

Sunday, 28 February 2021

Project number: n/a

Reference: *DELWP Changes to the regulation of wind farm noise* – Consultation response

Department of Environment, Land, Water and Planning
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To whom it may concern,

Proposed changes to wind farm noise regulation Response to request for feedback

Thank you for the opportunity to provide comment on the proposed changes to wind farm noise regulation in Victoria. We recognise that changes to the regulation are required to give certainty to various stakeholders following the commencement of the new *Environment Protection Act 2017*.

1 About Resonate

Resonate Consultants (Resonate) is a leading provider of acoustic consulting services in Australia, headquartered in Adelaide. Resonate provides a full range of acoustic services for wind farm projects, including:

- Pre-construction noise assessments for planning applications.
- Pre-construction noise monitoring to establish baseline noise levels and noise limits.
- Noise predictions and mapping.
- Post-construction monitoring and assessment.
- Tonality and amplitude modulation assessments at residences.
- Turbine sound power and tonality assessments to IEC 61400-11.
- Peer or due diligence reviews for various stakeholders.
- Expert evidence.
- Community consultation regarding wind farm noise.

The Resonate team has also undertaken significant research into the measurement, modelling and prediction methods for wind farm noise assessments. This research has been referenced in the UK Institute of Acoustics *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*, and our amplitude modulation assessment methodology was drawn upon during the development of the standardised Institute of Acoustics methodology.

In recognition of their work in the field of wind farm acoustics, Resonate's staff were awarded the Australian Acoustical Society's 2013 Award for Excellence in Acoustics. This award recognised the development of an objective method for a long-term assessment of tonality at wind farms, which provides detailed information on the times and conditions under which any tonality occurs.

2 Comments on the proposed changes

2.1 Proposed approaches

Of the three approaches proposed for regulation of wind farm noise under the *Environment Protection Act 2017*, we agree that the direction regulation approach (Option 2 in the Fact Sheet and Option 1 in the Regulatory Impact Statement) is the preferred approach as it provides greater certainty to all stakeholders. However, we are of the opinion that changes should be considered to the proposed package of requirements as per our comments below.

2.2 EPA Victoria Guideline

Under the new system, New Zealand Standard (NZS) 6808:1998 and NZS 6808:2010 will be reinforced as the relevant compliance standards for wind farms in Victoria, with the 1998 version only applying to those wind farms which have that version referenced in their Permit.

Both versions of NZS 6808 have areas of ambiguity including, but not limited to, items such as:

- the application of high amenity zones, as described in NZS 6808:2010, in a Victorian context
- alternative approaches to noise compliance assessments where access to a background noise monitoring sites are not available or where the background noise is unknown or may have changed
- the use of wind speed data as part of the noise assessment
- methodologies to assess and, if they occur, apply penalties for special audible characteristics.

Currently, various approaches may be applied to these aspects depending on outcomes of the planning permit application process. Given a key purpose of these proposed changes is to provide certainty, this change to regulation provides an opportunity to provide greater clarity and consistency on these aspects.

The Regulatory Impact Statement notes that Environment Protection Authority (EPA) Victoria would become responsible for enforcement and would issue a guideline to support the proposed Regulations. It is assumed that this EPA Victoria Guideline would be the logical place for these areas of ambiguity to be clarified and to provide a consistent approach.

It is noted that the EPA Victoria Guideline is not otherwise referred to in the fact sheet or in the Regulations so clarity is required on this item as it would form an important part of the framework for regulation. Any such guideline would be an important part of the new regulatory scheme and should undergo a consultation process. Given that it would essentially come into effect on 1 July 2021, it is important that this guideline be released for consultation as soon as is practicable.

Recommendation summary:

The EPA Victoria Guideline referred to in the RIS should be released for consultation as soon as is practicable.

2.3 Reasonableness of periodic noise testing

The proposed Regulations include a requirement for every wind farm to undergo a noise assessment every five years in accordance with the relevant version of NZS 6808:1998 to 'demonstrate whether or not the facility complies with the noise limits.'. In effect, this would require a site that is 10 dB below the relevant noise limits to undergo a noise assessment as much as it would require a site that is 1 dB below.

A key aspect of the new general environmental duty under the *Environment Protection Act 2017* is to minimise risk so far as is reasonably practicable. As per the industry guidance provided in EPA Victoria Publication 1714.1:

Reasonably practicable means putting in controls that are proportionate to the risk.

It is our view that the proposed Regulations around periodic testing, as drafted, do not imply a proportionate response to managing ongoing compliance with the noise limits.

It is important to note that NZS 6808:2010 already includes an element of risk assessment for determine if noise compliance monitoring is required, with Clause 7.6.1 stating:

For all noise sensitive locations predicted to receive a wind farm sound level of 35 dB or less it should be assumed that the wind farm will comply with the noise limits.

A reasonable literal interpretation of NZS 6808:2010 could be made to say that wind farms in Victoria with predicted noise levels lower than 35 dB at all sensitive land uses do not in fact need to undergo post-construction noise monitoring at any time. However, in reality, post-construction noise monitoring of these wind farms does occur to provide confidence to various stakeholders. The current draft of the Regulations similarly implies that noise monitoring will be required for all wind farms regardless of the presence, or otherwise, of noise sensitive land uses within the 35 dB contour.

We consider that a more reasonable approach, consistent with the intent of a proportionate response to risk management, would be for EPA Victoria to retain the ability to request a wind farm operator conduct updated noise monitoring, where they consider this an appropriate response to noise complaints or for any other reason. This would be similar to how EPA Victoria interacts with other industries with respect to noise management and has the advantage that a complaint which is deemed to warrant additional testing may be responded to faster than if fixed five-year testing intervals are imposed.

If the Regulations are to retain a requirement for periodic noise compliance assessments on a regular basis (i.e. every five years), it is recommended that 131F(3)(a) of the Regulations be modified such that periodic noise reports be provided in accordance with the Noise Management Plan that will be developed under 131D of the Regulations. This would allow the Noise Management Plan to take a risk-based approach to establishing what level of assessment needs to be undertaken for each site. It is noted that the proposed Regulations state that the Authority can require the operator to make amendments to the Noise Management Plan, such that this risk assessment process would be subject to appropriate regulatory review.

Recommendation summary:

The current proposed blanket periodic noise testing requirement for all wind farms is not considered a proportionate response to managing the risk of noise compliance.

Instead, it is recommended that EPA Victoria retain the ability to request updated noise compliance testing when they deem it a necessary response in a similar manner to the way they interact with other industries.

Alternatively, if the Regulations are to retain a requirement for periodic noise compliance assessments, it is recommended that 131F(3)(a) of the Regulations refer to the approved Noise Management Plan for this testing under Clause rather than NZS 6808. This would allow the Noise Management Plan to set forth a proportionate response to this requirement for each site.

2.4 Practicalities of periodic noise testing

There can be significant practical issues associated with periodic noise testing for wind farms that can make it difficult to assess noise compliance when there are extended gaps in time between the background noise monitoring period and the operational noise monitoring period.

The primary issue relates to changes in background noise levels between the pre-construction noise survey and the operational noise survey. The standard NZS 6808 assessment methodology essentially assumes that background noise levels remain the same between the periods. However, if changes occur, then it may not be possible to accurately determine the wind farm noise level at the measurement location. If the background noise levels increase by 5 dB at any wind speed, then the noise levels may appear to be non-compliant when compared to the pre-construction noise levels, regardless of any contribution from the wind farm.

The Regulatory Impact Statement appears to assume that changes in background noise are rare but, based on our experience, changes in background noise are relatively common even over periods of less than five years. Background noise levels are influenced by sources in the local environment around a monitoring site, including local vegetation. Given this, it is likely that changes in background noise at a monitoring site will become more significant if operational noise monitoring is occurring 10, 15 or 20 years after the original pre-construction noise monitoring occurred.

When a change in background noise occurs or is considered to occur, it is generally not considered a proportionate response to organise a shutdown of the wind farm to remeasure background noise. Instead, one or both of the following methodologies would typically be employed to assess whether compliance is being achieved with the noise limits:

- **Intermediate location testing:** Intermediate location testing involves measuring the wind farm noise at a location (typically a cleared paddock with little or no local vegetation) that is significantly closer to the wind farm than the relevant dwelling. Because the wind farm noise level is increased relative to the dwelling and the background noise is typically low, the wind farm noise level can be more clearly measured. The intermediate location would also have a higher noise limit set for it, that corresponds to the noise limit at the dwelling plus the predicted difference in wind farm noise levels between the two locations. It is noted, however, that while the noise measurement and assessment methodology at the intermediate location is effectively the same as that required by NZS 6808, intermediate locations are not explicitly referenced as a noise compliance test methodology in either NZS 6808:1998 or NZS 6808:2010.
- **Attended on/off testing:** Attended on/off testing is an alternative compliance test methodology that is referenced in NZS 6808:2010. It involves undertaking attended measurements under suitable wind conditions, before switching the wind farm off and measuring the background noise level, allowing the wind farm contribution to be determined. The concerns with attended on/off testing are that it can be difficult to schedule appropriately, particularly for large sites where there may be multiple dwellings around the wind farm in different directions, and also requires coordination to shut down part or whole of the wind farm at appropriate times. NZS 6808:2010 itself notes that on/off testing is typically better suited to smaller wind farms.

Of the two methods above, our opinion is that intermediate location testing provides the most robust test method, providing reliable measurements of wind turbine noise in accordance with the intent of NZS 6808. Intermediate location testing can also offer the opportunity to carry out a noise assessment where access to a previous background noise monitoring site is no longer available and can reduce the burden on residents to provide repeated access to the same location if periodic testing is required.

The intermediate location test methodology also has other benefits, namely that it can assist in assessing wind farm noise at locations where background noise levels were not previously measured and/or where access has not been granted by the landowner to conduct measurements. While most wind farms undergo an extensive background noise monitoring campaign prior to operation, it is not an uncommon occurrence for a post-construction assessment to be required for a site with no previous background noise measurements and/or where access to the previous background noise monitoring site has not been granted.

We note that intermediate location testing is:

- Already specified as an acceptable procedure in other Australian wind farm noise regulations, namely the NSW *Wind Energy: Noise Assessment Bulletin*.
- Is equivalent to the process already well established for other commercial and industrial noise sources, known as 'derived' locations under the current SEPP N-1¹ policy and 'alternative assessment locations' under the Noise Protocol² that will replace SEPP N-1 on 1 July 2021.

¹ State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No N-1

² EPA Victoria Publication 1826, *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*

To provide clarity and to ensure that appropriate assessment methodologies can be employed where necessary, it is recommended that:

- The EPA Victoria Guideline to be issued should include an appropriately robust method for assessing wind farm noise at intermediate locations, to enable appropriate testing to occur in cases where there may have been a long period of time since the background noise measurements occurred.
- If periodic noise testing is to be retained in the Regulations, Regulation 131F(3)(a) should be updated to refer to the Noise Management Plan rather than the standard, to enable the Noise Management Plan to develop an appropriate approach to any ongoing noise compliance testing.

Recommendation summary:

The EPA Victoria Guideline to be issued should specify a suitably robust method for assessing wind farm noise at intermediate locations.

If the Regulations are to retain a requirement for periodic noise compliance assessments, it is recommended that the Regulations refer to the approved Noise Management Plan for this testing under Regulation 131F(3)(a) rather than NZS 6808. This would allow the Noise Management Plan to document appropriate procedures to address alternative compliance noise testing procedures, such as intermediate locations.

3 Conclusion

Thank you again for the opportunity to comment on the proposed regulations. We would welcome the opportunity to discuss our comments in more detail should that be of assistance.

Please do not hesitate to contact the undersigned if you have any questions.

Yours sincerely,



Tom Evans
Technical Director