Dundonnell Wind Farm Pty Ltd

Dundonnell Wind Farm

Pre Construction Noise Assessment and Noise Compliance Test Plan Peer Review

R02

Final | 29 May 2018

PLANNING AND ENVIRONMENT ACT 1987
PLANNING SCHEME MOYNE
PERMIT NO. 2015/23858
ENDORSED PLAN

SIGNED S. Menzies FOR
MINISTER FOR PLANNING
DATE: 16/10/18

ENDORSED TO COMPLY WITH CONDITION
13 + 14
OF PLANNING PERMIT
2015/23858

Job number 258579-00

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Document Verification

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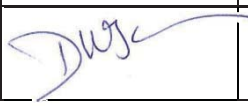
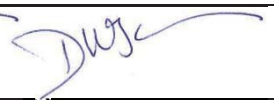
		Signature			
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Appendices

Environmental Auditor's Declaration

This Environmental Auditor's Declaration (Declaration) provides an opinion on the compliance of the Dundonnell Wind Farm to be operated by Dundonnell Wind Farm Pty Ltd (a subsidiary of Tilt Renewables) (the Proponent) with Conditions 13 and 14 of the Planning (Permit No 2015/23858 (the Planning Permit) issued under the Moyne Planning Scheme on 30/6/2016.

The report attached to this Declaration provides a summary of a peer review of documentation provided by the Proponent for assessment of compliance with Conditions 13 and 14 of the Planning Permit.

Objective

Condition 14 of the Planning Permit requires that an Environmental Auditor appointed under the *Environment Protection Act 1970* is to be engaged to undertake a review and provide an opinion on the methodology and results contained in the proposed Noise Compliance Test Plan

The Proponent has engaged David Spink of Arup Pty Ltd (Arup), an Environmental Auditor appointed under the *Environment Protection Act 1970*, to undertake this review.

In addition, the Proponent has requested the Environmental Auditor to undertake a similar review of the Pre-Construction Noise Assessment required by Condition 13. Conditions 11 and 12 provide performance requirements to be met, including provision for site specific higher base noise limits where an agreement is made between the Proponent and a dwelling owner (referred to as a Stakeholder).

The Declaration and accompanying report has been prepared as specified in the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* (DELWP, January 2016) (Guideline).

Review Process

The Environmental Auditor's opinion on each of these conditions was based on the information provided by the Proponent as noted below, with technical assistance provided by Dr Kym Burgemeister (Audit Specialist Support Team Member, Arup Pty Ltd).

With respect to the Guideline, the audit has been undertaken in a manner and format consistent with the accepted EPA Auditor requirements[1]. The report accompanying the Declaration is consistent with EPA Auditor requirements, and "thorough but concise" as noted in the Guideline.

[1] *Environmental auditor guidelines for appointment and conduct*, Environmental Protection Authority Victoria, Publication 865.12. December 2016.

Declaration

I, David Spink, declare that I and Dr Kym Burgemeister (Audit Specialist Support Team Member) have reviewed the following reports:

- *Dundonnell Wind Farm, Pre-construction Noise Assessment*, Sonus Pty Ltd Report S5345C9A, May 2018.
- *Dundonnell Wind Farm, Pre-construction Noise Assessment*, Sonus Pty Ltd Report S5345C9, February 2018.
- *Dundonnell Wind Farm, Background Noise Monitoring*, Sonus Pty Ltd Report S5345C6, November 2017.
- *Dundonnell Wind Farm, Background Noise Monitoring*, Sonus Pty Ltd Report S5345C6A, May 2018.
- *Dundonnell Wind Farm, Noise Compliance Test Plan*, Sonus Pty Ltd Report S5345C4, September 2017.
- *Dundonnell Wind Farm, Noise Compliance Test Plan*, Sonus Pty Ltd Report S5345C4, March 2018.

and assessed the content of these reports against Conditions 13 and 14 of the Planning Permit, and relevant standards.

I hereby declare that I am of the opinion that the methodologies and findings contained in these reports complies with the relevant requirements of Conditions 13 and 14 of the Planning Permit. I found the reports to be complete and appropriately applying industry standards, and that the findings can be reasonably relied on for assessment of the performance of the facility.

This determination comes with the following findings and qualifications on the pre-construction noise assessment and proposed noise compliance test plan, with further details provided in the accompanying report:

In regard to the Pre-Construction Noise Assessment (Planning Condition 13):

- **Specialist Assessment**

  The Pre-Construction Noise Assessment has been prepared by Sonus Pty Ltd, a recognised specialist company for undertaking this technical work.

- **Consistency of assessment with applicable standard**

  The assessment is generally undertaken in accordance with New Zealand Standard 6808:2010 *Acoustics – Wind farm noise*, Standards New Zealand, 2010 (NZS 6808-2010). Various default parameters including selection of the CONCAWE model for noise propagation prediction modelling are acceptable.

- **Agreements with nearby residents**

  The Proponent has entered into agreements with some dwelling owners as

referred to in Condition 11(b) of the Planning Permit, with habitable dwellings at these locations referred to as stakeholder dwellings in the Sonus report.

- **Background noise monitoring**

  Assessment of predicted operational noise levels requires appropriate confidence in the methodology and outcomes of the background noise monitoring. Review of the work undertaken by Sonus indicates that an appropriate risk based approach has been taken to identification of "worst case" noise propagation representative locations for both stakeholder and non-stakeholder locations (noise sensitive locations).

- **Noise Limits Adopted**

  Base noise limits at noise sensitive locations are specified in Conditions 11 and 12 of the Planning Permit, and do allow higher limits where agreements have been put in place with dwelling owners.

  The approach used in the assessment is generally to adopt the 40 dBA 'Base Limit' at most receivers (except at stakeholder dwellings, and dwellings H18 and H62, which are not stakeholder dwellings) regardless of whether higher noise levels might be allowable at high wind speeds using the 'background +5dB' approach. A base limit of 45 dBA will be adopted at some stakeholder dwellings, except H49 where a proposed limit of 46 dBA is accepted by the landowner. Only limits at dwellings H52, H18 (non-stakeholder), H46 and H62 (non-stakeholder) are wind speed dependant. This approach is consistent with Planning Permit Condition 11. It is agreed that this is a conservative approach, and is being increasingly adopted in wind farm noise assessments.

- **Assessment of Special Audible Characteristics**

  Condition 12 of the Planning Permit requires consideration of potential audible characteristics. At this stage, the assessment of tonality of the wind turbine source noise levels has been undertaken using the simple 'one-third' octave band method given in NZS 6808 which demonstrates that no tonal penalty should apply. This approach is reasonable to adopt at this stage because the wind turbine sound levels have been estimated by the turbine manufacturer because there are no constructed turbines that could be used to undertake a more accurate tonal audibility analysis using narrowband wind farm sound level source measurements in accordance with the Reference method documented in Annex C of ISO 1996-2[2].

- **Compliance with Noise Limits**

  The outcome of the assessment (Table 6 of Sonus report) indicates that the wind farm sound levels are predicted to comply with the relevant adopted

[2] ISO 1996-2 (2007) *Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels.*

noise criteria at all of the critical noise sensitive locations at all relevant wind speeds. All other noise sensitive locations are outside of the 40 dBA wind farm sound level contour, and will therefore comply with the noise limit specified in Condition 11(a).

In regard to the Noise Compliance Testing Plan (Planning Permit Condition 14):

- **Specialist Assessment**

  The Noise Compliance Test Plan has been prepared by Sonus Pty Ltd, a recognised specialist company for undertaking this technical work.

- **Proposed Tests**

  The proposed tests are acceptable (refer to Section 4.3 of attached report), but it is noted Amplitude Modulation testing could also be undertaken adopting the more recent UK Institute of Acoustics Amplitude Modulation Working Group (AMWG) Hybrid Method (August, 2016)[3].

- **Residential Logging Locations**

  Compliance measurements are proposed at 4 locations, shown in Figure 1 of the report, with measurements undertaken for a minimum of six weeks at each location. The proposed method is in compliance with the requirements of NZS 6808.

- **Measurement and Data Assessment Methodology**

  The proposed methodology is consistent with the requirements of NZS6808:2010.

- **Non Compliance Action Plan**

  The test plan includes a *non-compliance action plan* in Section 5, which outlines a procedure that will be followed where the testing indicates that operational noise limits are exceeded by the operation of the wind farm (as required under Planning Permit Condition 14(e)). The non-compliance action plan includes steps to mitigate noise emissions from turbines, and where mitigation proves insufficient to ensure compliance, implementation of a Noise Management System (NMS) which could include the application of noise management modes or curtailment for critical turbines.

Comments on specific Planning Permit Conditions are provided in Attachment A of the report.

3 *IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working Group, Final Report, A Method for Rating Amplitude Modulation in Wind Turbine Noise*, Version 1, UK Institute of Acoustics, 9 August 2016.

DATED: 29 May 2018

Signed:

David Spink
Environmental Auditor (Appointed pursuant to the *Environment Protection Act 1970*)

1 Introduction

Dundonnell Wind Farm Pty Ltd (the Proponent) is proposing to develop the Dundonnell Wind Farm project in Victoria. The Dundonnell Wind Farm has been subject to an environmental assessment and approvals process, and was granted a Planning Permit by the Minister for Planning (Permit No. 2015/23858) issued under the Moyne Planning Scheme on 30/6/2016).

The Proponent has engaged Sonus Pty Ltd (Sonus) to prepare a Pre-Construction Noise Assessment and Noise Compliance Test Plan in accordance with Conditions 13 and 14 of the Planning Permit, respectively.

The Noise Compliance Test Plan document is required by Condition 14(f) of the Planning Permit to be accompanied by a report by an environmental auditor appointed under the *Environment Protection Act 1970* with their opinion on the methodology and results.

Arup Pty Ltd (Arup) has been commissioned by the Proponent to undertake the environmental audit of the Pre-Construction Noise Assessment and Noise Compliance Test Plan against the relevant requirements of the Planning Permit, and supporting documented assessment of compliance and to provide an Environmental Auditor's Declaration (Declaration). Note that the Declaration addresses both Conditions 13 and 14, as requested by the Proponent.

This audit has been undertaken in accordance with the requirements of the Planning Permit, and the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* (DELWP, January 2016) (Guideline). The Guideline (page 30) state that the assessment of compliance is to consist of two documents;

- A Declaration by the EPA Appointed Environmental Auditor that the noise assessment meets the requirements of:
    - The appropriate standards;
    - The Guideline (as it relates to noise); and
    - The Planning Permit (or other regulatory instrument).
- A report accompanying the Declaration consistent with EPA Auditor requirements, and "thorough but concise" as noted in the Guideline.

With respect to the Guideline, the audit has been undertaken in a manner and format consistent with the accepted EPA Auditor requirements[4].

In this report;

- Section 2 provides a summary of the information that has been reviewed.

[4] *Environmental auditor guidelines for appointment and conduct*, Environment Protection Authority Victoria, Publication 865.12. December 2016.

- Section 3 provides a description of the relevant planning framework and associated standards and guidelines.
- Section 4 provides a technical review of the pre-development noise assessment and noise compliance test plan reports.
- Appendix A provides a summary of the Audit of the Planning Approval Condition Requirements.

2 Information Reviewed

The following project documentation has been reviewed;

- Planning permit 2015/23858, Moyne Planning Scheme, 30/6/2016
- *Dundonnell Wind Farm, Pre-construction Noise Assessment*, Sonus Pty Ltd Report S5345C9A, May 2018.
- *Dundonnell Wind Farm, Background Noise Monitoring*, Sonus Pty Ltd Report S5345C6A, May 2018.
- *Dundonnell Wind Farm, Noise Compliance Test Plan*, Sonus Pty Ltd Report S5345C4, September 2017.
- *Dundonnell Wind Farm, Noise Compliance Test Plan*, Sonus Pty Ltd Report S5345C4, March 2018.

Note that the documentation which informed the issue of the Planning Permit has not been reviewed in detail, for example, the Dundonnell Wind Farm EES Noise Impact Assessment prepared by Marshall Day Acoustics, September 2014.

3 Planning Requirements

The planning policy for wind farms in Victoria is given in *Victoria Planning Provisions for Wind Energy Facilities* Clause 52.32[5]. The application of the planning provisions is described in the general *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria*[6].

For the Dundonnell Wind Farm, specific planning conditions are provided in the Planning Permit (Permit No. 2015/23858) under the Moyne Planning Scheme (30/6/16).

The planning provisions which underlie these planning conditions require the noise assessment for wind farm projects to be undertaken in accordance with NZS 6808:2010[7] (amendment VC78[8], 15 March 2011) (NZS 6808). This standard has been adopted because it addresses the unique requirements for the prediction, measurement and assessment of sound from wind farms and because the usual measurement and assessment standards adopted in Victoria (such as AS 1055[9] and SEPP N-1[10]) are unsuitable.

There are other standards and guidelines such as AS 4959, the draft National Guidelines[11], the UK ETSU-R-97[12] and the Annual Report of the National Wind Farm Commissioner[13] that can provide helpful background information and secondary guidance that can also assist with the assessment of projects where the New Zealand Standard does not provide detailed or explicit guidance.

In particular, the New Zealand Standard states that it does not set limits that provide *absolute* protection for residents from audible wind farm sound, but rather provides guidance on noise limits that are considered *reasonable* for protecting sleep and amenity from wind farm sound at noise sensitive locations.

5 Victoria Planning Provisions, Wind Energy Facility, Clause 52.32.

6 *Policy and planning guidelines for development of wind energy facilities in Victoria*, Victoria State Government, January 2016.

7 New Zealand Standard 6808:2010 *Acoustics – Wind farm noise*, Standards New Zealand, 2010.

8 Advisory Note 35, Amendment VC 78 Wind energy facility provisions – Clause 52.32, March 2011.

9 AS 1055.1-1997 *Acoustics - Description and measurement of environmental noise - General procedures*, Standards Australia, 1997.

10 *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1*, Victoria Government Gazette No. S31, 1989.

11 *National Wind Farm Development Guidelines – Draft*, Environment Protection and Heritage Council, July 2010.

12 *The Assessment and Rating of Noise from Wind Farms*, UK Department of Trade and Industry, ETSU-R-97, September 1996.

13 *Annual Report to the Parliament of Australia*, Office of the National Wind Farm Commissioner, 31 March, 2017.

4 Technical Review

The technical review that follows addresses the noise compliance test plan report as required by the Planning Permit conditions.

4.1 Pre-Construction Noise Assessment

Sonus has undertaken the Pre-Construction Noise Assessment (*Dundonnell Wind Farm, Pre-construction Noise Assessment*, Sonus Pty Ltd Report S5345C9A, May 2018).

The assessment is generally undertaken in accordance with NZS 6808-2010 as required by Planning Permit Condition 13.

Background noise level measurements have been undertaken for the Project by both Marshall Day Acoustics (*Dundonnell Wind Farm EES Noise Impact Assessment*, Report Rp001 R03 2012480ML, September 2014) and Sonus (*Dundonnell Wind Farm Background Noise Monitoring*, Report S5345C6A, May 2018) - refer to next section.

The Proponent has entered into agreements with some dwelling owners as referred to in Condition 11(b) of the Planning Permit, with habitable dwellings at these locations referred to as stakeholder dwellings.

The approach used in the assessment is generally to adopt the 40 dBA 'Base Limit' at most receivers (except at stakeholder dwellings, and dwellings H18 and H62, which are not stakeholder dwellings) regardless of whether higher noise levels might be allowable at high wind speeds using the 'background +5' approach. It is agreed that this is a conservative approach, and is being increasingly adopted in wind farm noise assessments.

A base limit of 45 dBA will be adopted at some stakeholder dwellings, except H49 where a proposed limit of 46 dBA is accepted by the landowner.

It is noted that the adoption of a limit at stakeholder dwellings is not strictly considered under NZS 6808, but is discussed in the Working Group on Noise from Wind Turbine recommendations (ETSU-R-97)[14] and the South Australian wind farm environmental guidelines[15]. Arup therefore concur that generally adopting a 45 dB(A) base noise limit for participating landowners is reasonable, on the basis of adopting best practice.

Table 4 of the report indicates that it is proposed to adopt background noise dependant limits at the following locations;

- H18 (non-stakeholder)

14 *The Assessment and Rating of Noise from Wind Farms, The Working Group on Noise from Wind Turbines*, ETSU-R-97, UK Department of Trade and Industry, September 1996.

15 *Wind farms environmental noise guidelines*, Environment Protection Authority South Australia, July 2009.

- H62 (non-stakeholder)
- H2 (stakeholder)
- H41 (stakeholder)
- H49 (stakeholder)
- H52 (stakeholder)
- H1 (stakeholder)
- H46 (stakeholder)

Although, we note that the proposed limits at H2, H41, H49 and H1 do not increase above the base limit (ie. They are not, in fact, wind-speed dependant). Only limits at dwellings H52, H18 (non-stakeholder), H46 and H62 (non-stakeholder) are wind speed dependant.

Of these, additional background noise level measurements have been undertaken by Sonus at H18 (non-stakeholder), H46 and H62 (non-stakeholder) (in addition to H1) to assist with the development of the background noise/wind speed dependant noise limits. The measurements are documented in the *Background Noise Monitoring* report (Sonus report S5345C6A, May 2018). See Section 4.2 below for a more detailed review of the *Background Noise Monitoring* report.

It is assumed that further background measurements were not undertaken at dwelling H52 because although it is a stakeholder dwelling, a background noise level dependant limit has been adopted above a conservative base noise limit of 40 dBA, and the background noise level dependant limit remains below the more usual 'stakeholder' limit of 45 dBA at all wind speeds.

It is not proposed to adopt any High Amenity base limits (discussed in the New Zealand Standard), which we consider to be reasonable because the provisions of NZS 6808 are partly dependent on New Zealand specific planning legislation which separately identifies High Amenity Areas in their planning controls – and it is accepted that the current Victorian planning zones in the region are not comparable to those in the New Zealand planning controls which would require it.

The noise level predictions have been undertaken using the CONCAWE noise propagation model. While this model is perhaps not as commonly adopted for wind farm noise modelling as the ISO 9613-2:1996, it has still been demonstrated to provide reasonable results for wind farm noise level predictions.

In our opinion, the calculation parameters that have been adopted for meterological conditions, temperature, humidity and ground absorption are reasonable, and correspond to best practice.

Furthermore, the noise level predictions have limited the barrier attenuation from topography of 2 dB. This is a conservative assumption which is not explicitly required by NZS 6808 but is commonly adopted as good practice for wind farm noise assessment.

The noise predictions have been based on a source height at 114 m (the turbine hub height). Some contemporary wind farm noise assessments also undertake a sensitivity analysis by also basing predictions on the turbine tip height, although this is not strictly required by NZS 6808.

The spectral (1/3 octave band) sound power data for the turbines is based on the information provided by Vestas for the proposed V150-4.2MW turbine operating in a power optimised mode (PO1). It would be helpful if the report explicitly stated that these data were determined in accordance with IEC 61400-11[16] as recommended by Section 6.2.1 of NZS 6808.

Table 6 of the assessment indicates that the wind farm sound levels are predicted to comply with the relevant criteria at all of the critical noise sensitive receivers at all relevant wind speeds. All other receivers are outside of the 40 dBA wind farm sound level contour, and will therefore comply with the noise limits.

At this stage, the assessment of tonality of the wind turbine source noise levels has been undertaken using the simple 'one-third' octave band method given in NZS 6808 which demonstrates that no tonal penalty should apply. This approach is reasonable to adopt at this stage because the wind turbine sound levels have been estimated by the turbine manufacturer because there are no constructed turbines that could be used to undertake a more accurate tonal audibility analysis using narrowband wind farm sound level source measurements in accordance with the Reference method documented in Annex C of ISO 1996-2[17].

4.2 Background Noise Monitoring

This component of the audit is not strictly a condition of the Planning Permit; however, assessment of predicted operational noise levels requires appropriate confidence in the methodology and outcomes of the background noise monitoring.

Background noise monitoring has been undertaken by Sonus at 4 locations between August and October 2017, including two stakeholder dwellings (H1, H46) and two non-stakeholder dwellings (H18, H62) [18]It is apparent that these measurements were undertaken to allow the derivation of background noise level dependant noise limits at these properties.

The background noise level data includes over 4,000 data points per location which is considerably in excess of the minimum recommended requirement of 2-weeks (1,440 data points). The background measurements have been undertaken using appropriate equipment (including windshields).

Noise level measurement data with a local (ground level) wind speed > 5m/s have been removed from the analysis. While this is not strictly required by NZS 6808, it will result in a conservative assessment of the background noise level.

16 IEC 61400-11 (r3) *Wind Turbines- Part 11: Acoustic noise measurement techniques*, International Electrotechnical Commission, 2012.

17 ISO 1996-2 (2007) *Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels.*

18 *Dundonnell Wind Farm Background Noise Monitoring*, Report S5345C6A, May 2018.

The background noise level data has been referenced to wind speed measurements undertaken at 2 representative meteorological masts installed on the proposed site.

The masts provide at least 4 individual anemometer heights between 20–84 m. While the measurements have not been undertaken directly at the proposed turbine hub height of 114 m, the reference wind speed at this height has been calculated based on the individual 10-minute wind shear data for each correlated met-mast. This methodology is appropriate.

The 4 background noise measurement locations are shown on a map in the report as required.

The background noise level and wind speed data has been analysed using a 3rd order polynomial regression, which is appropriate.

At this stage, the measurement data has not been subject to any sub-analysis. This is reasonable, since an examination of the measurement and analysis data shown in Appendix B does not show strong support for day/night scenario analysis.

4.3 Noise Compliance Test Plan

The *Noise* Compliance Test Plan required by Condition 14 of the Planning Permit has been prepared by Sonus (*Dundonnell Wind Farm, Noise Compliance Test Plan*, Sonus Pty Ltd Report S5345C4, September 2017 & *Dundonnell Wind Farm, Noise Compliance Test Plan*, Sonus Pty Ltd Report S5345C4, March 2018.

The test plan documents separate near field measurements to confirm the modelling input assumptions and intermediate testing to determine the character of the wind farm noise, where necessary.

Nearfield testing would be limited to two (2) turbines, which is appropriate.

The proposed sound power compliance measurements will be undertaken in general accordance with IEC61400-11[16].

The nearfield and intermediate testing (undertaken where necessary) will also be used to assess special audible characteristics (SACs), including;

- Tonality, in accordance with Annex C of ISO1996.2[2]
- Amplitude Modulation (AM), using *interim test method*, of NZS 6808.

These tests are acceptable, but it is noted Amplitude Modulation testing could also be undertaken adopting the more recent UK Institute of Acoustics Amplitude Modulation Working Group (AMWG) Hybrid Method (August, 2016)[19].

Compliance measurements are proposed at 4 locations, shown in Figure 1 of the report, with measurements undertaken for a minimum of six weeks at each

19 *IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working Group, Final Report, A Method for Rating Amplitude Modulation in Wind Turbine Noise*, Version 1, UK Institute of Acoustics, 9 August 2016.

location. The proposed method is in compliance with the requirements of NZS 6808.

Where compliance cannot be positively demonstrated, it is proposed to adopt 'on-off testing'.

Tonality and Amplitude Modulation (AM) testing for Special Audible Characteristics (SACs) are proposed only if intermediate screening test demonstrates tonality or AM. Test methodologies are acceptable.

Timing of commissioning and associated reporting comply with the requirements of the Planning Permit.

In response to comments in our initial peer review, the test plan includes a *non-compliance action plan* in Section 5, which outlines a procedure that will be followed where the testing indicates that operational noise limits are exceeded by the operation of the wind farm (as required under Planning Permit Condition 14(e)). The non-compliance action plan includes steps to mitigate noise emissions from turbines, and where mitigation proves insufficient to ensure compliance, implementation of a Noise Management System (NMS) which could include the application of noise management modes or curtailment for critical turbines.

4.4 Planning Permit Conditions

A summary of observations and comments on specific conditions of the Planning Permit are provided in Appendix A.

5 Conclusion

The Pre-Construction Noise Assessment and Noise Compliance Test Plan have been undertaken in compliance with the requirements of the Victorian Planning provisions, New Zealand Standard NZS6808-2010 and Conditions 13 and 14 of the Planning Permit No. 2015/23858.

Appendix A

Planning Permit Condition Audit

A1

Planning Permit Condition	Complies?	Observations/Comments
Noise Compliance Assessment		
Pre-Construction assessment		
13. Before development of the wind energy facility commences, a pre-construction noise assessment, including tonality assessment, must be undertaken to reflect the final turbine layout and turbine model chosen. The pre-construction noise assessment shall be prepared by a suitably qualified and experienced independent acoustic engineer to demonstrate the wind energy facility will comply with the relevant noise limits specified in condition 11, and must be to the satisfaction of the responsible authority. All compliance reports must be publicly available on the project website.	Y	
Post-construction assessment		
14. Before the wind energy facility starts operating, a noise compliance testing plan shall be prepared by a suitably qualified and experienced independent acoustic engineer which sets out the methodology used to demonstrate compliance with the relevant noise limit specified in condition 11. The noise compliance testing plan must be submitted to and be to the satisfaction of the responsible authority and must also:	Y	Compliance test plan prepared by Sonus, staff meet requirements of Acoustical Society of Australia.
a. demonstrate that noise assessment positions have been located according to the Standard, and show the location of the noise assessment positions on a map. Alternative noise assessment positions should also be included in case a noise assessment position on private land become inaccessible.	Y	Locations shown.
b. require noise monitoring in accordance with the Standard for the purpose of preparing the compliance reports required by this condition.	Y	

Planning Permit Condition	Complies?	Observations/Comments
c. if the wind energy facility is developed in stages, require a noise compliance investigation to be carried out and reported to the responsible authority by no later than six months after completion of each stage of the wind energy facility.	N/A	Staging not proposed
d. require a post-construction noise compliance investigation to be carried out and reported to the responsible authority within 6 months from the commissioning of the wind energy facility, and then repeated 12 months later.	Y	
e. in the event of non-compliance with the Standard include a noise non-compliance action plan which shall be prepared and implemented to the satisfaction of the responsible authority including actions to make the wind energy facility compliant.	Y	
f. include a report from an environmental auditor accredited under the Environment Protection Act 1970 with their opinion on the methodology and results contained in the noise compliance testing plan.	Y	This Report