



APPROVALS - SUSTAINABILITY - COMPLIANCE

*Review of the
Noise Management Plan*

*for the
Berrybank Wind Farm*

**for
Berrybank Development Pty Ltd**

GENERAL INFORMATION

Report Descriptor:	Descriptor: r_GPG_Berrybank_NMPReview_241106_R0
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Report(s) Subjected to Review	
Noise Management Plan	Berrybank Wind Turbine Farm Noise Management Plan M230283RP1 Revision D, prepared by Resonate dated Thursday 3 October 2024
Report Distribution:	
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Revision	Summary of Amendments	Reviewed by	Issued by	Issue Date
0		S Carter	S Jenkins	11/11/24

REVIEW METHOD

This review report is based on a systematic examination of the noise management plan (NMP) against the requirements of the Regulations and available EPA guidelines.

The auditor has interrogated the technical and administrative components within the NMP, evaluated the noise modelling, made enquiries relating to derivation of noise compliance limits, assessed content against guideline expectations, held communications with the proponent and the suitably qualified and experienced acoustician who authored the NMP, reviewed nominated Alternative Monitoring Points (AMPs), suggested improvements and amendments to content and received an update based on such recommendations.

An appreciation for the WEF locality was obtained via a site inspection, including the land use and topography surrounding the nominated noise monitoring locations.

The report is provided for the named entity and may only be reproduced and distributed in full.

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ABBREVIATIONS

ABBREVIATION	WORD/PHRASE
AMP	Alternative monitoring point (interchangeably termed alternative monitoring location in NMP)
AS/NZS	Australian and New Zealand Standard
EPA	Environment Protection Authority of Victoria
DELWP/ DoT	The former Department of Environment Land Water and Planning, Victoria (as of 2023 being the Dept of Transport and Planning, Victoria)
GED	General environmental duty
m/sec	meters per second
NMP	Noise management plan
NSL	Noise sensitive location (interchangeably termed noise sensitive area within the Regulations)
NZS	New Zealand Standard
Principal Regulations	Environment Protection Regulations 2021
SAC	Special audible characteristic i.e. tonality, impulsiveness, amplitude modulation.
SQEA	Suitably qualified and experienced acoustician
the Regulations	Environment Protection Amendment (Wind Turbine Noise) Regulations 2022
WEF	Wind energy facility
WTG	Wind turbine generator

DEFINITIONS

Standard:

New Zealand Standard NZS 6808:2010 Acoustics – Wind Farm Noise

Noise Sensitive Location/ Noise Sensitive Area – for the purposes of the NMP, these terms are considered interchangeable and have the same meaning as included for a noise sensitive area in Part 1.2 Section 4 - Definitions within the Environment Protection Regulations 2021.

(It is noted a definition for noise sensitive location is provided in the NZS 6808:2010 Standard which may differ to the Principal Regulations).

(Involved) Stakeholder – a landowner that has a written wind turbine noise agreement with the WEF to exceed the noise limit as specified under the Standard.

Night period – The Environment Protection Regulations 2021 specify:

night period to be 10 p.m. to 7 a.m. the following day.

(It is noted the relevant Standard does not specify time periods. For the purposes of the NMP, definitions within the Regulations are taken to apply).

EXECUTIVE SUMMARY

I have reviewed the noise management plan (NMP) against available EPA guidelines and the Environment Protection Amendment (Wind Turbine Noise) Regulations 2022 requirements, and find the document titled 'Berrybank Wind Turbine Noise Management Plan' conforms with the reasonable expectations of the content of a functional NMP including:

- procedures for identification, assessment and control of risk of harm to human health and the environment (i.e. taken to be compliance with noise limits specified in the Standard and the Regulations),
- reducing wind turbine noise in the event of non-compliance, and
- addressing complaints.

Suggested improvements that were incorporated into the final document or clarified during the NMP review process included:

- Adding noise compliance aspects to the stated responsibilities for the Relationship and Compliance Manager role.
- Clarifying the scope of operational audits.
- Ensuring the Objectives of the NMP include compliance obligations within the project's Planning Permit.
- Consideration of cumulative noise impacts from nearby wind farms.
- Appropriately referencing relevant sections of the appended Noise Compliance Testing Plan.
- Inclusion of noise limits for two NSLs not previously listed.
- A review of post construction noise monitoring reports to consider potential for tonality special audible characteristics.
- Inclusion of baseline rainfall data.
- Consideration and addition of high amenity and nighttime noise limits to NSLs located within a Township Planning Zone.
- Clarification of expert oversight of the wind speed data processing procedure.
- The use of alternative monitoring points (AMPs) where NSLs are not available that coincide with background sound measurements.
- Addition of AMPs for two NSLs not previously listed.
- Confirmation of the lead acoustic consultant's experience requirements.

Signed



Stephen Jenkins (Environmental Auditor Appointed under the Environment Protection Act 2017)

1.0 INTRODUCTION

This report discusses a review of the noise management plan prepared by Resonate on behalf of Berrybank Development Pty Ltd (BDPL) titled 'Berrybank Wind Farm Noise Management Plan'. The Berrybank Wind Energy Facility (WEF) is located approximately 80 km west of Geelong and 14 km east of Lismore in Western Victoria.

The WEF consists of 69 Vestas V136-4.2MW turbines each with a rated power of 4.2 MW hub height of 112m above ground and a rotor diameter of 136 m. The WEF was constructed over two stages with Stage 1 commencing operations in July 2021 and Stage 2 commencing operations in June 2023.

The review was commissioned by Berrybank Development Pty Ltd to fulfil obligations under the Environment Protection Regulations 2021 (as amended) (the Principal Regulations).

The report structure and content, where relevant, is based on the available EPA guidelines relating to auditor reports on wind energy facilities i.e. publication 1692, *Wind energy facility noise auditor guidelines, October 2018*. It is recognised that additional guidance is under development, but this had not been issued at the time of the review report.

2.0 COMPONENTS OF REVIEW

2.1 Objective

The objective is to review the noise management plan (NMP) as to its conformance with specifications within the Environment Protection Amendment (Wind Turbine Noise) Regulations 2022 (the Regulations) and EPA guidelines as published on their website at the time of the review.

As the WEF was authorised after 1 January 2011 the 'relevant noise standard' is specified in the Regulations ([i.e. Section 131B]) as New Zealand Standard NZS6808:2010, Acoustics – Wind Farm Noise (the 'Standard'). The NMP is therefore prepared to assess compliance initially with this Standard. In addition, the Wind Farm holds two planning permits one issued under the Golden Plains Planning Scheme (20092820 – A) and one issued under the Corangamite Planning Scheme (20092821 – A) which contain conditions relating to the control of operational wind turbine noise. The NMP also addresses compliance with these planning permits.

The Regulations include noise limits for landowners who are subject to a wind turbine noise agreement [i.e. Section 131 BA (2)], termed in the NMP an 'involved stakeholder'. The NMP reports that there are 12 involved stakeholders who have an agreement in place with BDPL with respect to wind turbine noise. As these agreements were made prior to 1 November 2021, in accordance with the Regulations Section 131BA (2), the WEF does not need to comply with noise limits set out in NZS 6808:2010 at those dwellings. Rather, WEF must comply with any limits set out in the agreements. The NMP advises that there are no such limits contained within the agreements. Therefore, no noise limits apply for the involved stakeholders.

2.2 Scope

The scope is to:

1. review the report titled Berrybank Wind Turbine Noise Management Plan M230283RP1 Revision D prepared by Resonate dated Wednesday, 3 October 2024; and
2. prepare a report under regulation 164(ca)(ii) in relation to the noise management plan.

2.2.1 Activity

The activity is the noise generated by the wind turbine generator (WTG), as defined within the Standard, including any cumulative noise from adjacent wind energy facilities; either operating or under planning approval to develop.

A site inspection of the proposed WEF's locality was conducted by the auditor to appreciate the locality and the proposed noise monitoring locations including the nominated alternative monitoring points.

2.2.2 Segment & Boundary

The segment being reviewed within the NMP relates to noise that will be generated by the WEF with potential to impact on a noise sensitive area/ location (NSL).

The area boundaries under consideration include noise sensitive locations (NSL) within reasonable proximity to the turbine i.e. typically not beyond 2.0 kms. These boundary distances are considered suitable to reasonably capture a non-compliance noise level risk against a wind turbine noise limit.

2.2.3 Element & Beneficial Uses

The element of the environment under consideration is the protection of human health and well-being from noise related sleep disturbance, annoyance and amenity loss.

Note 1: The term beneficial use is no longer used in the Regulations.

Note 2: Noise limits specified in the Standard are not designed to provide absolute assurance against individual annoyance sensitivities.

2.2.4 Period

The review was conducted over the period: 10-21 June 2024.

2.2.5 Criteria

The noise criteria for noise sensitive areas where a wind turbine noise agreement does not apply are specified in the New Zealand Standard, NZS 6808:2010, which forms the relevant 'Standard' when assessed in accordance with Regulation 131B.

Noise limits are defined in section 5.2 and 5.3 of the Standard as:

‘... As a guide to the limits of acceptability at a noise sensitive location, at any wind speed wind farm sound levels (LA90(10 min)) should not exceed the background sound level by more than 5 dB, or a level of 40 dB LA90(10 min), whichever is the greater.’

An increased noise limit is applicable at locations whereby a wind turbine noise agreement is made with a relevant landowner i.e. a 'host dwelling' or an 'involved stakeholder location'.

Whilst a noise limit is not specified in the Standard for stakeholder locations, a noise limit is provided in the Regulations i.e.:

Section 131BA (2): If a wind energy facility is the subject of a wind turbine noise agreement, the noise limit for that facility in relation to noise emissions to the premises of the relevant landowner is—

- (a) if the agreement is made before 1 November 2021, the noise limit specified in the agreement; or
- (b) if the agreement is made on or after 1 November 2021, the noise limit that is the greater of—
 - (i) 45 dB(A); or
 - (ii) the background sound level plus 5 dB.

It is noted that Section 131CA of the Regulations provide direction to the GED section of the Act supporting an interpretation that the GED is met if wind turbine noise is in compliance with the noise limits for the facility, or a noise assessment confirms noise levels at an alternative monitoring point comply with the SQA derived alternative monitoring point criteria.

2.2.6 Exclusions

In accordance with the Regulations, the review includes the components of the NMP associated with wind turbine generator (WTG) noise as assessed against the requirements of NZS 6808:2010. It does not consider auxiliary noise sources¹.

2.3 Methodology

The following method was adopted for the review:

1. Communications with the client as to the review process.
2. Attaining a copy of the noise management plan (NMP) and associated noise modelling report.
3. Reviewing the NMP, and provision of comments, queries and clarifications back to the proponent on specific items within the plan, including an assessment of coverage against the EPA Regulations and guidelines, and recommendations aimed to achieve same.
4. Inspecting the areas surrounding the WEF as referenced in the NMP, including sighting any proposed alternative monitoring point(s) (AMP).
5. Subsequent communications with the proponent's representative and review of comments made by the suitably qualified and experienced acoustician who authored and/ or led the preparation of the NMP, regarding auditor comments and items warranting clarification.
6. Obtaining an updated tracked change version of the NMP and provision of further comments (as relevant).

¹ Note: Non-WTG noise considerations are outside the auditor's role under the Regulations.

7. Holding final discussions on the updated NMP with the proponent and the suitably qualified and experienced acoustician.
8. Prepare the review report inclusive of commentary against EPA guideline requirements and the Regulations.

2.4 Regulation Requirements

In respect to the review, the relevant sections of the regulations are:

'Section 131E Noise management plan

- (1) An operator of a wind energy facility must prepare and implement a noise management plan for the facility.
- (2) The noise management plan must include procedures for the following—
 - (a) the identification, assessment and control of risks of harm to human health and the environment from wind turbine noise;
 - (b) determining any alternative monitoring points and alternative monitoring point criteria for the wind energy facility;
 - (c) assessing whether wind turbine noise from the facility complies with—
 - (i) the noise limit for that facility; or
 - (ii) if the wind turbine noise is assessed at an alternative monitoring point, the alternative monitoring point criterion for that alternative monitoring point;
 - (d) reducing wind turbine noise from the facility in the event that non-compliance is detected with—
 - (i) the noise limit for that facility; or
 - (ii) if the wind turbine noise is assessed at an alternative monitoring point, the alternative monitoring point criterion for that alternative monitoring point;
 - (e) addressing any complaints about wind turbine noise received by the operator, including who will investigate the complaint and respond to the complainant. and
- (3) As soon as reasonably practicable after the noise management plan has been prepared, the operator must engage an environmental auditor to prepare a report under regulation 164(ca)(ii) in relation to the noise management plan.'

The auditor's role is outlined in Section 164 (ca) of the Principal Regulations i.e.

Part 6.1—Environmental audit system

Section 164 Functions of environmental auditors

For the purposes of section 190(1)(d) of the Act, the prescribed functions of an environmental auditor are the following—

- (c) to perform any function conferred on an environmental auditor under a legislative instrument made under any Act;

"(ca) for the purposes of Division 5 of Part 5.3—

(ii) to review any noise management plan prepared for a wind energy facility"

EPA has released guidance on its website (initially released November 2022) relating to noise management plans. No updated auditor guidelines have been released, although EPA has noted further guidelines will be prepared during 2024. EPA confirmed (*source: pers comm. EPA auditors meeting 1 December 2022*) that the previous auditor guidelines are to be referenced in the interim.

Therefore, to assist the auditor on procedural structure and content of the review report, reference has been drawn from personal experience and where relevant from:

- EPA publication 1692, *Wind energy facility noise auditor guidelines, October 2018.*

The review has however adopted the Regulations specifications as guidance for items to be considered, and these may be summarised as (i.e. Section 131E-2):

- (a): Procedures for identification, assessment and control of risk of harm to human health and the environment from wind turbine noise (2(a)) (taken to be compliance with noise limits specified in the Standard).
- (b): Determining an alternative monitoring point and criteria.
- (c): Assessing when wind turbine noise complies with noise limits.
- (d): Reducing wind turbine noise in the event of non-compliance; and
- (e): Addressing complaints and responding to the complainant.

3.0 EPA LEGISLATION AND GUIDELINES

The following guidance material is considered to apply to the NMP review and has been suitably referenced by the auditor:

- Environment Protection Act 2017 (as amended) (the 'Act').
- Environment Protection Amendment (Wind Turbine Noise) Regulations 2022.
- New Zealand Standard 6808:2010, Acoustics – Wind Farm Noise.
- Wind Energy Facility Noise Auditor Guidelines EPA Publication 1692 October 2018.
- ISO 1996-2 Acoustics – Description, measurement and assessment of environmental noise. Annex C Objective method for assessing audibility of tones in noise.
- AS 1055:2018 Acoustics – Description and measurement of environmental noise.

Guidance as to the reporting process and technical considerations within the NMP was also obtained from EPA publications:

- *2041 February 2022 Guidelines for Conducting Environmental Audits,*
- *Publication 865.13 Environmental auditor guidelines for appointment and conduct,*
- EPA Website: [Wind Energy Facility Turbine Noise Regulation Guidelines | Environment Protection Authority Victoria \(epa.vic.gov.au\)](https://www.epa.vic.gov.au/wind-energy-facility-turbine-noise-regulation-guidelines)
(i.e. latest Wind Energy Facility Turbine Noise Regulations Guidelines, published 14 November 2022 and accessed October 2024,
- Noise protocol² EPA Victoria Publication 1826 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*

3.1 Auditor Duties & Declaration

It is a requirement of guidelines that environmental auditors have regard to the Act, subordinate legislation and relevant EPA audit guidelines when undertaking their duties as environmental auditors.

I declare I have considered the Act, the Regulations and relevant published and available guidelines, and have no conflict of interest in preparing the review report.

² It is noted that the Regulations are specific to Division 5 wind turbine noise and the relevant Standard, and do not cover a review of ancillary noise sources against the Noise Protocol.

4.0 NOISE LIMITS

4.1 Noise Sensitive Location Noise Criteria

The Wind Farm is subject to planning approval conditions which require a pre-construction noise assessment to be prepared in accordance with the Standard. Marshall Day have prepared two reports prior to the operational phase of the WEF to inform noise limits. These are Marshall Day Acoustics, 2019, Berrybank Wind Farm – Pre-Development Noise Assessment and Marshall Day Acoustics, 2019, Berrybank Wind Farm – Background Noise Monitoring. In accordance with the Standard, monitoring data was used to calculate regression curves resulting in noise limits being derived for hub height wind speeds between 3 m/sec (cut in speed) and 15 m/sec; as is provided within Table 6 (all-time) of the NMP.

The noise limit tables in the NMP reveal the NSLs having derived noise limits as follows:

For All-Time (day and night combined) a base limit of 40 dB for wind speeds from 3m/sec to 7m/sec. At higher wind speeds noise limits increase due to increased background levels.

It is noted there is no night period noise limit specified in the NMP. This may become relevant if future complaints are made concerning night period noise.

4.2 Stakeholder Noise Limit

The NMP reports that there are 12 involved stakeholders who have an agreement in place with BDPL with respect to wind turbine noise. As these agreements were made prior to 1 November 2021, in accordance with the Regulations Section 131BA (2), the WEF does not need to comply with noise limits set out in NZS 6808:2010 at those dwellings. Rather, the WEF must comply with any limits set out in the agreements. The NMP advises that there are no such limits contained within the agreements. Therefore, no noise limits apply for the involved stakeholders. Eight (8) alternative monitoring points are specified with their position being in reasonable proximity to a location between the turbines and the NSL that they aim to assess compliance against.

The specified criteria at an AMP are reportedly be derived adopting the ISO 9613-2 calculation procedure and referenced against NSL compliance criteria. This, in combination with the modelling approach specified is considered an appropriate means to extrapolate a compliance noise limit at an AMP.

New dwellings are possible post the WEF approval date. There appears to be a potential conflict between the Regulations and planning rules associated with an appropriate noise limit to protect new dwellings. It is likely a landowner noise agreement will be required for any new dwelling that did not have a planning permit application in at the time the WEF was approved. Communication with EPA [pers com. 5 May 2023] suggested this approach is reasonable and should be taken by auditors.

The site inspection identified no new dwellings are currently being constructed within the 35 dB L_{A90} prediction contour.

It is noted the Standard requires testing between cut in and rated wind speeds (i.e. Section 7.2.1 of the Standard) and this is included within the appended NCTP (i.e. MDA, 2019, Section 6.3) to the NMP. The NMP also contains provision for On/Off testing and also additional background derivation if required.

4.3 Review of background sound level assessments and noise limits

Background sound level measurements were taken prior to the development and formed a part of the post construction noise compliance assessment as was required by the planning permit. Background sound data and post compliance monitoring were reported by Marshall Day Acoustics [MDA,2022].

The information provided within the background noise data comprised scatter plots and derived polynomial equations that enable a regression line to be plotted under all-time.

4.4 Compliance testing

Post construction compliance testing has been conducted and reported [MDA, 2022]. The report concluded wind farm noise levels were compliant with the applicable noise limits.

It is emphasised this review report is of the NMP and does not review the veracity of compliance testing processes nor results, other than noting where the monitoring occurred, and specification of the background regression curves used to derive compliance limits.

5.0 PROCESS

During the initial review of the NMP, specific items were identified, and recommendations made for additional clarity of content, procedural alterations and administration type changes.

Amendment recommendations and enquiries were provided directly onto the provided version of the NMP provided during the initial review. This was accompanied by subsequent communications to enable a response on enquiries, additions and recommendations from the suitably qualified and experienced acoustician and representatives of the proponent.

A tracked changes document was then provided against each comment to the auditor for further review and final feedback. The outcome of this further and final review is documented in Section 6 below.

An updated NMP was subsequently provided for final review and reporting.

Suggested improvements that were incorporated into the final document included:

- Adding noise compliance aspects to the stated responsibilities for the Relationship and Compliance Manager role
- Clarifying the scope of operational audits
- Ensuring the Objectives of the NMP include compliance obligations within the project's Planning Permit
- Consideration of cumulative noise impacts from nearby wind farms

- Appropriately referencing relevant sections of the appended Noise Compliance Testing Plan
- Inclusion of noise limits for two NSLs not previously listed
- A review of post construction noise monitoring reports to consider potential for tonality special audible characteristics
- Inclusion of baseline rainfall data
- Consideration and addition of high amenity and nighttime noise limits to NSLs located within a Township Planning Zone
- Clarification of expert oversight of the wind speed data processing procedure
- The use of alternative monitoring points (AMPs) where NSLs are not available that coincide with background sound measurements
- Addition of AMPs for two NSLs not previously listed
- Confirmation of the lead acoustic consultant's experience requirements.

6.0 ASSESSMENT OF CONFORMANCE AGAINST EPA GUIDELINES

From EPA website *Wind Energy Facility Turbine Noise Regulation Guidelines* (accessed April 2024)

Requirement	Conforms Y/N/Part	Comment
An NMP must be prepared for the WEF in accordance with regulation 131E. Broadly, the function of the NMP is to demonstrate an understanding of the risks of noise-related harm associated with the operation of the WEF, and to document procedures to control those risks and rectify any noncompliance. The documented approach to WEF noise management should be practical, cost effective and proportionate to the risk of harm, and supported by verifiable evidence.	Y Y	An NMP has been prepared as required under the Regulations. Refer to below for detail. The NMP captures risk elements including relevant legislation, policies and guidelines, applicable noise limits, noise test requirements and reporting procedures, maintenance requirements, complaints procedures, noise remediation procedures, requirements for annual statements and periodic noise monitoring requirements. These elements adequately describe the processes and methodology to meet the primary purpose of the NMP in accordance with Regulation 131E.
Regulation 131 E(2) requires the NMP to include procedures for: 1. the identification, assessment and control of risks of harm to human health and the environment from wind turbine noise. 2. determining any alternative monitoring points and associated alternative monitoring point criteria. 3. assessing compliance with:	Y Y	The NMP contains risk-based procedures to control noise throughout the document. Section 5 – Risk Assessment deals specifically with the risks of non-compliance with applicable noise limits, the presence of special audible characteristics (SAC) and the potential for changes in noise levels or SAC over time and rates these risks both pre and post controls. EPA guidance (publication 1695.1) has been used to inform the risk assessment. Alternative monitoring points (AMPs) have been specified along with a process for determining the applicable noise criteria at the AMPs (refer Sections 12.2 and 12.3) relative to the compliance noise limits that are applicable at the NSLs. The applicable alternative monitoring point criteria have been established by determining the predicted difference between the AMP and the applicable criteria at the NSLs. The procedures to determine this noise level difference were in accordance

○ the noise limit for that facility, or ○ the applicable alternative monitoring point criterion if the assessment of the wind turbine noise is conducted at an alternative monitoring point. 4. reducing wind turbine noise in the event of noncompliance with the noise limit for the facility or alternative monitoring point criterion determined for an alternative monitoring point. 5. addressing any complaints about wind turbine noise received by the operator, including who will investigate the complaint and respond to the complainant.	Y Y Y Y	with ISO 9613-2 (attenuation of sound during propagation outdoors). The initial AMPs were sighted, and the auditor engaged with the SQEA as to the suitability of additional locations. The NZ6808:2010 Standard processes have been adopted to derive noise limits based on background sound level information and derived regression curves. Noise compliance limits at NSLs within the 35 dB L_{A90} noise contour (Table 6 of the NMP) were calculated from either the base limit of 40 dB L_{A90} or background sound plus 5 dB(A) in accordance with the Standard. The background sound level trend line (i.e. regression curve) being derived from background sound monitoring data summarised in the background noise monitoring report [MDA, 2020]. There are 12 involved stakeholder dwellings listed in the NMP (Table 3). The agreements with the involved stakeholders were made prior to 1 November 2021. In accordance with Environment Protection Amendment (Wind Turbine Noise) Regulations 2022, for agreements made before 1 November 2021, noise limits are determined as the noise limits contained within the agreement. The NMP advises that the agreements do not contain noise limits. Therefore, no noise limits apply to the involved stakeholders. Section 12 describes the processes for determining compliance with noise limits for the WEF including assessing compliance at alternative monitoring points, checking for SACs and the frequency of assessments. Processes and procedures to mitigate the risk of non-compliance and reduce wind farm noise if a non-compliance noise level is identified are provided in Section 10. This section outlines triggers for implementing
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		noise remediation procedures relating to possible non-compliance scenarios as well as mitigation measures and short-term actions such as curtailment and undertaking maintenance procedures. Complaint receipt, logging, and response, including communication and close-out are included within the complaint response procedures provided in Appendix D, Berrybank Wind Farm Complaints Investigation and Response Plan. The NMP does not include a discussion on how any new dwellings may be considered. This aspect is not well defined in the Regulations. It is envisaged that should a new dwelling be proposed a noise agreement will become relevant as part of the planning process.
WEF operators are required to: - engage an environmental auditor to review the NMP - provide a copy of the NMP and environmental auditor's report to the Authority (EPA) on request. - amend the NMP if requested by EPA.	Y NA NA	This report addresses this requirement. To be actioned upon request. As above.
8.1 Developing a noise management plan		
Organisational environmental strategy (regulation 131 E(2)(a)) Definition of organisational and other responsibilities for the measurement, assessment and management of noise emissions from the WEF.	y	The organisational environmental strategy is described in Section 1.1. This includes reference to BDPL's environmental management system which links to the NMP. Roles and responsibilities for relevant BDPL personnel for the oversight and management/implementation of the NMP are outlined, including the Site Manager, Operations Manager, WHS Specialist and the Relationship and Compliance Manager. The engagement of noise experts such as suitably qualified and experienced acousticians as required is also captured.

Requirements for reporting and recordkeeping, including document control systems, incident reporting and tracking, and records to be retained.	Y	Requirements for reporting, record keeping, document control and records management are outlined in Sections 1.1, 8 and 10. Incident reporting and management is covered in Section 8 and states that incidents will be registered in the BDLP HSE Management System including the need for an investigation. Noise-related inspections and maintenance aspects are also captured in Section 8. Records are stated to be retained for 5 years post the life of the project unless a Regulation, guideline or approval condition specifies otherwise as specified in Section 8.5.
Regulatory standards (regulation 131 E(2)(a)) Summary of legislative framework requirements.	Y	Section 3 includes relevant legislative requirements including the EP Act 2017, the Regulations, Noise regulation guidelines and the relevant Standard (NZS 6808:2010) Sections 3.1 and 3.2 outline the obligations under the EP Act 2017 and the Regulations as they relate to the GED. Compliance with the GED is also further evaluated in Section 5. Section 131CA of the Regulation which sets out that the GED can be complied with on the basis of a noise assessment confirming compliance with noise criteria limits, or as measured at an alternative monitoring point against the alternative monitoring point criteria is referenced in Sections 3.2.3 and 5 The EPA Wind Energy Facility Turbine Noise Regulation Guidelines relating to the NMP are referenced, and direction is provided as to where the guideline requirement is considered to be captured within the NMP.
Outline of site environmental noise objectives, including the relevant consent conditions.	Y	Overall NMP objectives are listed in Section 1.5. These cover compliance with legislative requirements, pre-emptive checking for changes in noise characteristics or levels, maintenance and stakeholder and complaints management.

		Compliance with Planning Approval conditions was not originally included in the NMP however, following discussions with the noise consultant, this has now been added.
Noise sensitive areas and alternative monitoring points (regulation 131 E(2) (b), (c)(i) & (ii)) Identification and justification of noise sensitive areas, alternative monitoring points, and applicable alternative monitoring point criteria, land use category and operational noise limits that apply at each of the locations.	Y	Noise Sensitive Areas (termed 'noise sensitive locations' in the NMP to be consistent with the Standard) are considered captured in the NMP under Section 2. The 2020 Marshall Day Pre-Development Noise Assessment identified 21 noise sensitive locations within the 35 dB_{LA90} noise contour. Noise limits were determined through background noise monitoring at the noise-sensitive locations within the predicted 35 dB LA90 noise contour and are provided in Section 4.1 of the NMP. Noise limits have been established for six NSLs. All-time noise limits range from the base limit of 40 dB_{LA90} for wind speeds of 3-7m/s. At higher wind speeds noise limits increase due to increased background levels. The NMP contains provision for On/Off testing in Section 6.2 and provides procedures for undertaking this testing. Eight alternative monitoring points (AMP) have been specified along with a process outlining how the noise criteria at the AMP have been derived (refer Section 12.3) against the compliance noise limits that are applicable at the NSL. The AMPs were sighted. The applicable alternative monitoring point criteria were established by determining the predicted difference between the AMP and the applicable criteria at the NSL. The procedures to determine this noise level difference were in accordance with ISO 9613-2 (Attenuation of sound during propagation outdoors) using an algorithm and modelling adopting SoundPlan V8.2. Derived noise limits for the AMP are provided in Table 11.

		The prediction algorithm adopted is similar to that used in many pre-construction noise assessments and is considered appropriate. The assessment of potential for special audible characteristics is discussed in Section 6.1 of the NMP and also references the Noise Compliance Testing Plan developed by Marshall Day (April 2019). Section 12.4 notes that an assessment of SAC will be included in any periodic noise monitoring for the WEF in accordance with the NCTP. The NCTP sets out appropriate procedures to assess and respond to the potential for SAC. EPA guidance, or consultation, should be considered if any approach to assess and quantify SACs deviates from that specified in the relevant Standard.
Map of noise sensitive areas in relation to the WEF, and alternative monitoring points.	Y	A map showing the NSLs, and the AMPs is provided in Figures 1 and 4 respectively.
Risk assessment and controls (regulation 131 E(2)(a)) (EPA Publication 1695 Assessing and Controlling Risk (publication 1695) provides a framework for risk assessment.) Operational noise modelling, including method, input data and results.	Y	The NMP references a Pre-Development Noise Assessment prepared by Marshall Day (April 2019) which provides predicted noise modelling contours for the WEF. Appendix C, Noise Compliance Testing Plan prepared by Marshall Day (April 2019) is attached to the NMP. The NCTP includes Figure 1 showing the predictive noise contours from the WEF.
Risk analysis and assessment, including identifying major noise sources and evaluating and assessing risks of harm to human health and the environment from wind turbine noise.	Y	A risk assessment, undertaken in accordance with EPA publication 1695.1, is included in Section 5. The risk assessment (Table 8) considers non-compliance with applicable limits, presence of SAC and changes in noise level or SAC over time. Residual (post control) risk is rated as medium in all three cases, which is considered reasonable.

		A medium risk is considered an acceptable risk subject to rigorous implementation of controls. Controls specified include noise monitoring, complaint response procedures, noise remediation plans, training, three monthly inspections and maintenance programs.
Evaluation of likelihood and consequence of risks, development of a risk matrix and risk management approach.	Y	Refer above.
Consideration of control measures to address noise-related hazards and determination of residual risks.	Y	Refer above.
Operational performance (regulation 131 E(2)(c)) Details of noise measurement procedures, including equipment requirements, timing and duration.	Y	Noise measurement procedures are described in Section 6 of the NMP. This section references the NCTP developed by Marshall Day (April 2019) which is included as Appendix C. Details associated with equipment, calibration, assessment procedures for subjective and objective assessments for evaluation and application of special audible characteristics are included in the NCTP. Periodic testing procedures in accordance with NZS 6808:2010, are specified in Section 12. This specifies that AMPs have been nominated based on a review of the site and the nearest NSLs. The option for on/off testing is provided if required. The procedures for an on/off test are specified in the NMP Section 6.2 and will follow procedures defined in NZS6808:2010. Quality assurance (QA) procedures are specified in Section 12.5 including the involvement of an SQEA in noise monitoring and assessment tasks.
Wind-speed measurement locations and analysis approach for wind speed data.	Y	Wind data is discussed in Section 6.3. It is noted that wind speed and direction data used for the background noise monitoring period was obtained from a site meteorological mast that has since been removed from the site. The NMP proposes to obtain future wind data using a process developed by the wind turbine supplier and EPC contractor.

		The process is described in Figure 3 of the NMP. This process was used during post-construction noise monitoring. Any alternative procedure will be deemed appropriate by a suitably qualified wind consultant.
Noise level and wind-speed measurement data analysis approach, including for subjective and objective evaluation of Special Audible Characteristics (SACs), and procedures for data exclusion, where necessary.	Y	Noise level and wind speed measurement data analysis approach is discussed in Section 6 of the NMP and in the appended NCTP. Special Audible Characteristics assessments are discussed in Section 12 of the NMP with additional detail provided in the appended NCTP (Section 6.7) along with subjective and objective test procedures for SACs. The NCTP discusses analysis processes for excluding data due to rainfall and other extraneous sources (Section 7).
Approach for attended subjective observations	Y	Subjective assessment observations are captured in the NCTP appended to the NMP. The process includes a 3 separate visits for minimum 10-minute periods on different days and includes at least 1 night period. The overall process is deemed appropriate.
Summary of results of operational noise monitoring and compliance assessment, including at alternative monitoring points	Y	Post-construction noise monitoring has been undertaken during June 2021 to September 2021 for Stage 1 of the WEF. This monitoring was repeated for Stage 2 of the Project during 2022-2023 at both NSLs and intermediate locations. This is discussed in Section 2.5 of the NMP and concludes that the monitoring showed the wind farm noise levels to be in compliance with applicable noise limits. An Annual Statement is also captured (Section 11) and includes relevant information associated with complaints, maintenance, compliance determination and remediation programs.

Summary of baseline meteorological conditions (consistent with the compliance documentation required under section 8.3 of the 2010 Standard including atmospheric conditions (wind speed and direction, rainfall)).	Y	Baseline wind speed and direction data is provided in Section 2.6 of the NMP. Ongoing access to wind speed and direction data is discussed in Section 6.3. Baseline rainfall data was not originally provided in the NMP, however, following communications with the noise consultant, this has now been added.
Site inspection and maintenance (regulation 131 E(2)(a)) Details of the maintenance plan and routine maintenance activities.	Y	Specific details for site inspection and maintenance activities are provided in Section 8.1, 8.3 and 8.4. Routine scheduled preventative maintenance on the turbine will occur on an average 6 monthly basis. Inspections will occur at a minimum on a three-monthly basis to check for unusual acoustic characteristics. If detected, they will be captured as an incident in the maintenance system.
Requirements of ongoing condition monitoring and inspections that may influence noise emissions.	Y	Refer to above discussion of inspection programs. 3 monthly environmental checks are proposed with records kept. Periodic noise monitoring, as required under the Regulations, is specifically referenced in Section 12, and includes a noise assessment every 5 years in accordance with the relevant Standard and the Regulations. Monitoring is stated to be led by the SQEA.
Procedures for unexpected (non-routine) maintenance activities.	Y	Unscheduled maintenance can arise from SCADA fault notifications, inspections, as listed in a noise remediation plan or, as a result of a complaint investigation identifying a non-compliance. Unscheduled servicing (e.g. blade repair, replacement, major issues with the nacelle) details are specified to be recorded and reported within the annual statement. Unscheduled maintenance that is required relating to a risk of increased noise emissions is stated to be attended to as soon as reasonably practicable (section 8.4).

Procedures for scheduled inspections and monitoring.	Y	Personnel conducting inspections are required to complete training as outlined in Sect 1.2. Section 8.1 includes listening tests during inspection to assess for unusual characteristics such as whistling, screeching, thumping, droning or humming noise Environmental checks that include the presence of unusual WTG noise are scheduled as a minimum every 3 months.
Noise complaint management procedures (regulation 131 E(2)(e)) Reflecting good practices set out in AS/NZS 10002:2014 Guidelines for complaint management in organizations, complaint management procedures should include: details of how the community can lodge a complaint, including contact details	Y	Section 9 of the NMP references Appendix D 'Berrybank Wind Farm Complaints Investigation and Response Plan', ERM April 2019. This is a detailed procedure that outlines the complaints process and the steps associated with lodging, registering (in complaints register), investigating and responding to a complaint.
- a complaint register to record information for each complaint received, which may include: - the name and address of the person making the complaint - procedures on how complainants' details will be maintained, including any relevant privacy policy - a receipt number for each complaint, which is to be communicated to the person making the complaint - any applicable property reference number (for example when connected to a background sound measurement location) - the time, prevailing conditions and a description of the concerns reported	Y	As above.
- investigation and response procedures, which may include: - a proforma noise investigation report - procedures for the analysis of complaint data against environmental conditions and WEF operational data - procedures for taking measurements to assess wind turbine noise levels in response to complaints - procedures for communication, consultation, and engagement with any relevant stakeholders	Y	As above – the Complaints Investigation and Response Plan includes investigation and response processes. Section 8.2 outlines maintenance inspections may be triggered by a complaint. Section 10 also describes how noise remediation procedures that may be triggered in response to a complaint.

WEF operators should also consider a proactive program for contacting community in nearby noise sensitive areas to determine if there are unreported complaints	NA	The Complaints Investigation and Response Plan within the NMP provides contact details for the purposes of making a complaint, including the Berrybank Wind Farm website. The website also provides other information about the WEF that is relevant to the community.
Noise remediation procedures (regulation 131 E(2)(d)) For situations where noncompliance has been detected (either as a result of investigating a complaint or through other routine monitoring procedures) the NMP must set out noise remediation procedures to address noncompliance and to reduce noise emissions.	Y	Section 10 - Noise Remediation Procedures outlines events that may trigger a non-compliance, noise mitigation options and reporting procedures that will form the basis of a Noise Remediation Plan. The reporting lists minimum content requirements and is to be prepared by a SQEA and includes the nature and level of the non-compliance and proposed mitigation measures. In particular it is noted in Section 10: <i>'Noise mitigation measures shall be implemented as soon as reasonably practicable after BDPL become aware of a non-compliance, including where it is reasonable to expect that a non-compliance exists, but a formal noise assessment may not have been received.'</i>
Training (regulation 131 E(2)(a)) Develop and implement a training program for employees engaged in the operation of the WEF, including the provision of information, instruction, supervision and training, particularly about their duties under the EP Act.	Y	Training and competencies are included in Section 1.2. This includes obligations and duties under the Environment Protection Act 2017 as well as to follow complaint response procedures in the NMP.
Review (regulation 131 E(2)(a)) Program for review, including the development of the annual statement, five-yearly wind turbine noise monitoring and NMP review cycle.	Y	Section 1.4 outlines the review process for the NMP. Section 11 Annual Statement, specifies the content to be included within the Annual Statement including: -details of complaints concerning WTG noise, -how they were addressed or are being addressed, -maintenance over the (preceding) 12 month period, -noise remediation actions undertaken,

		-compliance with limits, including stakeholders, NSLs including those derived from AMPs. A periodic (i.e. 5 yearly) noise monitoring schedule is provided in Section 12.6. A check of the dates proposed against the Regulations Sect 131 G (2) requirement indicates timing to be appropriate i.e. <i>'Within 3 months of the fifth anniversary of a wind energy facility commencing operation, and every subsequent 5 years.'</i> A document review period is stated in the front section along with a document revision table.
8.2 Alternative monitoring points Alternative monitoring points, as determined in accordance with r.131BB, may be adopted in NMPs for complaint response purposes or during five-yearly monitoring assessments monitoring activities under r.131G.	Y	Alternative monitoring points (AMPs) have been specified along with a process for determining the applicable noise criteria at the AMPs (refer Sections 12.2 and 12.3) relative to the compliance noise limits that are applicable at the NSLs. The applicable alternative monitoring point criteria have been established by determining the predicted difference between the AMP and the applicable criteria at the NSLs. The procedures to determine this noise level difference were in accordance with ISO 9613-2 (Attenuation of sound during propagation outdoors). The AMPs were sighted, and the auditor engaged with the SQEA as to the suitability of these and alternative locations.
An alternative monitoring point may be used if a monitoring point for the WEF is not readily accessible, or where an alternative monitoring point is closer to the wind turbines being assessed and has less extraneous noise than the monitoring point at the noise sensitive area.	Y	As above.
When alternative monitoring points are used, a well-established theoretical or empirical relationship between the noise levels at the alternative monitoring point and the noise sensitive area should be used and appropriately justified in the NMP or five-yearly wind turbine noise monitoring report. For example, concurrent noise level monitoring at the monitoring points	Y	Details associated with the prediction methodology and algorithm adopted are provided (calculated by the SQEA using the SoundPlan version 8.2 software.)

determined in accordance with the relevant noise standard, and any alternative monitoring points, or the use of computer noise modelling, can help determine alternative monitoring point criteria.		
8.2.1 Alternative monitoring point criteria When an alternative monitoring point is used, an alternative monitoring point criterion must be set for that alternative monitoring point. An alternative monitoring point criterion is the maximum noise level that cannot be exceeded at the alternative monitoring point, expressed in dB(A). This noise level must be determined by a suitably qualified and experienced acoustician so that an assessment of wind turbine noise against the alternative monitoring point criterion accurately represents an assessment of wind turbine noise against the noise limit at the monitoring point. This means that the compliance of wind turbine noise with an alternative monitoring point criterion at the alternative monitoring point should be representative of compliance with the noise limit at the monitoring point. The acoustician must explain how the alternative monitoring point criterion has been determined and why the alternative monitoring point criterion represents the noise limit, having regard to the environmental or other relevant factors that differ, between the monitoring point and the alternative monitoring point. These may include, but are not limited to: • the difference in distance relevant to the wind turbine(s) • the difference in the level of extraneous noise • the difference in background noise levels and why there is an increase in background noise (if that is the case) • the difference in topography • the difference in acoustic attenuation caused by structures and vegetation • the difference in exposure to the wind turbines • the operational status of wind turbines at the time the alternative monitoring point criterion was determined	Y	Refer to above discussion.
More than one alternative monitoring criterion may be required if: • there is more than one alternative monitoring point, or • multiple noise limits apply to a noise sensitive area (for example, a high amenity noise limit at night).	Y	Eight AMPs have been selected and associated noise limits formulated. Assessment of high amenity noise areas was not originally covered in the NMP. Berrybank township is located in a

		Township Zone. According to the NCTP [Marshall Day, 2019] the subject of high amenity limits was considered as part of the panel hearing associated with the amendment of the planning permits for the Berrybank Wind Farm. The panel concluded that the WEF proposal was not in an area where the high amenity noise limit would apply. The remaining NSLs are located within a Farming Zone. Subsequent communications were held with the noise consultant resulted in a new section (Section 4.2) being added to the NMP addressing noise limits for NSLs within the Township Zone. This was considered required as EPA guidance now considers Township Zones of high noise amenity.
8.3 Auditor review/verification requirements (reg 131E(3) & (4))		
Current EPA auditor guidelines are available in EPA publication 1692 Wind energy facility noise auditor guidelines	Y	EPA auditor guideline 1692 was referenced with relevant sections included in the review report.
This review should present concise conclusions about the extent to which the NMP: • demonstrates an understanding of the risks of noise-related harm associated with the operation of the WEF • includes procedures: ○ that would be effective in controlling those risks and ensuring compliance with the noise limits ○ for noise remediation if noncompliance is identified ○ for complaint investigation and resolution • justifies the suitability of any alternative monitoring points and alternative monitoring point criteria."	Y	The review report is considered to address this requirement of the auditor.

LEGEND: Y = Yes, N= No, P= Part, NA = Not Applicable

7.0 CONCLUSIONS

The noise management plan is considered to meet the intent of the Regulations and provides suitable procedures for:

- the identification, assessment and control of risk of harm to human health and the environment (taken to be compliance with noise limits specified in the Standard and the Regulations).
- reducing wind turbine noise in the event of non-compliance; and
- addressing complaints.

The content within the NMP satisfactorily demonstrates an understanding of the risks of noise-related harm associated with the operation of the WEF and is considered to include procedures and practices:

- that would be effective in controlling those risks and ensuring compliance with the noise limits,
- for noise remediation if noncompliance is identified,
- for complaint investigation and resolution, and
- justifies the process to determine the suitability of proposed alternative monitoring points and provides methodology to derive alternative monitoring point criteria.

8.0 REFERENCES

1. New Zealand Standard NZS 6808:2010 *Acoustics – Wind Farm Noise*
2. Policy and Planning Guidelines for the Development of Wind Energy Facilities in Victoria, DELWP, November 2021
3. EPA Publication 1692 Wind energy facility noise auditor guidelines. Conducting environmental audits of noise from wind facilities
4. EPA Pub. 953 *Environmental Auditor Guidelines for Conducting Environmental Audits*
5. EPA Website (accessed October 2024): [Wind Energy Facility Turbine Noise Regulation Guidelines | Environment Protection Authority Victoria \(epa.vic.gov.au\)](https://epa.vic.gov.au/wind-energy-facility-turbine-noise-regulation-guidelines)
6. ISO 1996-2 Acoustics – Description, measurement and assessment of environmental noise. Annex C Objective method for assessing audibility of tones in noise.
7. AS 1055:2018 Acoustics – Description and measurement of environmental noise
8. AS/NZS ISO19011:2018 *Guidelines for auditing management systems*
9. ISO 1996-1:2016 *Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures*
10. NZS 6801:2008 Acoustics- Measurements of environmental sound.
11. Marshall Day Acoustics, 2019, Berrybank Wind Farm – Background Noise Monitoring, Rp 003 R02 20180495
12. Marshall Day Acoustics, 2019, Berrybank Wind Farm – Noise Compliance Test Plan, Rp 001 R04 20180495
13. Marshall Day Acoustics, 2022, Berrybank Wind Farm – Post Construction Noise Monitoring, Rp 002 20200683