

Wind energy facility noise auditor guidelines



Environment
Protection
Authority Victoria

Conducting environmental audits of noise from wind energy facilities

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Environmental Auditor Guideline

1 Introduction

1.1 Overview

These guidelines have been prepared to assist environmental auditors appointed under the *Environment Protection Act 1970* (the EP Act) to conduct audits of wind energy facilities (WEF) pre-construction predictive noise assessments and post-construction noise compliance assessments.

The EP Act provides for the appointment by the Environment Protection Authority (EPA) of environmental auditors. Environmental audit reports can only be prepared by EPA appointed environmental auditors.

The audit of WEF noise assessments occurs under Part IXD, Section 53V of the EP Act, which sets out requirements that must be met when an environmental auditor prepares an environmental audit report 'in relation to the risk of any possible harm or detriment to a segment of the environment caused by any industrial process or activity, waste, substance or noise'.

Risk of harm in relation to WEFs is defined herein as the potential for noise generated by WEFs to impact upon nearby noise sensitive locations.

1.2 Background

The Victorian Government response to the independent inquiry into the EPA, identified the need to amend the existing *Policy and Planning Guidelines: Development of Wind Energy Facilities in Victoria 2018*, to require the use of statutory environmental audits to assess WEF noise as part of approval processes and for compliance purposes.

This requires an assessment of noise to be undertaken by the proponent prior to permit application and after facility commissioning. Noise

assessments are to be reviewed and verified as suitable by environmental auditors appointed under the EPA's statutory environmental audit system.

The Victorian Government response to the independent inquiry supported this recommendation in full.¹

1.3 Legislative context

In Victoria, the planning and development of WEFs is subject to the *Planning and Environment Act 1987* and WEF Clauses of the Victoria Planning Provisions (VPPs). Additionally, the *Policy and Planning Guidelines: Development of Wind Energy Facilities in Victoria* provide guidance to responsible authorities, proponents and the community about suitable sites to locate WEFs, and to inform planning decisions about WEF proposals.

Victoria has adopted the New Zealand Standard *NZS6808:2010 Acoustics – Wind farm noise* (the Standard), as the standard which defines the assessment criteria, methodology and noise limits for WEFs.

It is a requirement of these guidelines that environmental auditors have regard to the EP Act, subordinate legislation and relevant EPA audit guidelines when undertaking their duties as environmental auditors. Primarily, *Environmental Auditor Guidelines for the Preparation of Environmental Audit Reports on Risk to the Environment* (EPA Publication 952) and *Environmental Auditor Guidelines for Conducting Environmental Audits* (EPA Publication 953).

¹ The Victorian Government response also calls for noise management plans to be reviewed by environmental auditors. The review of these plans is not a statutory audit under section 53v of the EP Act. Environmental auditors should refer to *Policy*

and *Planning Guidelines for the Development of Wind Energy Facilities in Victoria* for information on the peer review of these documents.

2 Audit process

2.1 WEF development and required audits

The audit process will require two separate environmental audits across the WEF project development to fulfil permitting requirements:

1. Audit of pre-construction predictive noise for permitting applications.
2. Audit of post-construction noise compliance.

As part of the WEF planning permit application, the proponent will need to conduct a pre-construction predictive noise assessment demonstrating the WEF can attain compliance with the Standard. EPA appointed auditors are required to conduct an audit of the noise assessment to determine that it was conducted in accordance with the Standard.

Following construction of the WEF, the proponent must conduct a post-construction noise compliance assessment to determine that the WEF is operating in line with noise limits as defined in the Standard. EPA appointed auditors are required to conduct an audit of the noise assessment to determine that it was conducted in accordance with the Standard.

2.2 Audit scope

The objectives of the audit process are to confirm that the WEF noise assessments have been carried out in accordance with the Standard, meet project permitting requirements and industry best practices. This is to ensure acoustical assessments carried out by consultants on behalf of WEF project proponents are accurate and correct.

Audits should follow the methodology specified in *Environmental Auditor Guidelines for the Preparation of Environmental Audit Reports on Risk to the Environment* (EPA Publication 952). The audit must cover and report on the following scope components:

- Activity to be audited.
- Component of activity to be considered.
- Segment of the environment to be considered.
- Elements of the environment to be considered.
- Beneficial uses to be considered.
- Risk assessment to be conducted.
- Period of time over which the audit is to be conducted.
- Exclusions from the scope of audit.

2.3 Noise audit criteria

Assessment methodology and compliance limits for WEFs in Victoria are set out in the Standard.

Audits of both the pre-construction predictive and post-construction noise should follow the same basic methodology to verify that the noise assessments have been conducted in accordance with the Standard.

The A-frequency-weighted L90 centile level is the metric used in the Standard to assess wind energy facility noise. This is expressed as dB LA_{90(10mins)}, and in effect means a sound level measurement will be the average dB which was equalled or exceeded for 90% of the time over a 10-minute period.

The Standard specifies a general 40 decibel limit (40 dB LA_{90(10min)}) for WEF sound levels outdoors at noise sensitive locations, or that the sound level should not exceed the background sound level by more than five decibels (referred to as 'background sound level +5 dB'), whichever is the greater.

The audit should include review of the assessment as it relates to:

- whether a high amenity noise limit is applicable, as assessed under Section 5.3 of the Standard following procedures outlined in clause C5.3.1 of the Standard. Where the Standard refers to a District Plan (or Plan) this shall be taken to mean a Scheme as defined within the VPPs
- whether Special Audible Characteristics (SACs) – Amplitude Modulation, Tonality and Impulsivity are present, as described in Section 6.7 of the Standard.

Alongside the Standard, due regard must also be given to WEF Clauses of the VPPs and the *Policy and Planning Guidelines: Development of Wind Energy Facilities in Victoria 2018* as regards noise impacts and their assessment.

The *Policy and Planning Guidelines: Development of Wind Energy Facilities in Victoria 2018* stipulate that noise sensitive locations be assessed in accordance with the Standard.

Noise sensitive locations are defined by the Standard as "The location of a noise sensitive activity, associated with a habitable space or education space in a building not on a wind farm site". Noise sensitive locations need not be permanently occupied. For further information on

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types of locations included refer to the list provided in section 2.4 Definitions of the Standard.

Additional criteria to consider may be drawn from the following policies, documents and guidelines:

- EP Act.
- Relevant guidelines for environmental auditors issued by EPA.
- Project planning permit conditions (when conducting the post-construction audit).
- Project noise management plans (when conducting the post-construction audit).
- ISO 1996-1:2016 Preview. Acoustics – Description, measurement and assessment of environmental noise.
- ISO 1996-2:2017 Acoustics – Description, measurement and assessment of environmental noise / AS 1055.1:1997 Acoustics – Description and Measurement of Environmental Noise.
- Any other publications deemed relevant by the environmental auditor.

2.4 Conducting the audits

2.4.1 Audit of pre-construction noise

The audit of the pre-construction predictive noise is to be conducted in a manner deemed appropriate by the environmental auditor and would typically include the steps of:

1. Familiarisation with the WEF development proposal and planned operation.
2. Inspection of the WEF project site and the surrounding environment.
3. Assessment of the rigour of the process used to identify surrounding noise sensitive locations.
4. Review of the pre-construction noise assessment considering the WEF development proposal and operations including:
 - turbine technical specifications and power ratings
 - tower locations
 - topography
 - transformer stations
 - any other relevant factors.
5. Review of background noise assessments (if available).
6. Technical verification of the predictive noise assessment, including:

- methodology applied to conduct the assessment
 - noise monitoring equipment and parameters used
 - sound modelling programs employed
 - verification that the assessment was conducted in line with the Standard.
7. Review of identified potential noise impacts and any operational plans to manage the impacts (e.g. select turbines operating in reduced power modes during certain wind conditions) that are proposed as part of the WEF permit application.
 8. Risk assessment, including a qualitative statement on the risk of non-compliance.
 9. Preparation of the environmental audit report.

2.4.2 Audit of post-construction noise

The audit of the post-construction noise is to be conducted in a manner deemed appropriate by the environmental auditor and would typically include the steps of:

1. Review of the WEF design in comparison to the pre-construction permitted design for the WEF.
2. Inspection of the WEF project site and verification that turbines are sited within the permitted variance parameters as per the pre-construction design and permitted conditions. This should include turbine placements in relation to the location of identified noise sensitive locations.
3. Review of background noise assessments.
4. Technical verification of the compliance noise assessment, including:
 - methodology applied to conduct the assessment
 - noise monitoring equipment and parameters used
 - sound modelling programs employed
 - verification that assessment conducted in line with NZS6808:2010.
5. Review of compliance noise assessment against noise management plan commitments.
6. Risk assessment.
7. Preparation of environmental noise audit report.

2.5 Staged developments and cumulative impacts

Where a WEF development occurs in stages or is subject to a later subsequent expansion, audits of predictive and compliance noise assessments should ensure these assess the cumulative impacts of the following stages or expansion inclusive of the original development.

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Similarly, where a WEF is planned adjacent to an existing WEF or another planned WEF, audits of predictive and compliance noise assessments also should ensure these assess the cumulative impacts of all surrounding WEFs upon identified sensitive receptors in line with the Standard.

Both pre-construction predictive and post-construction compliance noise assessments conducted under these circumstances must also be accompanied by audits conducted by EPA appointed auditors following this guideline.

3 Environmental audit reports

3.1 General

Audit reports should be concise and informative, with information displayed in a format that is easy to interpret and understand. The environmental audit report should be consistent with the requirements of section 15 of EPA Publication 952 *Environmental Auditor Guidelines for the Preparation of Environmental Audit Reports on Risk to the Environment* and also have regard to EPA Publication 1147.2 *Environmental Auditor Guidelines – Provision of Environmental Audit Reports, Certificates and Statements*.

The environmental auditor must ensure that any environmental audit report that he or she provides is an accurate record of soundly based observations and of logical deductions.

All environmental audit reports must be lodged with the EPA. Once submitted and quality assured by the EPA, environmental audit reports will become public documents made available to the public via the EPA website.

3.2 Report content

In addition to the general requirements outlined in section 3.1 above, section 53V of the EP Act states that an environmental audit report must:

- specify the industrial process or activity, waste, substance or noise in respect of which the environmental audit was conducted
- state the name of the person who has engaged the environmental auditor to conduct the environmental audit (the client)
- be signed by the environmental auditor
- specify the results of the environmental audit.

The results of an environmental audit report are the findings, conclusions and any recommendations.

The process for arriving at these results and any opinions stated should be well documented and referenced within the environmental audit report. The report should clearly state the environmental auditor's opinion as to the risks posed by the activity to beneficial uses of segments within the scope of the audit, and provide justification for that opinion.

The report should also contain the following information:

- The objectives of the environmental audit.
- The scope of the audit, including the audit criteria.
- When the audit was conducted.
- Audit methodology.
- Evidence used to assess the audit criteria.
- Findings.
- Conclusions.
- A copy of the authorisation for the relevant person to request the environmental audit (but only if the person making the request is not the owner or occupier of the premises).

The auditor must include a statement indicating that the auditor has determined the Pre-Construction Predictive Noise Assessment / Post-Construction Noise Compliance Assessment has been conducted in accordance with the Standard. The auditor shall also consider when preparing the report other relevant legislation.

3.3 Reliance and limitations

An environmental auditor must not qualify an audit report to limit reliance on it to their client (or any other person). Depending on the circumstances, other stakeholders (for example local residents) may also be interested in the outcomes of an environmental audit.

Further, the environmental auditor must not disclaim responsibility for the opinion that he or she has expressed (regarding risks posed by the activities to the environment and/or the condition of the premises) on the basis that the environmental auditor has relied on the work of others. It is the role of the environmental auditor to confirm that the data or information on which he or she relies in forming the opinion constitutes an adequate basis for forming that opinion.