

Guideline

Environmental Protection Act 1994

Application requirements for activities with noise impacts

This guideline outlines the information to be provided to support an environmental authority application for activities with noise impacts.

Table of contents

1	Introduction.....	2
1.1	Using this guideline	2
1.2	What is 'noise'?	3
1.3	Queensland environmental law	3
2	Making an application involving noise emissions.....	4
3	Environmental values of the site	4
3.1	How information on environmental values will be used by the department	5
4	Possible impacts to identified environmental values.....	6
4.1	How information on impacts to the environmental values will be used by the department	8
5	Proposed management practices.....	8
5.1	How information on management practices will be used by the department	9
6	Information and references	9

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1 Introduction

This guideline focuses on the types of impacts that environmentally relevant activities (ERAs) can have in relation to noise, and outlines the information to be provided to the department as part of the ERA application process.

This guideline seeks to assist both regulators and operators of an ERA with the potential to have noise impacts to identify, quantify and evaluate the impacts on nearby sensitive receptors and to ensure that these impacts are managed in a way that achieves a balance between the social benefits of development and maintaining the environmental values of the receiving environment.

In general, there are three key areas to be identified and addressed through the ERA application process:¹.

- Identify the environmental values of the receiving acoustic environment including the identification of any nearby sensitive places.
- Identify the possible impacts due to the proposed activity and all associated risks to environmental values.
- Identify the strategies to mitigate the identified risks to the environmental values.

This guideline describes the types of information that the applicant must provide to address the three key points above. The information provided will assist the department in deciding the application and conditioning the environmental authority.

1.1 Using this guideline

The information provided in this guideline is updated regularly by the Department of Environment and Science (the department) and is subject to change without notice. Applicants should check the department's website for the latest copy prior to lodgement.

Sections 3–5 set out the information that applicants will need to provide to the department with their application. Section 6 sets out some useful references to help applicants develop their application material.

The information provided in this guideline is general in nature. To assist applicants to identify key areas of concern associated with each ERA, further information on industry specific noise impacts can be found at www.business.qld.gov.au.

Additionally, the level of detail required to support an application will depend on the type of ERA proposed and its likely impact on the receiving environment. Some activities will require more detailed information to be provided. In order to assist applicants to identify potential areas of concern associated with their individual applications, applicants are encouraged to participate in a pre-lodgement meeting.

Applications can now be made to the department online through Online Services. Supporting documentation that addresses each environmental value (EV) impacted by the activity can be uploaded electronically. Supporting documentation can be uploaded as a separate document for each EV or as one document uploaded at the end of the online application process. For more information and to register to use Online Services go to <https://www.qld.gov.au/environment/pollution/licences-permits/onlineservices>.

This guideline is relevant for applications for prescribed ERAs and mining ERAs. For applications relating to petroleum, geothermal or greenhouse gas storage ERAs, refer to the guideline 'Application requirements for petroleum activities' (ESR/2016/2357).

¹ s125 of the *Environmental Protection Act 1994*

1.2 What is 'noise'?

Noise is defined in the *Macquarie Dictionary* as a sound of any kind. The EP Act identifies noise as a type of contaminant and noise nuisance as environmental harm. In defining noise the EP Act includes vibration of any frequency, whether emitted through air or another medium. Therefore where noise impacts are to be considered in this guideline, consideration of vibration impacts must also be undertaken.

Noise may cause environmental nuisance or harm when it negatively affects environmental values, including human health and wellbeing (for instance by interfering with sleep, relaxation or recreation activities), community amenity or the health and biodiversity of ecosystems.

Examples of ERAs that commonly generate significant noise emissions include mining activities, extraction and screening, crushing, milling, grinding or screening, meat processing, timber milling and wood chipping.

Other factors that may increase the risk of noise impacts from a development include:

- Development particularly close to a noise sensitive place.
- Existing land use with a very low background noise level.
- Conducting noise-generating activities outside standard business hours.
- Conducting blasting.
- Particularly intrusive noises being generated by the activity (e.g. tonal or impulsive noises).

Determining the likely impact of noise emissions on environmental values can be complex. A number of factors influence the impact that noise can have. This includes the audibility and frequency of the noise, whether the noise is continuous at a steady level or has a fluctuating, intermittent, tonal or impulsive nature, whether it has vibration components, how often it occurs, the times that it occurs and the character of the receiving environment, including existing ambient noise levels. As a result, the impact of noise on environmental values is often undertaken using a risk-based approach. For example, measuring noise at a sensitive place², where the impact of noise would be noticeable is preferred, rather than at the boundary of the project site.

All ERAs involving noise impacts are expected to incorporate all reasonable and practicable measures to avoid or minimise potentially harmful releases or actions. If the ERA cannot avoid potentially harmful effects, an impact assessment of these residual risks will be necessary. Depending on the identified risks, assessing the impacts of an ERA can be complex and may require a substantial body of information to be prepared. This generally involves prediction of potential noise emissions and comparison to recognised guidelines.

1.3 Queensland environmental law

Activities that are likely to cause environmental impacts are called environmentally relevant activities (ERAs). In Queensland, the environmental impacts of noise emissions, associated with ERAs, are regulated under the *Environmental Protection Act 1994* (EP Act) and subordinate legislation, including the Environmental Protection Regulation 2019 (EP Regulation) and the Environmental Protection (Noise) Policy 2019 (EPP (Noise)). An environmental authority is required to conduct an ERA and will include conditions to protect the noise environmental values from environmental harm. Environmental harm is any adverse effect or potentially adverse effect on an environmental value and includes an environmental nuisance.

When making an application the applicant may also need to refer to the ['State planning policy'](#).

Noise from other non-ERA commercial or industrial activities, or noise from domestic premises, is typically regulated by the local council.

Application requirements for activities with noise impacts

The term 'environmental value' is used to describe the physical, aesthetic, social and cultural values of a location or proposed site. Specific environmental values relevant to noise impacts are defined in the EP Act and the EPP (Noise). Those prescribed under the EP Act are public amenity, public safety and ecological health. Those prescribed under the EPP (Noise) are:

- The qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystem; and
- The qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to do any of the following:
 - sleep
 - study or learn
 - be involved in recreation, including relaxation and conversation; and
- The qualities of the acoustic environment that are conducive to protecting the amenity of the community.

For each environmental value, there is a range of relevant acoustic quality objectives designed to protect that value. These can be found in schedule 1 of EPP (Noise).

2 Making an application involving noise emissions

When deciding an application, the department is required to assess the application against requirements stipulated in the EP Act, including considerations stated in the EP Regulation and any relevant Environmental Protection Policy, including the EPP (Noise).

For environmental authority applications that have noise impacts the application must describe how one of the following environmental objective and performance outcomes for the ERA will be achieved. Under Schedule 8, Part 3, Division 1 of the EP Regulation the environmental objectives and performance outcomes for noise emissions in Queensland are:

Environmental objective

The activity will be operated in a way that protects the environmental values of the acoustic environment.

Performance outcome

- (a) Sound from the activity is not audible at a sensitive receptor, or
- (b) The release of sound to the environment from the activity is managed so that adverse effects on environmental values, including health and wellbeing and sensitive ecosystems, are prevented or minimised.

3 Environmental values of the site

The first step in making an application for an environmentally relevant activity is to accurately identify the environmental values of the site. The following table outlines a number of different tools, strategies and suggestions to assist applicants in identifying the environmental values of the proposed site.

In addition to general information about the site and the environmental values, there are a number of key environmental priority areas which, if applicable, should be addressed in detail by the applicant. If they are

² A sensitive place includes a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2019

Application requirements for activities with noise impacts

applicable, these environmental priorities have regulatory assessment requirements and are required to be assessed by the department.

<p>Environmental values</p> <p>Identify environmental values for the area, both on and offsite, which may be impacted by noise emissions.</p>
<p>Sensitive places</p> <p>Identify the location of sensitive places affected by the proposed activity on an appropriately scaled map. Column 1, Schedule 1 of the EPP (Noise) lists a range of sensitive places, including schools, offices, kindergartens, retirement homes, domestic residences, natural areas (e.g. national parks or nature reserves), and some commercial premises.</p> <p>Provide details of any potential future sensitive places affected by the proposed activity on a scaled map (e.g. a planned residential development). Relevant information may be sourced from the relevant local council or planning schemes.</p>
<p>Site description</p> <p>Provide a description of the site topography and the built environment, including features such as hills, valleys, buildings or thick stands of vegetation. These features may affect the way that noise is dispersed in the environment.</p> <p>Describe the general climate and prevailing wind characteristics of the site of the proposed activity. It may be necessary to include information on seasonal variations as the wind characteristics may vary significantly.</p>
<p>Background noise levels</p> <p>Provide details of background noise levels, including a description of existing noise sources, within the vicinity of the site (e.g. road traffic). Background noise should be calculated taking into consideration the proposed hours of operation for the activity. Applicants should consult the Noise measurement manual for further information regarding collecting appropriate background noise measurements.</p>
<p>How this information will be used</p> <p>This information will be used to establish the contextual details, including the environmental values of the site and the surrounding area.</p>

3.1 How information on environmental values will be used by the department

This information will be used to establish the contextual details, including the environmental values of the site and the surrounding area.

This information will be considered when determining whether the ERA and its components can be operated on the site in a way that minimises the impacts to environmental values. If the application is approved, this information will be used to inform the conditions placed upon the environmental authority.

4 Possible impacts to identified environmental values

Once the environmental values of the site have been identified, applicants must identify the potential impacts which are likely to arise from the proposed activity.

In addition to providing details of any impacts likely to be generated, the EP Act³ requires applicants to provide a description of the relative risks and likely magnitude of impacts on the identified environmental values.

The following table includes a number of key areas which, if applicable, should be addressed by an applicant in the application documentation.

<p>Noise sources</p> <p>Identify all noise, vibration and airblast overpressure sources, including stationary and mobile sources, associated with the activity. Also provide a scaled map which shows the source of all noise emissions in relation to any existing noise sensitive places.</p> <p>How information provided on noise sources will be used by the department</p> <p>If sound has the potential to be audible, the department will consider whether the release of sound to the environment from the activity may cause an adverse impact on an environmental value, including sensitive ecosystems, human health and wellbeing. This information will also assist to tie together the details of the ERA being conducted and its site and surrounds. This will allow the department to determine:</p> <ul style="list-style-type: none"> • Whether the impacts to the environmental values can be mitigated. • If a condition, or conditions, need to be applied to manage the risk.
<p>Emission characteristics</p> <p>Describe in detail, the characteristics of the noise emissions produced.</p> <p>If available, this includes identifying the overall sound power level in dB, preferably in octave bands with centre frequencies 31.5Hz to 8kHz. Alternatively, the operational sound pressure level in dB (A) and octave bands at a specified distance.</p> <p>This also includes identifying whether the noise generated is likely to be either tonal or impulsive. The term 'tonal' is used to identify noise that contains a distinguishable, discrete, continuous note (whine, hiss, screech, hum, etc.) while the term 'impulsive' is used to identify noise that includes distinct impulses like bangs, clicks, clatters, or thumps.</p> <p>How information provided on emission characteristics will be used by the department</p> <p>This information will form part of the assessment as to whether the proposed activity follows the management hierarchy for noise emissions set out in EPP (Noise). It will also assist the department in determining whether the release of noise emissions to the receiving environment has the potential to cause an adverse impact on an environmental value or noise sensitive place. This information may also assist in developing a relevant noise emission condition if required.</p>
<p>Noise management hierarchy</p> <p>Describe how noise, vibration or air blast overpressure emissions will be avoided, minimised or otherwise managed in accordance with the noise management hierarchy provided in the EPP (Noise). This should include specifying the hours and days of operation that specific noise-generating equipment will be used.</p>

³ s125 of the *Environmental Protection Act 1994*

Application requirements for activities with noise impacts

Importantly, noise emissions must be avoided wherever possible. If this is not possible, the applicant must describe how emissions will be minimised (preferably by orienting the activity to minimise noise, or otherwise through the use of best available technology), or managed.

How information on the noise management hierarchy will be used by the department

This information will be used by the department to assist in its assessment as to whether the applicant has implemented the management hierarchy for noise emissions as set out in the EPP (Noise).

Noise impact assessment

If it is not possible to mitigate the impacts associated with the noise emission, applicants must provide a noise impact assessment, which identifies the likely effect of noise from the activity on nearby sensitive places. This assessment must be conducted in accordance with the latest version of the [‘Noise measurement manual’](#) and any applicable Australian Standard and include:

- Noise modelling contour maps to show predicted noise levels at all potential noise source locations.
- Analysis on whether noise emissions associated with the activity will adversely affect the environmental values of the receiving environment (including noise sensitive places).
- Description of controls (e.g. noise emission limits or operational controls such as operating hours) which are appropriate to protect environmental values.
- A vibration risk assessment for blasting activities, if applicable.
- If blasting is to occur, that blasting activities will be managed in accordance with [AS 2187: Explosives](#).

The purpose of the noise impact assessment is to determine whether noise emissions associated with the activity will adversely affect the environmental values of the receiving environment, and to determine what controls (e.g. noise emission limits or operational controls such as operating hours) are appropriate to protect these environmental values. The acoustic quality objectives defined in the EPP (Noise) provide guidance as to what ambient noise levels should be achieved to protect the receiving environment. The acoustic quality objectives for sensitive places are defined in Schedule 1 of the EPP (Noise).

How information included in a noise impact assessment will be used by the department

The department will consider whether the proposed activity can be conducted without compromising the acoustics quality objectives for the relevant sensitive place and environmental values listed in Schedule 1 of the EPP (Noise). If acoustic quality values cannot be protected, the department will need to determine whether the impacts to the environmental values can be mitigated or whether a condition, or conditions, need to be applied to manage the risk to the environment. This may result in the applicant needing to undertake additional noise management measures such as relocation or re-orientation and/or installation of noise abatement measures.

In considering whether it is appropriate to set noise emissions limits, the department will consider factors such as:

- Whether the acoustic quality objectives are currently being met.
- Whether acoustic environmental values are protected.
- The social benefit of, and need for, the development.
- Whether it is in the public interest to authorise noise emissions.
- Views of submitters if applicable.

- The operator's commitment to environmental management, and whether best practice measures are proposed to minimise or avoid noise emissions.
- Cumulative impacts and the remaining capacity of the receiving environment to accept noise contaminants without compromising acoustic quality objectives.
- The order of occupancy between the development and sensitive places. This may be particularly relevant where the application relates to a change to an existing development which pre-dates noise sensitive places nearby.

Background creep

Due to the rapid growth and increasing density of noise-producing activities in Queensland, the consideration of cumulative noise impacts and background creep is particularly important.

For applications where background creep is likely, applicants are encouraged to use modelling to demonstrate that the activity will to the extent it is reasonable to do so ensure that background creep in an area or place is prevented or minimised. If the acoustic quality objectives for an area or place are not being achieved or maintained, the noise experienced in the area or place must, to the extent it is reasonable to do so, be dealt with in a way that progressively improves the acoustic environment of the area or place.

How information on background creep will be used by the department

Any modelling provided will be used to identify whether the current application is likely to contribute to background creep as well as to identify the impacts to ambient noise levels as a result of the proposed activity.

Further information regarding the control and prevention of background creep is provided in the department's guideline Planning for noise control.

4.1 How information on impacts to the environmental values will be used by the department

This information will assist the department to establish the contextual details of the site, the activity and the possible noise impacts. This will assist the department in evaluating the risks to environmental values.

The department will consider the noise emissions and any noise impact assessment provided, to determine whether the proposed activity can meet the EPP objectives, and whether specific noise conditions are required.

If sufficient information is not provided to characterise noise impacts, the department may request additional information or determine that the application must be refused.

5 Proposed management practices

Once the relative risk of each contaminant or impact to the environmental values is known, the next step is to identify appropriate management practices or mitigation strategies to address the risk.

These approaches can include physical works, processes or treatments. Similarly, they could include management strategies and practices. In both circumstances the applicant should clearly detail how the works or practices will link back to, and address, the identified risk.

The following table provides general information to assist all applicants in identifying the type of contaminant management information to provide. Additionally, this table provides information on a number of key areas

Application requirements for activities with noise impacts

which, if applicable, will require the applicant to provide additional information on the proposed environmental management practices to be used.

Noise mitigation strategies

The applicant must provide information on the proposed noise mitigation strategies, such as acoustic barriers, siting equipment appropriately, buffers, mufflers, housing noisy equipment in sealed buildings, or reducing the timing of operations.

5.1 How information on management practices will be used by the department

The information provided may be used by the department to condition the environmental authority.

When setting the conditions, assessing officers will consider best practice industry guidelines relevant to the proposed activity, and determine whether these are achievable for the given situation.

6 Information and references

Type	Title
Plans/policies	State planning policy Environmental Protection (Noise) Policy 2019 Explanatory Notes for Environmental Protection (Noise) Policy 2019 (SL 2019 No. 154)
Departmental guidelines	Department of Environment and Science 2013, <i>Noise Measurement Manual, version 4</i> , State of Queensland (available at www.qld.gov.au using the publication number ESR/2016/2195 as a search term)
Relevant Australian Standards	AS 1055 – Acoustics - Description and measurement of environmental noise AS/NZS IEC 61672 – Electroacoustics – Sound Level Meters AS 2187 – Explosives – Storage, transport and use AS 2221 - Methods for measurement of airborne sound emitted by compressor / prime mover units intended for outdoor use. AS 2021 – Building siting and construction against aircraft noise intrusion AS 2107 - Acoustics - Recommended design sound levels and reverberation times for building interiors AS 2436 – Guide to noise control on construction, demolition and maintenance sites AS 2702 – Acoustics - Methods for the measurement of road traffic noise AS IEC 61260 – Electroacoustics - Octave-band and fractional octave-band filters
International Standards	ISO 9613 – Acoustics – Attenuation of sound during propagation outdoors ISO 1996 – Acoustics – Description, measurement and assessment of environmental noise
Best practice guidelines	Leading Practice Sustainable Development Program for the Mining Industry – Airborne contaminants, noise and vibration, Australian Government Department of Industry, Innovation and Science.

Application requirements for activities with noise impacts

Type	Title
Other government publications within Australia	Environment Protection Agency (VIC) (1989) "Interim guidelines for control of noise from industry in country Victoria", Victoria. Environment Protection Agency (VIC) (1991) "A guide to the measurement and analysis of noise" - EPA Victoria Information Bulletin, Victoria. Environment Protection Agency (VIC) (2008) "Noise control guidelines", Victoria. NSW Industrial Noise Policy, Environment Protection Authority, NSW. January 2000 Assessing vibration: a technical guideline, published by Department of Environment and Conservation (NSW) The noise measurement procedures manual, July 2008, Environment Protection Authority (Tasmania)
Other	Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration, Australian and New Zealand Environment Council, September 1990. Brüel & Kjær Sound & Vibration Measurement A/S. Environmental noise 2000

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