This is why the guidelines require microphones to be located between 1.2 and 1.5m above grounds.

12. Will Sonus be conducting a tonality test in accordance with a procedure acceptable to the EPA?

Wind Energy Partners Response:

A tonality assessment will be made as part of the noise predictions and the results will be included in the noise report. The noise report will be made publically available.

13. Will Sonus conduct a low frequency noise assessment exceeding 60 db(C) for non-associated residential receiver locations? Will the wind developer be made to explain to the public the results of this assessment?

Wind Energy Partners Response:

A low frequency noise assessment will be made as part of the noise predictions and the results of the predicted dB(C) level will be included in the noise report. The noise report will be made publicly available and WEP will offer consultation to the community on all aspects of the development application including the noise report.

14. Will Sonus predict the noise levels against the criterion at each integer wind speed for the closest non-associated dwellings to the wind farm project?

Wind Energy Partners Response:

The noise from the proposed layout will initially be predicted for all relevant noise sensitive locations and at each integer wind speed from “cut in” to full power and tabulated for review.

15. If tonality is found or expected to be a repeated characteristic of the wind turbine models proposed will Sonus or the wind developer make public the expected noise frequency impacts on each relevant receiver?

Wind Energy Partners Response:

Yes, as noted above, this will form part of the noise report, which will be made publically available.

16. What is the maximum sound power level of the proposed turbines and how will this calculation be made under the worst-case noise condition?

Wind Energy Partners Response:

The make and model of candidate turbines is still being considered. These details will be included in the noise report.

17. What are the tonal characteristics for the proposed wind turbine model?

Wind Energy Partners Response:

Per above, the make and model of candidate turbines is still being considered. These details will be included in the noise report.

18. What kind of additional studies are available that could elevate the summary of the environmental noise criteria for the project?

Wind Energy Partners Response:

We are unclear as to the intent of this question. If you can clarify what information is required, we will endeavour to provide a response.

19. What are the error margins in this kind of noise modelling?

Wind Energy Partners Response:

The inputs to the noise model are designed to be conservative, so that the worst-case level is predicted. That is, they are designed to predict the highest expected

noise level rather than the most likely. At other times, when worst case meteorological conditions are not encountered, the actual noise will be less than the predictions.

20. What land use zone will be applied to properties for determining the base noise level?

Wind Energy Partners Response:

In NSW all non-associated properties have a base noise level of 35 dB(A), irrespective of the land use zone. In Victoria and SA, a higher base limit of 40 is applied to most zones.

21. Is Sonus working from a current turbine layout to determine which receivers will actually be affected, and if not, describe the process on how this collected data from properties are later applied to the turbine layout?

Wind Energy Partners Response:

Yes, the noise modelling is being completed based on a preliminary turbine layout. This layout will be made available to the community in March. As per response to Question 5, the provision of preliminary layouts provides the opportunity to determine where the layout can change to minimise noise levels on sensitive receptors and provide results that have been considered for the layout.

22. Will landholders have access to the logged information generated from their property and can this information be interpreted for them?

Wind Energy Partners Response:

As noted above, the noise data collected from the noise loggers will be included in the noise report, which will be made publicly available. If landowners would like the raw data collected from the noise loggers, this information can be made available along with an explanation of the data collected.

23. Will landholders have access to the nominated ambient background noise level for their property and can this be made public?

Wind Energy Partners Response:

Yes, the noise report will be made publicly available and will include the ambient background noise level where this has been recorded via a noise logger.

24. How long has this method of testing, with this type of audio equipment, been around for?

Wind Energy Partners Response:

Sonus has been conducting noise monitoring since 2002 but has been continually refining the equipment and methodology to improve the accuracy.

25. Are there other more modern methods available to collect wind farm monitoring noise?

Wind Energy Partners Response:

The improvements incorporated in the proposed equipment and methodology include:

- Oversized wind shields to minimise noise on the microphone;
- Measuring wind speed at microphone height;
- Only using Class 1 noise monitors;
- Collecting 6 weeks of data;
- Using equipment with a noise floor no greater than 20 dB(A).

The proposed methodology represents the most contemporary method of noise monitoring.

26. Has any contemporary scientific research been produced since the 2015 National Health and Medical Research Council conducted its 2015 assessment of the effect of windfarms on human health?

Wind Energy Partners Response:

Yes, the WHO released recommendations specifically for wind farms in 2018. Compliance with the NSW criteria will also result in the WHO recommendations being achieved.

27. Will noise monitoring include HOGPI's original request to increase the audio and visual assessment zone from 3km to 10km?

Wind Energy Partners Response:

The audio assessment zone has been selected by Sonus in accordance with the requirements of the SEAR's and the NSW wind energy guidelines and adopted criteria, with input from WEP on key locations of interest to the community based on the results of consultation completed to date. There are receptors located at a distance of 7.1km from the nearest turbine which was at the request of WEP following consultation with the community. WEP requested an additional 60% (3) noise loggers be deployed for neighbours and points of community interests following consultation.

28. How is it decided who receives an audio monitoring logger and will everyone within the 3km impact zone receive one and explain how you collate noise impact data if you have very few relevant receivers that want to have loggers on their property?

Wind Energy Partners Response:

In ideal circumstances, the background noise would be monitored at the closest non-associated residence in each direction around the proposed wind farm. Where this occurs, there is the greatest confidence that the criteria are achieved at all non-associated residences because the noise (from the wind farm) at more distant residences will be lower than the noise at the closest residence in the same direction.

If permission to conduct noise logging is not granted at the closest residence in a particular direction, then the next closest residence in that direction would be used as a proxy. Where this is the case, no compliance logging could be conducted at the closest residence as background noise logging prior to construction is required for comparison.

Where the second closest residence in a particular direction is not available, the third closest is used etc.

As above, WEP requested additional loggers at community locations and for neighbours concerned regarding noise impacts.

29. How will you mitigate C-weighted noise levels at each receiver, as wind at microphone height can influence the background noise?

Wind Energy Partners Response:

The C-weighted noise levels will be predicted based on the manufacturer's data to determine if the level exceeds 60 dB(C). Where the level exceeds 60 dB(C),

changes will be made to the layout or turbine model reduce the low frequency noise.

The influence of wind on the microphone will be minimised by using oversized wind shields and removing data periods where wind on the microphone might have influenced results.