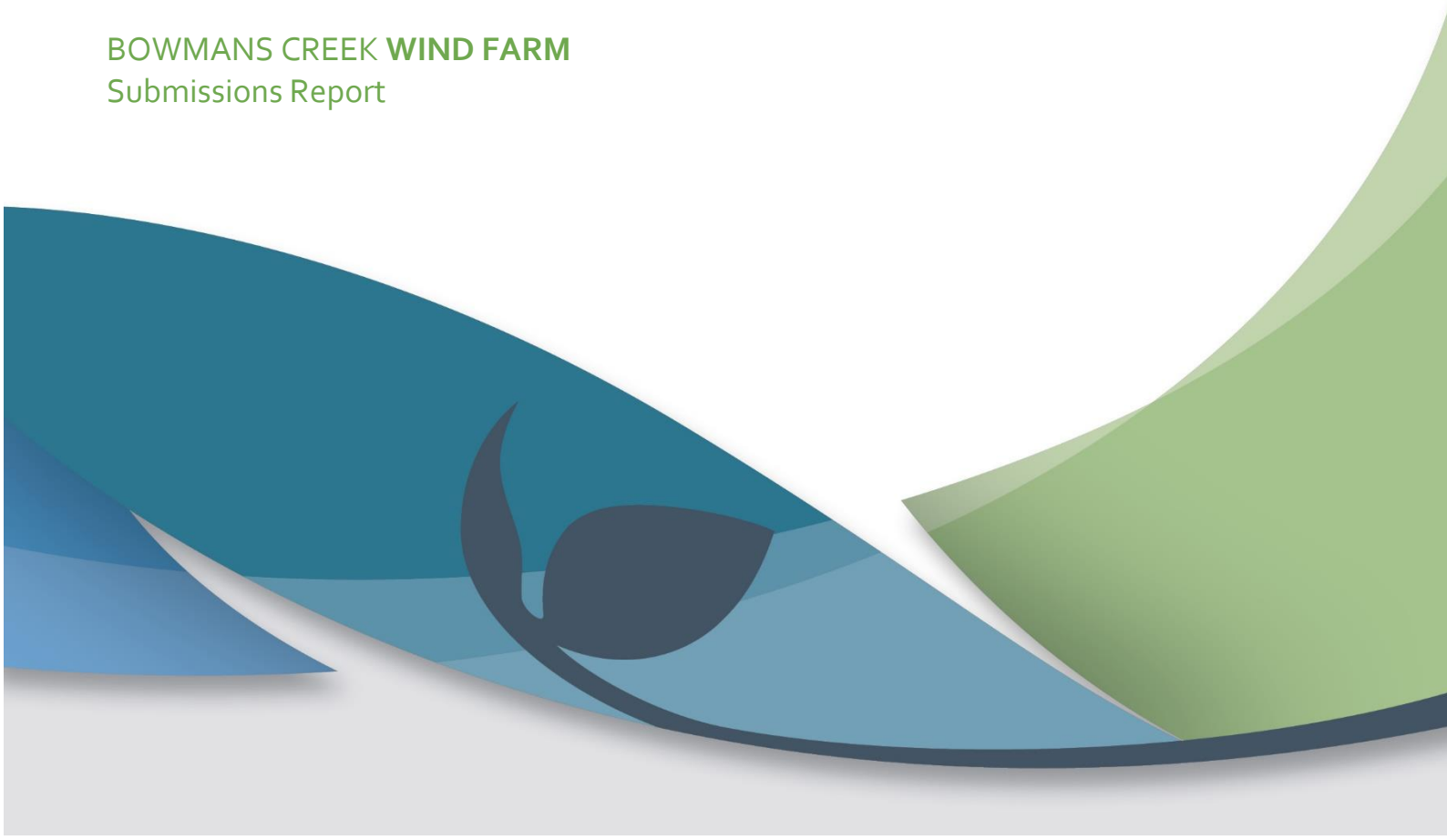


APPENDIX E

RESPONSE TO PUBLIC SUBMISSIONS

RELATED TO NOISE

BOWMANS CREEK WIND FARM
Submissions Report



Bowmans Creek Wind Farm

Response to Public Submissions Related to Noise

S6150C10

August 2021

sonus.

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BACKGROUND

A noise and vibration assessment was made for the proposed Bowmans Creek Wind farm and summarised in Sonus report with reference "S6150C9" dated February 2021 (**the Sonus Assessment**). The Sonus Assessment was included as part of the *Environmental Impact Statement* (EIS) prepared for the development application.

It is understood that since the Sonus Assessment, the turbine layout has been modified to reduce the number of turbines and for micro siting. As a result, the noise from the wind farm is expected to be similar to or lower than the noise levels detailed in the Sonus Assessment.

Public submissions were made in response to the proposed Bowmans Creek Wind farm and EIS. This report provides responses to the public submissions relating to noise based on the predictions in the Sonus Assessment.

RESPONSE TO PUBLIC SUBMISSIONS

Public Submission 60/61

P60 "I have a son who is vision impaired and has heightened hearing, so from all reports I have read there is a lot of noise associated with the turbines this would make my ten year old very unsettled and be up all night irritable due to the noise so we strongly object to this, and hope the decision not to go ahead is chosen.

P61 "Our son who is turning 10 in May was born with Optic Nerve Hypoplasia. He has also been diagnose with autism as well. His hearing sensors are very fragile. Some noises he loves and some he just can't bare. He cant see anything so noises is what he gauges off. We moved to muscle creek so he could enjoy the beautiful nature noises of the country. Hearing all the birds and other animals making noises puts a smile on his face. He also relies a lot on smell but sound is what directs him in life. We brought our property not knowing anything about the proposed windfarm. Nothing was mentioned in our sale. Hearing the nature noises of the beautiful environment of muscle creek i believe is great for his mental health. Our son will most likely grow old with us. He won't be like our other children and get jobs and move out of home. He will be with us forever. I do not want my son growing up in muscle creek having to live with noises coming from the proposed wind farm. The muscle creek environment is great the way it is. The sounds of the Wedge tail eagles flying over out home and the trees moving from the wind passing down the valley. These are the noises my son use to put a image in his brain of what it is."

Response

It is understood that the house that relates to public submission 60 and 61 is located 4km west of the wind farm (**the Residence**).

Although the noise at the Residence was not specifically identified as part of the Sonus Assessment, the noise was predicted for a cluster of houses, close to the Residence. The closest house assessed in the Sonus Assessment was "E17-3", which is 220m south-west of the Residence.

Background Noise in Environment

Background noise levels were measured at a range of locations surrounding the wind farm to determine the noise levels in the environment prior to construction. The two closest noise monitoring locations in the vicinity of the Residence were “G15-3” and “G17-1”. The results of the noise monitoring at these locations is shown below (from Appendix C of the Sonus Assessment).

Figure 1: G15-3 Background Noise Regression Curve.

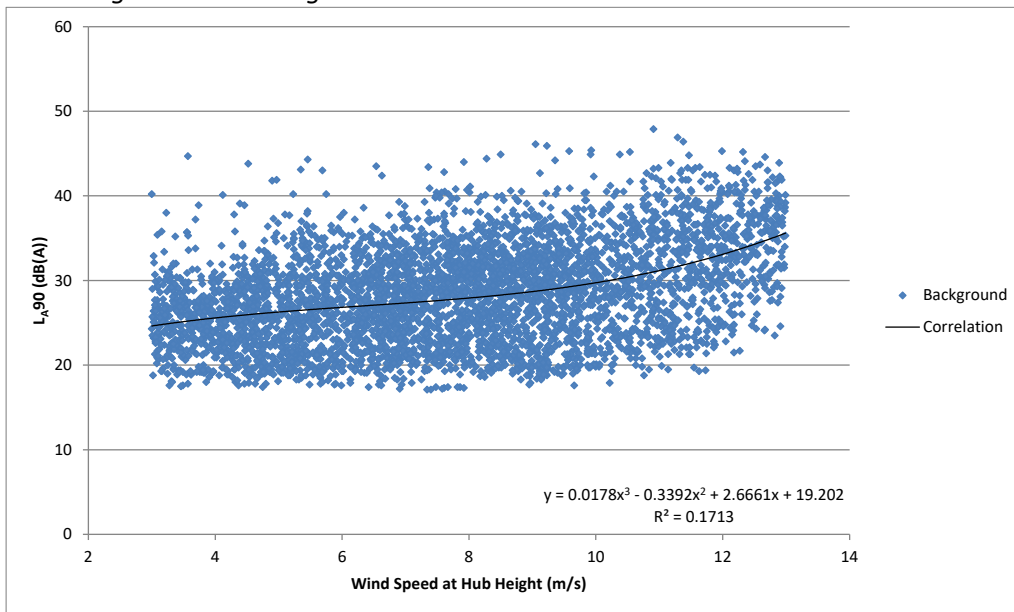
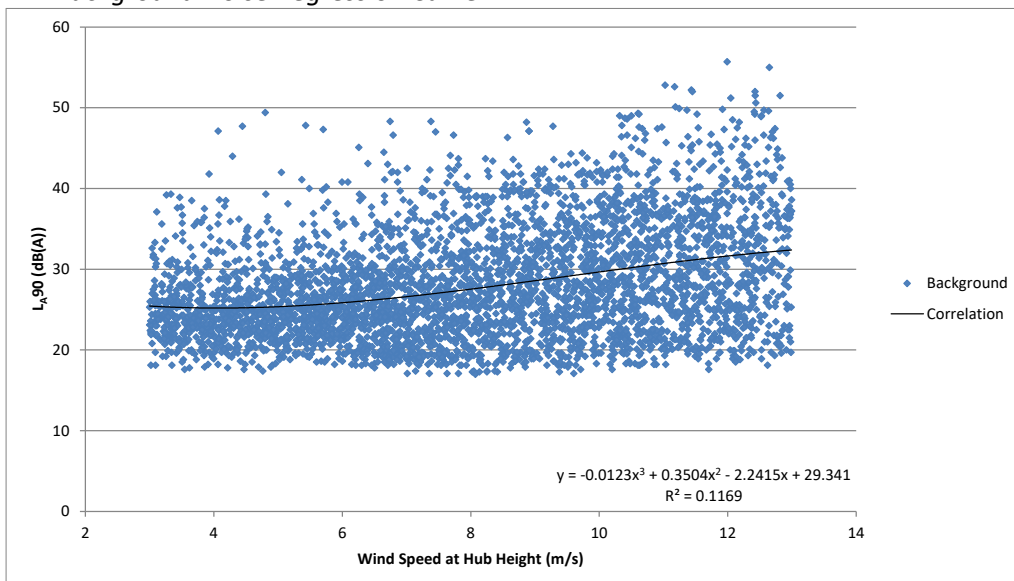


Figure 2: G17-1 Background Noise Regression Curve.



The results of the noise monitoring at these locations indicates that the external ambient noise in the environment will vary, with noise levels often between 20 and 30 dB(A) at the lower wind speeds, with the noise often increasing above 30 dB(A) at the higher wind speed.

Noise from the Wind Farm Operation

The New South Wales Planning and Environment *Wind Energy: Noise Assessment Bulletin (the Bulletin)* provides noise criteria that apply to the assessment of operational noise from the wind farm.

The most stringent requirement (lowest allowable noise level) provided by the Bulletin is an external noise level of 35 dB(A).

The external noise level from the operation of the wind farm at the Residence is predicted to be as follows:

Wind Speed (m/s)	3	4	5	6	7	8	9	10	11	12
Predicted Noise Level dB(A)	14	15	15	18	21	24	25	25	25	25

The above levels easily achieve the 35 dB(A) noise requirement of the Bulletin at all wind speeds.

It is also noted that the predicted noise levels are at the lower end of the noise levels measured in the ambient environment. It is therefore expected that the noise from the wind farm will be masked by the ambient noise in the environment most of the time, with the wind farm being audible only occasionally.

The noise levels in the Residence from the wind farm would be approximately 15 dB(A) lower than the external noise values in the table above, when windows are open. That is, the noise level within the Residence is expected to be 10 dB(A), or less. A noise level of 10 dB(A) within the dwelling is unlikely to be perceptible/audible often.

Noise from Construction

The New South Wales Department of Environment & Climate Change *Interim Construction Noise Guideline (DECC 2009)* provides noise criteria that apply to construction noise.

The most stringent requirements (lowest noise levels) provided by the DECC 2009 are an external management noise level of 45 dB(A) for “standard hours” (Monday to Friday between 7 am and 6 pm, and Saturday between 8 am and 1 pm); and an external management noise level of 35 dB(A) outside of the above “standard hours”.

The construction noise will vary during the project, with the highest external noise level from construction predicted to be no greater than 35 dB(A) at the Residence.

Further to the above, it is understood that the construction activity will typically occur during the “standard hours”.

Based on the above, the requirements of DECC 2009 could be achieved for continuous construction during the day and night at the Residence, even though construction is unlikely to occur outside of the “standard hours”.

Public Submission 120

120 "A 2012 report by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) entitled 'Exploring community acceptance of rural wind farms in Australia: a snapshot' indicated that the 'van den Berg effect' has been raised as a concern for Australian wind farms, and has been accepted in a NSW judgement that it is 'reasonably possible' that it may also occur in the Australian context (page 37). This effect is described as a 'thumping' noise which occurs on some cold, still, winter nights, owing to a temperature inversion between the extremes of rotor tip extension (page 36). The report comments that this effect appears 'to have been underestimated in previous extrapolations of daytime measurement data' (page 36). It is not clear from the 03 APP I Noise and Vibration Assessment whether this effect has been taken into account."

Response

The New South Wales Planning and Environment *Wind Energy: Noise Assessment Bulletin (the Bulletin)* provides the relevant noise criteria for the assessment of operational noise from the wind farm.

The Bulletin was published in 2016, following the issue of the CSIRO report and the Judgment, with full knowledge of the "Van Den Berg effect". On the basis of that knowledge, the criteria were developed taking into account for the fundamental operating characteristics of a wind farm, including noise associated with the rotation of the blades in temperature inversion conditions.

The noise criteria of the Bulletin are therefore considered to provide a suitable assessment, taking into account the fundamental characteristics of noise from a wind farm.