



Appendix K: Noise Response to Submissions Report

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RYE PARK WIND FARM RESPONSE TO SUBMISSIONS RELATING TO NOISE

Sonus previously prepared an environmental noise report (**the Report**) to accompany an application to modify the approval for the Rye Park Wind Farm to increase the tip height. A number of submissions have been received in response to the modification application. This letter addresses the submissions related to noise.

EPA SUBMISSION

Modifications are generally a supplementary process whereby the existing conditions of approval are retained and new conditions relating to the modification introduced if and as required. The exception to this would be where the modification relates to a request to modify an approved condition.

In this circumstance, the EPA has requested the full retrospective implementation of the *Wind Energy: Noise Assessment Bulletin* (**the Bulletin**). Specifically, the EPA noted:

In summary, the EPA recommends that the correlation between the modified hub height wind speed and background noise level at the receiver be re-examined. The EPA also recommends that the Department of Planning, Industry and Environment consider whether the Wind Energy: Noise Assessment Bulletin (NSW Planning and Environment, 2016) should be applied in full to the modification, or whether Condition 11 of SSD-6693 would require consideration of special noise characteristics as defined in the Bulletin.

As a result of the submission, background noise levels have been re-correlated with wind speed, referenced to a hub height of 119m. This hub height is likely to be close to the final selected hub height but the final hub height will be dependent on the final turbine selection, which will result from a competitive tender. In addition, further background noise monitoring has been conducted. The re-correlation analysis and the

analysis of the additional monitoring has been summarised in a Background Noise Monitoring Report (reference S3200.1C3). A revised environmental noise report (**the Revised Report**) has also been prepared (reference S3200C19) to ensure consistency with the Background Noise Monitoring Report.

It is understood that Condition 11 will be replaced as part of this Modification to make it align with the Bulletin. The table of criteria in Condition 11 is likely to be replaced with more general criteria (as stated in the Bulletin), which will remain valid for any hub height. It is understood that there will also be a requirement for a further revision to the Environmental Noise Report, to be prepared when the final turbine selection is made. The final table of criteria may then be included in any EPA Licence for the wind farm.

Ultimately, the existing approval sets objective noise limits which are equivalent to the Bulletin. These objective noise limits will not be materially changed if the proposed modification is approved.

WATTLE VALE SUBMISSION

A submission was provided by the owner of Wattle Vale, which included a review of the Report, prepared by Les Huson. Each of the noise related issues raised has been addressed below:

Non-compliance

The submission suggests that the noise modelling results in the noise from the wind farm exceeding the criteria of the Bulletin. Specifically, the submission includes:

The proponent should not be permitted to modify the proposal so as to exceed state-wide standards designed to protect rural communities from the adverse impact of wind farm noise.

The Bulletin provides the state-wide standards designed to protect communities from adverse noise impacts. With the implementation of the curtailment regime, the Report concludes that the criteria of the Bulletin will be achieved. It is expected that there will be a requirement for compliance monitoring to be conducted during operation to confirm in-situ operational compliance with the Bulletin.

Curtailment strategy

The submission suggests that a curtailment regime is not an appropriate method of controlling noise.

It is common for wind farms and other developments to incorporate acoustic treatments and restrictions (such as the proposed curtailment regime) to ensure that the relevant criteria are achieved. Ultimately, the wind farm will be required to demonstrate compliance with noise monitoring conducted during operation.

Increase in noise compared with approved proposal rather than criteria

The submission has requested a comparison of the noise from the approved proposal in comparison with the current proposal.

The existing approval sets objective noise limits which are equivalent to the Bulletin. These objective noise limits will not be materially changed if the proposed modification is approved.

Construction Noise

The submission suggests that an increase in size of turbines will result in an increase in construction noise.

Sonus has conducted monitoring of construction noise for several wind farms with a range of turbine sizes. These measurements indicate that the noise levels are very similar and not dependent on the turbine size.

The submission also includes:

Construction noise impacts have been assessed with tables of predicted construction noise levels being listed in Table 8 of the Sonus report of March 2020. However, it is difficult to review these predictions when sound source locations, sound power levels and noise model have not been described. The noise impact assessment for the selection of a Preferred Transport Route has not been considered in the Sonus report.

The purpose of the construction noise section of the Report is to demonstrate that reasonable outcomes can be achieved and to provide a framework for a construction noise management plan to be prepared. The construction noise management plan will be developed within that established framework when the construction methodology and location of all noise sources is known (through the successful contractor). The framework has been established to ensure that the *Interim Construction Noise Guideline (2009)* is achieved.

The Report has been updated to include an assessment of the noise from the preferred transport route.

Noise model

Concern has been raised regarding the inputs to the noise model. In particular, Les Huson states, “The use of $G=0.5$ and an alternative 4m receiver height in the noise modelling is inappropriate and the justification for its use by Sonus Pty Ltd is found to be lacking.”

The inputs to the noise model are based on the *Good Practice Guide* prepared by the UK Institute of Acoustics (IOA), following an extensive study to determine the most appropriate model and parameters.

Sonus has previously used the same inputs to the noise model for many wind farms. Subsequent compliance monitoring for these wind farms has indicated that the noise model is appropriately conservative.

For reference, the same parameters were used by Sonus when predicting the noise from the proposed Allendale Wind Farm and the same concerns were raised by Mr Huson. After considering the evidence, the South Australian Environment Resources and Development Court found¹:

In cross-examination, Mr Huson accepted that some of his criticisms, of the so-called shortcomings of the ISO model, were not justified.

and

In the circumstances, we reject the evidence of Mr Huson. We accept the evidence of Mr Turnbull that the proposed wind farm will not exceed the noise levels set out in the 2009 Guidelines and that it will be acceptable, in terms of its noise impact, on those living in the locality.

¹ Paltridge & Ors v District Council of Grant & ANOR [2011] SAERDC 23

Amplitude modulation

The submission raises concern regarding amplitude modulation.

Amplitude modulation is an inherent characteristic of wind turbine noise and has been taken into account when determining the criteria in the Wind Energy Noise Assessment Bulletin.

Influence of upwind turbines

The submission includes:

The noise model used to prepare data for the Sonus report does not account for site conditions such as inflow turbulence from other upwind turbines. These effects can increase sound emissions from wind turbines to an extent largely determined by the proximity of the wind turbines to each other. Inclusion of these effects will further exacerbate the degree of noncompliance with permitted noise limits.

Cooper and Evans² conducted noise measurements of a turbine which was influenced by the wake of an upwind turbine. The paper concluded, “the data gathered as part of this assessment does not support the proposition that the wakes of adjacent turbines will increase the level of noise emissions from wind farms”.

Compliance

The submission includes:

I do not give any weight to wind turbine noise guarantees and suggest that it is preferable to rely upon conditions that require robust assessment against licensed noise limits.

The current conditions include requirements for robust compliance monitoring.

² Cooper J and Evans T, “Influence of upwind turbines on wind turbine sound power output”, Australian Acoustical Society Proceedings of Acoustics 2012

Modelling of final turbine selection

The submission includes:

The extant Schedule 3 Environmental Conditions do not require any noise prediction modelling to demonstrate compliance with approved noise limits if a different turbine to the candidate is used.

Although the existing conditions do not require further noise modelling, it is understood that any modification is likely to include a requirement for the noise from the final turbine selection to be modelled with the results provided to the authorities prior to construction.

Notwithstanding this, in practice, the wind farm will be subject to a range of procurement and compliance monitoring requirements to ensure compliance with the Bulletin.

Ancillary equipment

The submission includes:

Ancillary equipment attached to and part of each wind turbine can operate below cut-in wind speed at the Rye Park Wind Farm that is not covered by the WENAB and operational noise limits in Condition 11. I recommend that a target noise limit from any such ancillary equipment be included with those applicable to ancillary infrastructure noise conditions in Condition 12.

The Bulletin includes noise criteria for ancillary equipment and these are incorporated in the current conditions.

CUMULATIVE NOISE FROM THE BANGO WIND FARM

Other submissions raised the potential for the cumulative noise from the Bango Wind Farm and Rye Park Wind Farm to exceed the objective criteria of the Bulletin.

Any residence with the potential to experience noise from both wind farms is located between the two wind farms with Bango to the west and Rye Park to the east. In these circumstances, with the wind blowing from the east, there will be no significant contribution of noise from Bango Wind Farm and with the wind from the west there will be no significant contribution from Rye Park Wind Farm. That is, the cumulative noise from both wind farms will not increase overall noise levels above the individual criteria applicable to both wind farms.

Notwithstanding the above, it is noted that the criteria in the Bulletin have been specifically developed to apply to an individual wind farm.

Yours faithfully
Sonus Pty Ltd



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