

Stockyard Hill Wind Farm Pty Ltd

Stockyard Hill Wind Farm

Verification of Post-Construction Noise Assessment Report – Environment
Protection Regulation 131D

Reference:

Issue | 26 October 2023

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.




Job number 286169-00

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Auditor Declaration

Verification of Stockyard Hill Wind Farm Post-Construction Noise Assessment Report – Environment Protection Regulation 131D.

I, David W Spink, an environmental auditor appointed pursuant to the *Environment Protection Act 2017*, having:

1. Been requested by Stockyard Hill Wind Farm Pty Limited to verify the Post-Construction Noise Assessment for the Stockyard Hill Wind Farm (SHWF), undertaken by Sonus Pty Ltd (Sonus) as provided in the following report:

- Stockyard Hill Wind Farm, Post-Construction Noise Assessment Environment Protection Regulation 131D (Sonus Pty Ltd, Report No S3425.2C30, dated July 2023) (Post-construction Noise Assessment – Regulation 131D Report)

and associated near-field analyses of wind turbine generator (WTG) noise emissions documented in the following associated Technical Reports;

- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 141 (Sonus Pty Ltd, Report No S3425.2C21, dated October 2022) (Technical Report – WTG 141)
 - Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 149 (Sonus Pty Ltd, Report No S3425.2C23, dated October 2022) (Technical Report – WTG 149)
 - Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 93 (Sonus Pty Ltd, Report No S3425.2C24, dated October 2022) (Technical Report – WTG 93)
 - Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 22 (Sonus Pty Ltd, Report No S3425.2C25, dated October 2022) (Technical Report – WTG 22)
 - Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 83 (Sonus Pty Ltd, Report No S3425.2C26, dated October 2022) (Technical Report – WTG 83)
 - Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 18 – Draft (Sonus Pty Ltd, Report No S3425.2C17, dated March 2022) (Technical Report – WTG 18)
2. Specifically, I have been requested under Regulation 164(ca)(i), to independently verify whether or not the acoustic assessment as provided in the Post-construction Noise Assessment – Regulation 131D Report was conducted in accordance with NZS 6808:2010.
 3. Having regard to, (amongst other things)
 - Environment Protection Regulations 2021 as amended by Environment Protection Amendment (Wind Turbine Noise) Regulations 2022 (EP Regulations)
 - New Zealand Standard NZS 6808:2010 Acoustics – Wind Farm Noise (Standard or NZS 6808:2010)
 - Planning Permit PL-SP/05/0548/D under the Pyrenees Planning Scheme (Amendment dated 4 August 2022) (Planning Permit)
 - *Environment Protection Act 2017* as amended by the *Environment Protection Amendment Act 2018*
 - Stockyard Hill Wind Farm, Noise Compliance Test Plan (Sonus Pty Ltd, Report No. S3425.2CS dated January 2018) (NCTP)
 - Stockyard Hill Wind Farm Pre-Development Noise Assessment (Marshall Day Acoustics Pty Ltd, Report No. 001 R04 20170840, dated 20 December 2017)

- Stockyard Hill Wind Farm Background Noise Monitoring (Sonus Pty Ltd, Report No. S3425.2C3, dated September 2017)
- Stockyard Hill Wind Farm, Initial Acoustic Compliance Report (Sonus Pty Ltd, Report No. S3425.2C16C, dated March 2022)
- Stockyard Hill Wind Farm, Verification Audit of Initial Acoustic Compliance Report (Arup Australia Pty Ltd Ref 286169-00, dated 08 March 2022)
- Stockyard Hill Wind Farm, Post-construction Testing Report (Sonus Pty Ltd, Report No. S3425.2C27, dated October 2022)
- Stockyard Hill Wind Farm, Verification of Post-construction Testing Report (October 2022) (Arup Australia Pty Ltd Ref 286169-00/R01, dated 26 October 2022)
- Stockyard Wind Farm, Derivation of Wind Reference Data (GHD Technical Memorandum, 7 September 2022)

and the following relevant documents

- Wind Energy Facility Noise Regulation Guidelines (EPA Publication, November 2022) (EPA Guidelines)
- Wind Energy Facility Noise Auditor Guidelines (EPA Publication 1692, dated October 2018) (EPA 2018 Guidelines)
- Planning Guidelines for Development of Wind Energy Facilities (Department of Transport and Planning, dated September 2023) (DTP Guidelines)
- Environmental Auditor Guidelines – Provision of statements and reports for environmental audits and preliminary risk screen assessments (EPA Publication 2022, dated August 2021)
- Guidelines for conducting environmental audits (EPA Publication 2041, dated February 2022)
- Environmental Auditor Guidelines for Appointment and Conduct (Publication 865.13, dated March 2022)
- International Standard IEC61400-11:2012 Wind turbines – Part 11: Acoustic noise measurement techniques (IEC 61400-11:2012)
- International Standard ISO 1996-2:2007 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels (ISO 1996-2:2007)


4. Hereby declare that under Regulation 164(ca)(i), I can verify that:

The post-construction noise assessment as provided in the Post-construction Noise Assessment - Regulation 131D Report was conducted in accordance with NZS 6808:2010.

Note that as stated in Section 2 of the Post-construction Noise Assessment – Regulation 131D Report, the noise limits for participant dwellings represents a modification of NZS 6808:2010, as NZS 6808:2010 does not differentiate between participant and non-participant dwellings.

Dated: 26 October 2023

Signed:

A handwritten signature in blue ink, appearing to read 'DWS', with a long horizontal flourish extending to the right.

David W Spink

Environmental Auditor (Industrial Facilities) – Appointed pursuant to the *Environment Protection Act 2017*

List of Acronyms

Acronym	Definition
AGL	Above Ground Level
AM	Amplitude Modulation
dB(A)	A-weighted decibels, unit for the measurement of sound. The A-weighting is an adjustment to reflect how humans hear sound.
DTP	Department of Transport and Planning Victoria
EPA	Environment Protection Authority Victoria
EP Act	<i>Environment Protection Act 2017</i> as amended by the <i>Environment Protection Amendment Act 2018</i>
EP Regulations	Environment Protection Regulations 2021 as amended by the Environment Protection Amendment (Wind Turbine Noise) Regulations 2022
ERS	Environment Reference Standard
GED	General Environmental Duty (requirement under Section 25 of the EP Act)
IEC 61400-11:2012	International Standard IEC61400-11:2012 Wind turbines – Part 11: Acoustic noise measurement techniques
ISO 1996.2:2017	International Standards Organisation ISO 1996.2:2017 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of sound pressure levels
LA _{90(10 min)}	A-weighted noise level exceeded for 90% of the measurement period, where the measurement period is 10 minutes
LGA	Local Government Area
MDA	Marshall Day Acoustics Pty Ltd
met	meteorological
NCTP	Noise Compliance Test Plan
NMP	Noise Management Plan
NZS 6808:2010	New Zealand Standard 6808:2010 Acoustics – Wind Farm Noise
SACs	Special Audible Characteristics
Sonus	Sonus Pty Ltd
Standard	New Zealand Standard 6808:2010 Acoustics – Wind Farm Noise
SHWF	Stockyard Hill Wind Farm
WEF	Wind Energy Facility
WEF Operator	Stockyard Hill Wind Farm Pty Ltd
WTG	Wind Turbine Generator

1. Overview

1.1 Background to this verification report

Stockyard Hill Wind Farm Pty Ltd is the operator of the Stockyard Hill Wind Farm (SHWF), located across an area between Ballarat and Ararat, nominally approximately 35 km to the west of Ballarat within the Pyrenees Shire. Goldwind Australia Pty Ltd is the majority shareholder of SHWF.

Planning Permit PL-SP/05/0548/D (as amended 4 August 2022) (Planning Permit) issued under the Pyrenees Planning Scheme required a Noise Compliance Testing Plan (NCTP) approved by the Minister for Planning before commissioning of the SHWF (Condition 26), and a Noise Compliance Assessment to be conducted (Condition 28). The NCTP (Stockyard Hill Wind Farm Noise Compliance Test Plan, Sonus Pty Ltd, Report No S3425.2C5, dated January 2018) was approved by the Minister for Planning on 17 May 2018.

Two post-construction noise compliance assessments have been completed to date (as required by Condition 28(c)), each accompanied by a report from David Spink, an Environmental Auditor appointed under the *Environment Protection Act 2017* (the Act) (as required by Condition 28(g)). Sonus Pty Ltd (Sonus) undertook both rounds of acoustic compliance assessment. Relevant reports are as follows:

Initial round of post-construction noise compliance assessment:

- Stockyard Hill Wind Farm, Initial Acoustic Compliance Report (Sonus Pty Ltd, Report No. S3425.2C16C, dated March 2022)
- Stockyard Hill Wind Farm, Verification Audit of Initial Acoustic Compliance Report (Arup Australia Pty Ltd Ref 286169-00, dated 08 March 2022)

Second round of post-construction noise compliance assessment

- Stockyard Hill Wind Farm, Post-construction Testing Report (Sonus Pty Ltd, Report No. S3425.2C27, dated October 2022)
- Stockyard Hill Wind Farm, Verification of Post-construction Testing Report (October 2022) (Arup Australia Pty Ltd Ref 286169-00/R01, dated 26 October 2022)

The reports above concluded that SHWF complies with the relevant noise limits specified in Condition 21 of the Planning Permit; specifically, SHWF complies with the New Zealand Standard 6808:2010, Acoustics – Wind Farm Noise (referred to variously as the Standard, or NZS 6808:2010).

During this period, the Environment Protection Regulations 2021 as amended by the Environment Protection Amendment (Wind Turbine Noise) Regulations 2022 (EP Regulations) have been made by the Victoria Government. Regulation 131D requires the operator to undertake a post-construction noise assessment. Whilst the findings of the above reports remain valid, there is a need to assess the status of SHWF against the specific requirements of the EP Regulations. Sonus has addressed these requirements on behalf of SHWF in the report:

- Stockyard Hill Wind Farm, Post-construction Noise Assessment – Environment Protection Regulation 131D (Sonus Pty Ltd, Report No. S3425.2C30, dated July 2023) (Post-construction Noise Assessment – Regulation 131D Report)

The Post-construction Noise Assessment – Regulation 131D Report adopts the data from the second round of post-construction noise compliance assessment undertaken by Sonus.

Regulation 131D(3)(b) requires that an environmental auditor must prepare a report under Regulation 164(ca)(i) to independently verify whether or not the post-construction noise assessment was conducted in accordance with NZS 6808:2010. The verification was undertaken by David Spink, an Environmental Auditor appointed under the *Environment Protection Act 2017* (EP Act). Technical support was provided by his Expert Support Team member Dr Kym Burgemeister, Principal, Arup Australasia Pty Ltd (as provided for under EPA Publication 865.13 Environmental Auditor Guidelines for Appointment and Conduct, dated March 2022).

This report (Verification Report) provides the findings of the verification of the Post-construction Noise Assessment – Regulation 131D Report.

Note 1: The requirements of the Environment Protection Authority Victoria (EPA) and the Department of Transport and Planning (DTP)¹ refer to a wind farm as a Wind Energy Facility (WEF); however, the term **wind farm** has been used in this Verification Report for consistency with terminology used in the Sonus reports and the Standard.

Note 2: Condition 28(d) of the Planning Permit requires a further *final* compliance report must be submitted to the Minister for Planning after a 12 month period following the commencement of full operation of the SHWF. That assessment will be subject to a further auditor process in accordance with Planning Permit Condition 28(g).

2. Statutory Requirements

2.1 EPA requirements

The EP Regulations came into effect under the EP Act in mid-2021, focusing regulatory control of wind farms to the EPA under Regulation 131.

Requirement for a Post-construction Noise Assessment

Regulation 131D(1) provides requirements for the Post-Construction Noise Assessment, that states in part:

(2) *A post-construction noise assessment must-*

- a) *be conducted in accordance with NZS 6808:2010 by a suitably qualified and experienced acoustician; and*
- b) *demonstrate whether or not the facility complies with the noise limits set out in accordance with NZS 6808:2010.*

(3) *The operator must –*

- a) *ensure that a report of the post-construction noise assessment is prepared; and*
- b) *engage an environmental auditor to prepare a report under regulation 164(ca)(i) in relation to the post-construction noise assessment.*

Regulation 164(ca(i)) specifies that the auditor is to:

... independently verify whether or not any noise assessment conducted for the wind energy facility was conducted in accordance with NZS 6808:2010.

Relevant Noise Standard

Regulation 131B includes a Table – Relevant noise standard for wind energy facilities. This table specifies NZS 6808:2010 except where an authorising document “*sets out conditions to modify or replace NZS 6808:2010 in relation to wind turbine noise.*”

For SHWF, the authorising document is the Planning Permit.

Condition 21 of the Planning Permit requires SHWF to *comply with New Zealand Standard 6808:2010, Acoustics – Wind Farm Noise (the Standard) or as modified by this condition to the satisfaction of the Minister for Planning.* The NCTP required by Condition 26 of the Planning Permit was approved by the Minister for Planning. The methodology included in the NCTP is consistent with the requirements of

¹ The Department of Environment, Land, Water and Planning (DELWP) morphed into the Department of Energy, Environment and Climate Action (DEECA) with certain functions also going into a new Department of Transport and Planning (DTP) on 01 January 2023. The planning functions for wind farms was transferred to DTP.

NZS 6808:2010 (Goldwind Capital (Australia) Pty Ltd. Stockyard Hill Wind Farm – Noise Compliance Peer Review and Compliance Assessment, Arup Australia Pty Ltd, Reference 257886-00, dated 23 March 2018).

It is noted that Regulation 131BA specifies noise limits where a (wind turbine noise) agreement is in place with a relevant landowner after 01 November 2021. It is understood that all agreements were in place with relevant landowners before 01 November 2021, therefore the noise limits that will apply are those specified in the agreements.

Alternative Monitoring Points

The use of alternative monitoring points where actual monitoring points are not readily accessible is a common approach used by acousticians to evaluate equivalent noise levels at sensitive receivers. Regulation 131BB prohibits the use of alternative monitoring locations for a post-construction noise assessment under Regulation 131D.

EPA has issued Wind Energy Facility Noise Regulation Guidelines (November 2022) (EPA Guidelines), that provides some general guidance on the implementation of the EP Regulations pertaining to noise from wind farms (Regulation 131). The EP Guidelines refer to the General Environmental Duty (GED) under the EP Act. Application of the GED requires engagement *in any activity that may give rise to risks of harm to human health or the environment from pollution or waste to minimise those risks, so far as reasonably possible*. Specifically with respect to operation of wind farms, the EP Act (Section 166) imposes an obligation not to emit an unreasonable noise or permit an unreasonable noise to be emitted. To comply with the GED, the EP Regulations state that an operator of a wind farm must ensure that wind turbine noise complies with the noise limits set out in the relevant noise Standard. As stated above, for the SHWF, the relevant noise Standard is NZS 6808:2010. It is understood that more detailed guidance will be provided by EPA at some time in the future.

The Environmental Reference Standard (ERS) provide noise indicators and objectives for various land use categories (Guide to the Environment Reference Standard, EPA Publication 1992, dated June 2021). However, assessment of turbine noise is directly addressed in the EP Regulations.

While this verification is strictly not an audit process, reference has also been made to the following EPA publications:

- Wind Energy Facility Noise Auditor Guidelines (EPA Publication 1692, October 2018) (2018 EPA Guideline)
- Guidelines for Conducting Environmental Audits (EPA Publication 2041, dated February 2022)
- Environmental Auditor Guidelines for Appointment and Conduct (Publication 865.13, dated March 2022)

2.2 Planning Permit requirements

The original Planning Permit under the Pyrenees Planning Scheme was issued on 26 October 2010, with the current permit No PL-SP/05/0548/D issued on 4 August 2022. This Planning Permit included conditions which specified requirements for the control of noise from the SHWF.

Key conditions related to this Verification are as follows;

Condition	Requirement
26. Noise Compliance Testing Plan	A noise compliance testing plan (NCTP) must be prepared by a suitably qualified and experienced acoustics expert
27. Noise Compliance Testing	Noise compliance testing shall be carried out by a suitably qualified and experienced expert in accordance with the approved testing plan
28 Noise Compliance Assessment	a) Acoustic compliance reports shall be prepared by a suitably qualified and experienced independent acoustic engineer to demonstrate compliance with the noise limits specified in the standard
	c) An initial acoustic compliance report must be submitted within six months of the commissioning of the first turbine, and at six monthly intervals thereafter until full operation has commenced (following completion of construction and commissioning).
	d) A final compliance report must be submitted to the Minister for Planning after a 12 month period following the commencement of full operation of the facility.
	g) All noise compliance reports must be accompanied by a report from an environmental auditor appointed under the <i>Environment Protection Act 1970</i> with their opinion on the methodology and results contained in the noise compliance testing.

Since implementation of the EP Regulations, Clause 52.32 of the Victorian Planning Provisions (VPP) has been amended to remove condition(s) requiring post-construction compliance assessments.

DELWP has previously issued guidance through the publication Development of Wind Farm Facilities in Victoria – Policy and Planning Guidelines (DELWP, November 2021). Following introduction of the EP Regulations, DTP has revised the publication – the current document being Planning Guidelines for Development of Wind Energy Facilities (DTP, September 2023) (DTP Guidelines).

3. Objectives of the verification

The objective of the verification was to independently verify under Regulation 164(ca)(i), whether or not the acoustic assessment as provided in the Post-construction Noise Assessment – Regulation 131D Report was conducted in accordance with NZS 6808:2010.

4. Verification methodology

As stated above, EPA has recently published guidance entitled Wind Energy Facility Noise Regulation Guidelines (EPA Publication, November 2022) (EPA Guidelines). However, this publication does not provide detailed guidance regarding requirements for verifications conducted under Regulation 164(ca)(i). The verification methodology adopted referenced Section 2.4.2 of Wind Energy Facility Noise Auditor Guidelines (EPA Publication 1692, October 2018) (EPA 2018 Guidelines), and included:

- Inception meeting with SHWF management

- Inspection of the SHWF site
- Technical verification of the Post-construction Noise Assessment – Regulation 131D Report for compliance with NZS 6808:2010, and the authorising document (Planning Permit)
- Preparation of draft and final Auditor Verification Statement and Report.

5. Documents reviewed for the verification

The following documents have been reviewed while undertaking the verification.

Site specific documents

- Stockyard Hill Wind Farm, Post-Construction Noise Assessment (Sonus Pty Ltd, Report No S3425.2C30, dated July 2023) (Post-construction Noise Assessment – Regulation 131D Report)
- Stockyard Hill Wind Farm, Post-Construction Testing Report (Sonus Pty Ltd, Report No. S3425.2C27, dated October 2022) (Post-Construction Testing Report (dated October 2022))
- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 141 (Sonus Pty Ltd, Report No S3425.2C21, dated October 2022) (Technical Report – WTG 141)
- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 149 (Sonus Pty Ltd, Report No S3425.2C23, dated October 2022) (Technical Report – WTG 149)
- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 93 (Sonus Pty Ltd, Report No S3425.2C24, dated October 2022) (Technical Report – WTG 93)
- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 22 (Sonus Pty Ltd, Report No S3425.2C25, dated October 2022) (Technical Report – WTG 22)
- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 83 (Sonus Pty Ltd, Report No S3425.2C26, dated October 2022) (Technical Report – WTG 83)
- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 18 – Draft (Sonus Pty Ltd, Report No S3425.2C17, dated March 2022) (Technical Report – WTG 18)
- Planning Permit PL-SP/05/0548/D under the Pyrenees Planning Scheme (Amendment dated 4 August 2022) (Planning Permit)
- Stockyard Hill Wind Farm, Noise Compliance Test Plan (Sonus Pty Ltd, Report No S3425.2CS dated January 2018) (NCTP)
- Stockyard Hill Wind Farm Pre-Development Noise Assessment (Marshall Day Acoustics Pty Ltd Report No 001 R04 20170840, dated 20 December 2017)
- Stockyard Hill Wind Farm Background Noise Monitoring (Sonus Pty Ltd, Report No S3425.2C3, dated September 2017)
- Stockyard Hill Wind Farm, Initial Acoustic Compliance Report (Sonus Pty Ltd, Report No S3425.2C16C, dated March 2022)
- Stockyard Hill Wind Farm, Verification Audit of Initial Acoustic Compliance Report (Arup Australia Pty Ltd Ref 286169-00, dated 08 March 2022)
- Stockyard Hill Wind Farm, Post-construction Testing Report (Sonus Pty Ltd, Report No S3425.2C27, dated October 2022)
- Stockyard Hill Wind Farm, Verification of Post-construction Testing Report (October 2022) (Arup Australia Pty Ltd Ref 286169-00/R01, dated 26 October 2022)

- Stockyard Wind Farm, Derivation of Wind Reference Data (GHD Technical Memorandum, dated 7 September 2022)

Other Relevant Documents

- New Zealand Standard NZS 6808:2010 Acoustics – Wind Farm Noise (Standard or NZS 6808:2010)
- *Environment Protection Act 2017* as amended by the *Environment Protection Amendment Act 2018* (EP Act)
- Environment Protection Regulations 2021 as amended by Environment Protection Amendment (Wind Turbine Noise) Regulations 2022 (EP Regulations)
- Planning Guidelines for Development of Wind Energy Facilities (Department of Transport and Planning, dated September 2023) (DTP Guidelines)
- Wind Energy Facility Noise Regulation Guidelines (EPA Publication, dated November 2022) (EPA Guidelines)
- Wind Energy Facility Noise Auditor Guidelines (EPA Publication 1692, dated October 2018) (EPA 2018 Guidelines)
- Environmental Auditor Guidelines – Provision of statements and reports for environmental audits and preliminary risk screen assessments (EPA Publication 2022, dated August 2021)
- Guidelines for conducting environmental audits (EPA Publication 2041, dated February 2022)
- Environmental Auditor Guidelines for Appointment and Conduct (Publication 865.13, dated March 2022)
- International Standard IEC61400-11:2012 Wind turbines – Part 11: Acoustic noise measurement techniques (IEC 61400-11:2012)
- International Standard ISO 1996-2:2007 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels (ISO 1996-2:2007)

6. General comments on the post-construction noise assessment

6.1 Relevant noise standard and application of the NCTP

Regulation 131B establishes the relevant noise standard that is the subject of an authorising document. The Table in Regulation 131B allows for an authorising document to set out conditions to *modify or replace* NZS 6808:2010; in regard to SHWF, the authorising document is the Planning Permit. As stated previously, Condition 26 of the Planning Permit required preparation of an NCTP. The NCTP (Stockyard Hill Wind Farm, Noise Compliance Test Plan, Sonus Pty Ltd, Report No. S3425.2C5, dated January 2018) outlines the procedures to be undertaken for the operational (post-construction) noise compliance monitoring. The NCTP was reviewed separately and subsequently approved by the Minister for Planning on 17 May 2018. The methodology included in the NCTP is consistent with the requirements of NZS 6808:2010 (Goldwind Capital (Australia) Pty Ltd. Stockyard Hill Wind Farm – Noise Compliance Peer Review and Compliance Assessment, Arup Australia Pty Ltd, Reference 257886-00, dated 23 March 2018).

Section 2 of the NCTP provides the methodology for undertaking Near Field and Intermediate Testing which form the basis of the near-field measurements undertaken at six of the turbines which is reported in the Technical Reports. The measurements allow the character of the noise from the turbines to be reviewed (particularly in relation to tonality and amplitude modulation), and to confirm that the input assumptions for the pre-construction stage assessment prior to the total construction and commissioning of the wind farm.

The NCTP includes the following requirements;

- Undertake nearfield measurements to derive apparent sound power level in general accordance with International Standard IEC61400-11:2012 Wind turbines – Part 11: Acoustic noise measurement techniques (IEC 61400-11:2012)
- Undertake tonality calculations in accordance with Appendix C of International Standard ISO 1996-2:2007 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels (ISO 1996-2:2007) for representative periods
- Undertake an assessment of amplitude modulation in accordance with the ‘interim test method’ provided in the Standard (NZS 6808:2010)

Section 3 of the NCTP provides the methodology for undertaking the post-construction noise compliance testing at the residential logging locations in accordance with NZS 6808:2010. The NCTP establishes:

- The locations where the residential noise logging will be undertaken
- The minimum equipment requirements
- The approach to data analysis, including
 - filtering and exclusion of extraneous noise
 - analysis of tonality and amplitude modulation
- Supplementary requirements for ‘on/off’ testing should it be required to demonstrate compliance
- The proposed testing schedule.

It is noted that Condition 26(e) of the Planning Permit (NCTP) states that the *noise compliance testing must be carried out at locations defined in accordance with the Standard, including consideration for alternative locations for assessment (if locations become inaccessible in future)*. In the EP Regulations, alternative monitoring points are monitoring points which are less affected by extraneous noise and closer to the wind turbines than the nominated monitoring point. The use of alternative monitoring points is not consistent with Regulation 131BB - which does not allow them to be used for the post-construction noise assessment under Regulation 131D.

In this case, there were two nominated monitoring locations where access was not granted (B029 and B121). Monitoring was therefore conducted at two ‘backup’ locations that are *representative* of the nominated monitoring points B029 and B121.

6.2 Conduct of assessment

Regulation 131D(2)(a) states that a post-construction noise assessment must *be conducted in accordance with NZS 6808:2010 by a suitably qualified and experienced acoustician*. It is accepted that the assessment has been undertaken by Sonus Pty Ltd (Sonus), a company with appropriate resources to appropriately meet this requirement.

6.3 Consistency with the Planning Permit noise requirements

The second round of post-construction noise compliance assessment and independent verification against the Condition 28 (Noise Compliance Assessment) of the Planning Permit was undertaken and reported as follows:

- Stockyard Hill Wind Farm, Post-construction Testing Report (Sonus Pty Ltd, Report No S3425.2C27, dated October 2022)
- Stockyard Hill Wind Farm, Verification of Post-construction Testing Report (October 2022) (Arup Australia Pty Ltd, Report No 286169-00/R01, dated 26 October 2022)

As an overall comment, the noise limits provided in Condition 21 of the Planning Permit for non-participant dwellings (40dB $L_{A90(10 \text{ min})}$ or background $L_{A90(10 \text{ min})}$ plus 5 dB) and participant dwellings (45 dB $L_{A90(10 \text{ min})}$ or background $L_{A90(10 \text{ min})}$ plus 5 dB) are consistent with Regulation 131BA.

7. Technical verification: near-field tests

7.1 Choice of turbines

Nearfield sound level measurements have been undertaken by Sonus near to six of the operational Wind Turbine Generators (WTGs), representing each of the different turbine models installed across the SHWF site, for the purpose of reviewing the apparent sound power level emissions, tonality and amplitude modulation characteristics of the installed turbines, as follows.

Turbine	Turbine Configuration
WTG 18	GW140/3570 V5
WTG 22	GW140/3570 ¾/5
WTG 83	GW140/3000 V5
WTG 93	GW140 3400 V5
WTG 141	GW140/3570 V4
WTG 149	GW140/3570 Clean Blades

The assessment, and verification of the assessment, of WTG 18 was undertaken previously, and provided in the following reports:

- Stockyard Hill Wind Farm, Acoustic Analysis of Wind Turbine Generator 18 – Draft (Sonus Pty Ltd, Report No S3425.2C17, February 2022) (Technical Report – WTG 18)
- Stockyard Hill Wind Farm, Verification Audit of Initial Acoustic Compliance Report (Arup Australia Pty Ltd, Report No 286169-00, dated 08 March 2022).

This second round involved verification of the assessment of WTGs 22, 83, 93, 141 and 149. The measurements and analysis are documented in the associated Technical Reports (Sonus Reports S3425.2C25, S3425.2C26, S3425.2C24, S3425.2C21 and S3425.2C23). Data from WTG 18 is also included for completeness in the following discussion.

7.2 Near-field monitoring methodology

Key points noted:

- The near-field measurements have been undertaken and the reports prepared by acoustic engineers from Sonus, who are suitably qualified and experienced to undertake the work.
- The near-field measurements have been undertaken using the measurement methodology in general accordance with International Standard IEC61400-11:2012 Wind turbines – Part 11: Acoustic noise measurement techniques (IEC61400-11:2012), including:
 - using microphones mounted on a ground-plane measurement board with appropriate primary and secondary wind-shields.
 - The measurement microphones were located at approximately 200 m slant distance from the nacelle of the wind turbines.
- The measurement equipment that has been used is considered appropriate.
- Hub-height wind speed and direction during the measurements were determined from instruments located on the WTG nacelle and averaged over 10-second periods. Where necessary, direction data was adjusted by Sonus based on field observations.

- No tonality or amplitude modulation was subjectively identified at any of the near field locations. It is noted; however, that Sonus undertook further testing at the residential locations.

The auditor considers that the measurement methodology is appropriate for determining the typical sound power output of the various turbine types in general accordance with IEC 61400-11:2012. While acknowledging some variation from strict compliance with IEC 61400-11:2012 these were not considered to be material to the monitoring programme.

7.3 Turbine Sound Power Emission

The apparent sound power level emitted by each of the turbines has been determined from the measurements at integer wind speeds and in accordance with the general procedure outlined in IEC 61400-11:2012. Key points noted:

- The near field analysis was conducted for integer wind speeds, which is consistent with NZS 6808:2010 (Section 7.5.3) requiring only integer wind speeds to be considered for determination of sound power levels (IEC 61400-11 :2012 requires integer and half integer wind speeds)
- The hub-height wind speed and noise level data has been processed to discard measurements with extraneous noise, where rainfall was identified, and where sound measurements at the two microphone locations were not within $\pm 15^\circ$ downwind of the turbine tower as required by IEC 61400-11:2012. Between 350–6,000 wind speed and noise level data pairs were recorded over the measurement periods, between typical wind speeds of 4–16 m/s.

The maximum measured overall apparent sound power level of the turbines is as follows:

Turbine	Overall A-weighted Sound Power, dBL _{Aw} re 1pW
WTG 18	110.9
WTG 22	110.7
WTG 83	111.5
WTG 93	110.6
WTG 141	113.6
WTG 149	110.7

The auditor notes that these measured sound power levels are higher than the sound power level adopted in the initial Pre-Development Noise Assessment (Stockyard Hill Wind Farm Pre-Development Noise Assessment (Marshall Day Acoustics Pty Ltd, Report No. 001 R04 20170840, dated 20 December 2017)), but that revised noise modelling by Sonus adopting the measured sound power levels which is presented in Figure 2 of the Post-construction Noise Assessment – Regulation 131D Report indicates that the wind farm noise limits are still likely to be achieved.

7.4 Near-field analysis of Special Audible Characteristics

In addition to subjective evaluation of Special Audible Characteristics (SACs) at the receiver locations, the tonality and noise level at the near-field and intermediate measurement locations has been considered when evaluating the potential for tonality, or for the exclusion of extraneous noise from the receiver measurements in accordance with S7.2.4 of NZS 6808:2010.

The near-field measurement data was analysed for the presence of SACs in accordance with Section 2 of the NCTP.

Key points on assessment of potential SACs are noted in the following sub-sections.

7.4.1 Near-field Tonality

Tonality of the wind farm noise near to each of the 6 test turbines has been assessed in accordance with the *reference method* for assessing the audibility of tones in noise, documented in Annex C of International Standards Organisation ISO 1996.2:2017 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of sound pressure levels (ISO 1996-2:2007).

The analysis has determined that for the sample of time periods and wind conditions that have been assessed, no tones that would warrant a penalty under Section C.2.4 of ISO 1996-2:2007 were detectable. That is, there were no tones measured in the near field of the turbine with a tonal audibility (ΔL_{ta}) greater or equal to 4 dB.

Turbine	Tonality Assessment (Tonal Audibility, Frequency)	Tonal Penalty (dB)
WTG 18	N/A	0
WTG 22	No relevant tones (ie < -3.0 dB)	0
WTG 83	No relevant tones (ie < -3.0 dB)	0
WTG 93	No relevant tones (ie < -3.0 dB)	0
WTG 141	1.6 dB, 4,037 Hz	0
WTG 149	-0.4 dB, 4,040 Hz	0

In addition, the one-third octave band *simplified method* for assessing the audibility of tones in noise provided in Annex D of ISO 1996-2:2007 has also been applied to every 10-second sample measured at each of turbines WTG22, 83, 93, 141 and 149. This method has also indicated that the wind turbines do not emit any tones that would warrant a penalty to be applied.

On the basis that there are no penalizable tones in the near-field of the wind turbines that were measured, it is accepted that the wind turbines are unlikely to result in any significant tones at the receiver locations.

7.4.2 Near-field Amplitude Modulation

Similarly, representative audio recordings from each integer wind speed have been analysed for excessive amplitude modulation (AM) in the overall A-weighted noise level in accordance with the interim test method for the assessment of amplitude modulation in Section B3.2 of NZS 6808:2010. In accordance with that method, AM is subject to a penalty of 5 dB if the measured overall A-weighted peak-to-trough noise levels exceed 5 dB on a regularly varying basis in respect of the blade pass frequency. (The blade pass frequency of the turbines is 0.6 Hz at a maximum rotational speed of 12 RPM. This has a period of approximately 1.67 seconds.)

For the representative samples shown in the Technical Reports, the measured A-weighted peak-to-trough levels typically vary between 1–3.5 dB, and do not exceed 5 dB on a regularly varying basis in respect of the blade pass frequency.

It is therefore accepted that the wind turbines measured do not generate AM in the near-field at a level that would warrant a penalty under Section B3 of NZS6808:2010.

On that basis, it is unlikely that the wind turbines would result in any penalizable AM at the receiver locations. The interim test method has also been applied (using both the overall A-weighted, and measured third-octave band levels) to the measurements undertaken at the residential receiver logging locations, and

are documented in the Post-construction Noise Assessment – Regulation 131D Report (refer Section 8.3.2 below).

8. Technical verification: compliance tests at residential locations

Compliance noise level monitoring and analysis for the nominated residential locations is provided in Section 4 of the Post-construction Noise Assessment – Regulation 131D Report.

8.1 Residential monitoring locations

Noise level measurements have been undertaken at the following properties;

Location Nominated in NCTP (Backup)	Compliance Test Locations
B006 (B113)	B006
B029 (B328)	B328*
B061 (B060)	B061
B065 (B099)	B065
B083 (B079)	B083
B111 (B006)	B111
B114 (B113)	B114
B121 (B118)	B118*
B171 (B167)	B171

* access not granted to primary location nominated in NCTP, therefore representative ‘backup’ location adopted.

It is understood that B061 is owned by SHWF and is therefore a ‘stakeholder’ receiver subject to a wind farm noise agreement. It is therefore subject to a noise limit of 45 dB(A) or the background noise level + 5 dB in accordance with Regulation 131BA.

The final locations are consistent with the NCTP.

Additional noise monitoring been undertaken at intermediate locations associated with each of the residential monitoring locations. In general, noise level measurements at these intermediate measurement locations are intended to assist with future compliance measurements that may be conducted to satisfy Regulations 131F and 131G. However, intermediate measurement data has also been used to assist to identify and exclude periods that are affected by extraneous noise events at location B111, refer Section 8.3 below.

8.2 Monitoring methodology

The methodology for measurement of wind farm noise at each of the locations was provided in Section 4 of the Post-construction Noise Assessment – Regulation 131D Report and indicates that this logging was undertaken in general accordance with Section 3 of the NCTP and NZS 6808:2010.

Key points noted:

- The sound monitoring equipment adopted for the measurements was appropriate for use, and was within calibration.

- An examination of the site photographs in Appendix C of the report indicates that the measurement locations at the dwellings are appropriate. It is noted that a slightly different location was adopted at B114 due to the nearby installation of an air-conditioning unit.
- Wind speed logging was undertaken at three meteorological (met) masts located around the site. However, these were not the same as the original reference met masts used for the initial background noise level measurements, as these had been decommissioned. The wind speed data was therefore derived by a wind engineer (GHD) based on correlations between data from the decommissioned met masts and the current met masts and as relevant extrapolated to the reference hub height consistent for background and post-construction monitoring to determine the wake-free equivalent wind speeds at the original reference met masts.

8.3 Data analysis

The data was analysed in accordance with the NCTP Sections 3.3–3.6 and NZS 6808:2010.

Periods when some, or all of the wind turbines were shutdown have been excluded from the measurements, where the shutdown turbines would make a measurable contribution to total wind farm noise level at the receiver location. Measurement periods affected by rain, and high local ground-level wind speeds (> 5m/s) have also been excluded.

Extraneous noise due to fauna has been excluded from the analysis at location B111, in accordance with S7.2.4 of NZS 6808:2010. At all other dwellings, no measurements have been excluded due to extraneous noise.

The wind roses provided in Appendix D indicate that the wind conditions during the measurement period are representative of conditions generally experienced on the site.

Special audible characteristics of tonality and AM are examined in Section 4.2 of the Post-construction Noise Assessment – Regulation 131D Report and in Sections 7.2 and 7.3 of the associated Technical Reports. The methods adopted for analysis of tonality and AM are in accordance with the requirements of NZS 6808:2010 and are acceptable.

Wind speed data has been analysed by an external wind engineer (Reference: Stockyard Hill Wind Farm, Derivation of Wind Reference Data, GHD Technical Memorandum, dated 7 September 2022) and adjusted to enable a comparison between the pre-construction background noise levels and the post-construction operational noise levels in accordance with S7.3 of NZS 6808:2010.

The data analysis approach used to determine the regression lines of operational noise level is reasonable. With the exception of the measurements at B111 (where some extraneous noise has been excluded), the background noise levels have been subtracted from the measured sound levels to determine the wind farm sound in accordance with S7.5.3 of NZS 6808:2010.

Key points on assessment of potential SACs are noted in the following sub-sections.

8.3.1 Tonality

The tonality measurements at the nearfield locations of representative turbines (documented in the associated Technical Reports) do not indicate the presence of tonal noise emission from the turbines that would be likely to result in tonality at the receiver locations (see Section 7.4.1 above).

A subjective assessment of tonality has also been undertaken at each of the receiver locations in accordance with Appendix B1 of NZS 6808:2010, during the deployment of the noise monitoring equipment and no significant tonality has been identified.

On this basis it is accepted that no tonal penalty should be applied.

8.3.2 Amplitude Modulation

Analysis of Amplitude Modulation (AM) in the noise measurements undertaken near to the turbines is documented in the Technical Reports and indicates that noise emission from the turbines does not result in any AM that would be subject to a penalty (see Section 7.4.2 above).

AM has also been evaluated for the measurements undertaken at the residential receiver locations. The analysis of AM at the receiver locations has been undertaken comprehensively using both the overall A-weighted noise level at a range of wind speeds, and the third-octave band noise levels in accordance with the interim test method documented in Section B3.2 of NZS 6808:2010.

The measurements documented in Appendix B of the Post-construction Noise Assessment – Regulation 131D Report indicate that the A-weighted peak to trough levels do not exceed 5 dB on a regularly varying basis, or that the third-octave band peak to trough levels exceed 6 dB on a regular basis in respect of the blade pass frequency (noting that the blade pass frequency of the turbines is 0.6 Hz at a maximum rotational speed of 12 RPM. This has a period of approximately 1.67 seconds).

There are some periods where the peak-to-trough levels do exceed these limits, but audio recordings of these periods have been reviewed, and noise level variation has been assessed as being the result of extraneous noise such as water or fauna noise (eg sound from birds, frogs or farm animals), or not occurring at the blade-pass-frequency (Shown in Appendix F of the Post-construction Noise Assessment – Regulation 131D Report). Some low-frequency third-octave bands (25–63 Hz) do exhibit varying noise levels outside of the 6 dB peak-to-trough limit. However, tests undertaken with the wind farm turned off (documented in Figure 6 of the Post-construction Noise Assessment – Regulation 131D Report) confirm that this is sound level variation is due to existing background noise, and is not related to the operation of the wind turbines.

It is therefore accepted that no penalties for AM are warranted.

8.4 Compliance with noise limits

The auditor agrees with the finding that the primary measurements at the residences indicate that wind farm sound levels at all of the locations comply with the respective noise criteria specified in Regulation 131BA at all integer wind speeds, determined in accordance with NZS 6808:2010 as modified by the NCTP (Refer to Section 9.1).

No penalties are required for SACs, and no alternative ‘on-off’ testing is therefore necessary.

9. Additional auditor comments

9.1 Overall compliance of contents of report with NZS 6808:2010

The report Post-construction Noise Assessment – Regulation 131D Report has been prepared considering the requirements of NZS 6808:2010 and the Planning Permit, including that the report provides:

- The reporting details required, in accordance with S8.3 Compliance Assessment of NZS 6808:2010. A summary of the Auditor’s review of these requirements is provided in Appendix A.
- Assurance that independent post-construction acoustic compliance assessment has been undertaken in accordance with Planning Permit Condition 28(a) – the Auditor is satisfied that Sonus has relevant experience in acoustic measurement and analysis of wind turbine noise.
- Sufficient detail of the monitoring and assessment methodology to enable an assessment to be undertaken in compliance with NZS 6808:2010, including compliance with the noise limits.
- As stated in Section 2 of the Post-construction Noise Assessment – Regulation 131D Report, the noise limits for participant dwellings represents a modification of NZS 6808:2010, as NZS 6808:2010 does not differentiate between participant and non-participant dwellings.

9.2 Site visit

The auditor undertook a site inspection on Friday 07 October 2022. Key issues noted were:

- Operational status of windfarm, including maintenance program
- Familiarisation with local issues including communications and complaints received

- Location of sensitive receivers (both participants and non-participant landowner properties, and proxy locations (includes review of local natural local features eg trees, waterways, fauna that could impact local background noise levels)
- Location of background and post-construction monitoring locations
- General geological features, and other potentially influencing factors (eg land use, waterways, roads)

10. Conclusion

The following conclusions relate specifically to the stated objectives of the Verification of the Post-construction Noise Assessment – Regulation 131D Report and associated Technical Reports for the SHWF undertaken by David Spink, an Environmental Auditor appointed pursuant to the *Environment Protection Act 2017*.

Under Regulation 164(ca)(i), the auditor can verify the post-construction noise assessment as provided in the Post-construction Noise Assessment – Regulation 131D Report was conducted in accordance with NZS 6808:2010.

Note that as stated in Section 2 of the Post-construction Noise Assessment – Regulation 131D Report, the noise limits for participant dwellings represents a modification of NZS 6808:2010, as NZS 6808:2010 does not differentiate between participant and non-participant dwellings.

Appendix A

NZS 6808:2010 Compliance Checklist

A.1 NZS 6808:2010 Compliance Checklist

Assessment of compliance against the reporting details required under New Zealand Standard NZS 6808:2010 Acoustics – Wind Farm Noise (Standard or NZS 6808:2010)

Information Source: Stockyard Hill Wind Farm, Post-Construction Noise Assessment (Sonus Pty Ltd, Report No S3425.2C30, dated July 2023) (Post-construction Noise Assessment – Regulation 131D Report)

NZS 6808:2010 Acoustics – Wind Farm Noise - Section/Clause	NZS 6808:2010 Acoustics – Wind Farm Noise Requirement	Reference from Information Source	Assessment	Compliance
7.1.3	Sound level measurements at clearly identified noise sensitive locations	PCTR Table 1, Figure 3 and Appendix C	Measurement positions and noise-sensitive locations clearly identified.	Comply
7.1.6	Sound level measurements at noise sensitive locations and on wind farm side of buildings. Measurement positions more than 3.5 m from significant reflecting surfaces. Measurement Positions not near streams or watercourses	PCTR Appendix C		Comply
7.2.1	Sound level measurements during a representative range of wind speeds and directions generally expected at the wind farm, and include the normal range of the turbines.	PCTR correlation figures 4-12, Appendix D	Wind speeds between 3-16 m/s and directions representative of yearly average	Comply
7.2.2	Measurement time intervals of 10 minutes shall be used	PCTR S4	10-minute intervals used	Comply
7.2.3	Instrumentation shall meet S5 of NZS6801. Microphone protected by a purpose designed wind shield.	PCTR S4		Comply
7.2.4	Extraneous sound levels caused by events, including precipitation, insects, fauna and son on, should, as far as practical be identified and removed from the data set.	PCTR S4	Extraneous noise from fauna excluded for Location B111 only.	Comply
7.3.1	Measurements of wind speed and direction taken within the wind farm site at a known height AGL	PCTR Table 7		Comply
7.3.2	Where wind speed measurements are not conducted at hub-height, hub-height wind speeds to be predicted from wind-shear relationships.	PCTR S4		Comply

NZS 6808:2010 Acoustics – Wind Farm Noise - Section/Clause	NZS 6808:2010 Acoustics – Wind Farm Noise Requirement	Reference from Information Source	Assessment	Compliance
7.3.2	If wind measurements are not representative of the location of the wind turbines, wind speeds should be adjusted from the measurement location to wind turbine locations.	PCTR S4	GHD determined wind reference data	Comply
7.3.3	Same location and height used for the wind measurements before and after installation. Where another position is selected. Use the relationship between wind speeds at positions to allow the post-installation measurements to be referenced to the same wind speeds as background measurements.	PCTR S4	GHD determined wind reference data	Comply
7.5.1	Post-installation sound levels shall, where practical, be measured at the same locations where the background sound levels were determined	PCTR Table 1, Table 2	Post-installation sound levels measured at same locations where background sound levels were determined, where practical. Representative locations selected for B029, B121	Comply
7.5.2	Scatter plots shall be drawn of the post-installation sound levels against wind speed and regression curves obtained.	PCTR Figures 4–12	Scatter plots are shown	Comply
7.5.3	The contribution of the background sound shall be removed from the regression curve at each integer wind speed.	PCTR S4.1	Background sound has been subtracted from regression curve (except B111)	Comply
7.5.4	An assessment for any special audible characteristics shall be undertaken covering the range of operational wind speeds	Acoustic Test Reports S7.2 and S7.3, PCTR S4.3.1, S4.3.2	Subjective assessment of tonality and AM has been undertaken at receiver locations. Objective measurement of AM and tonality has also been undertaken at nearfield locations.	Comply
7.6.2	To determine conformance with the limits, a comparison shall be made between the best fit regression lines of the background sound and the regression curves of the wind farm sound levels adjusted for any special audible characteristics.	PCTR Figures 4–12	Regression curves shown in appendices include background sound curves and wind farm sound levels adjusted for SACs	Comply
8.3	Report of wind farm post-installation sound level measurements and compliance assessment shall refer to the	PCTR S1	NZS 6808:2010 used	Comply.

NZS 6808:2010 Acoustics – Wind Farm Noise - Section/Clause	NZS 6808:2010 Acoustics – Wind Farm Noise Requirement	Reference from Information Source	Assessment	Compliance
	standard and provide the following:			
	a. description of the sound monitoring equipment including any ancillary equipment	PCTR S4		Comply
	b. A statement confirming the use of A-frequency-weighting	PCTR S4		Comply
	c. the location of sound monitoring positions	PCTR S2, Table 1, Table 2 PCTR S4 Appendix C		Comply
	d. description of the anemometry equipment including the height AGL of the anemometer	PCTR S4, Table 7		Comply
	e. position of wind speed measurements	PCTR Figure 3, Table 7		Comply
	f. Make and model of the wind turbines	PCTR S3.1, Table 4, Figure 1		Comply
	g. number of operational wind turbines	PCTR S1, Figure 1		Comply
	h. time and duration of monitoring period	PCTR S4, Table 6, Table 8		Comply
	i. Averaging period for both sound and wind speed measurements	PCTR S4, Table 6, Table 8		Comply
	j. Atmospheric conditions: the wind speed and direction at the wind farm position and rainfall shall be recorded	PCTR S4, Figures 4–12, Appendix D		Comply
	k. number of data pairs measured (wind speed in m/s, sound in L90)	PCTR S4.1, Table 9	> 1,440	Comply
	l. description of the regression analysis	PCTR S4.1	3 rd Order polynomial	Comply
	m. Graphical plots showing the data scatter and the regression lines;	PCTR S4.2, Figures 4–12		Comply
	n. Graphical plots showing the data scatter and the regression lines for both the background and the wind farm in operation;	PCTR S4.2, Figures 4–12, Background Noise Monitoring Report, Appendix B		Comply

NZS 6808:2010 Acoustics – Wind Farm Noise - Section/Clause	NZS 6808:2010 Acoustics – Wind Farm Noise Requirement	Reference from Information Source	Assessment	Compliance
	<p>o. Assessment of special audible characteristics; and</p> <p>p. A statement that the wind farm complies with relevant limits – or not – as determined from the results of the measurements.</p>	<p>PCTR S4.3, Appendix E</p> <p>PCTR S5</p>	<p>Note that as stated in Section 2 of the Post-construction Noise Assessment – Regulation 131D Report, the noise limits for participant dwellings represents a modification of NZS 6808:2010, as NZS 6808:2010 does not differentiate between participant and non-participant dwellings.</p>	<p>Comply</p> <p>Comply</p>