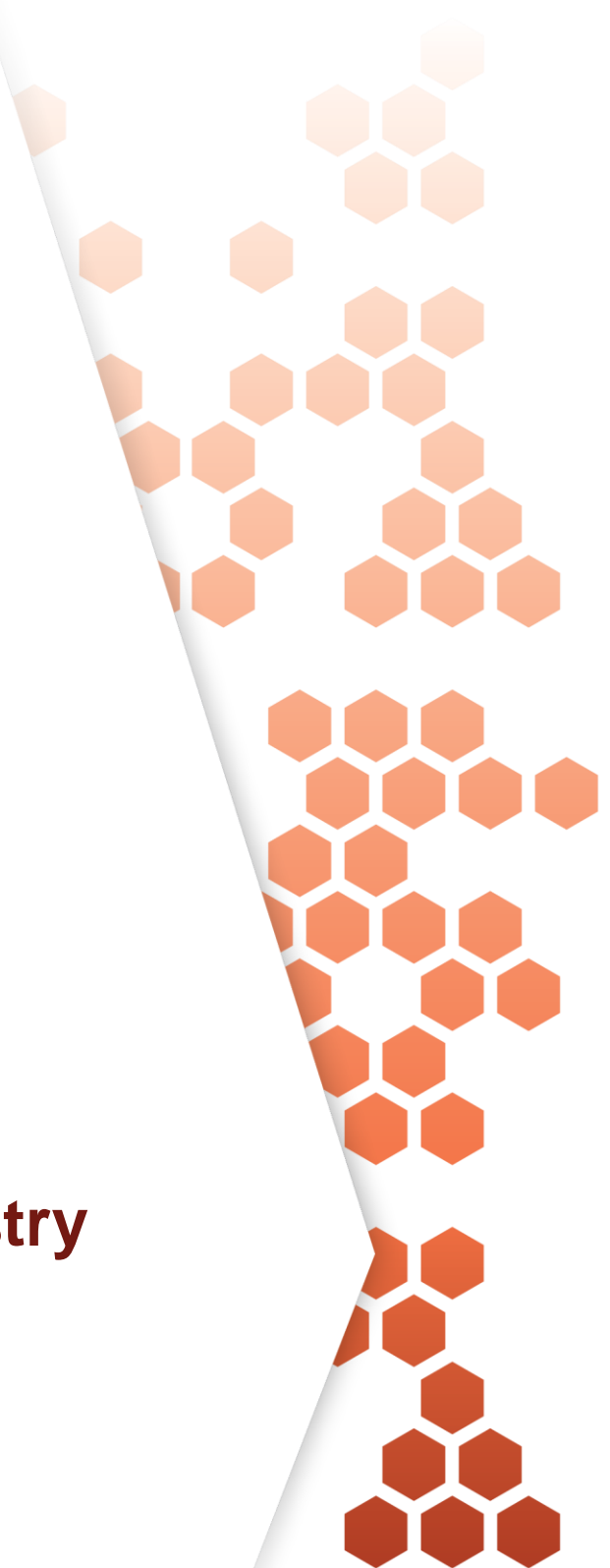




A guide to the Noise Policy for Industry



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Published by:

Environment Protection Authority
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)
Fax: +61 2 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@epa.nsw.gov.au
Website: www.epa.nsw.gov.au

Report pollution and environmental incidents

Environment Line: 131 555 (NSW only) or info@epa.nsw.gov.au
See also www.epa.nsw.gov.au

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Introduction

Noise pollution from industrial premises has the potential to have an impact on neighbouring properties, particularly if the industrial site has not been properly located or designed. Noise is one impact, among others, that is considered by developers and regulatory authorities when designing and approving new industrial developments. Reaction to noise varies widely from individual to individual and it is not possible to ensure that no one will experience annoying noise or that industrial noise will be inaudible. Excessive noise from industrial premises has the potential to disturb sleep, causing stress and annoyance, as well as interfere with daily activities including talking, hearing and studying. The *Noise Policy for Industry* (the policy) is designed to ensure that potential noise impacts associated with industrial projects are managed effectively.

There are a number of government processes in place to manage the impacts of excessive noise from industry on the community. First, land-use planning processes (for example, regional and local plans) provide the most effective and efficient way of locating noisy land uses, such as industries, away from residential or sensitive land uses. Second, development approval processes require all environmental impacts including noise to be identified and appraised against broader social, economic and environmental considerations before an industrial development is approved with appropriate environmental conditions (such as noise limits). Once a new development starts operating, the owner must ensure that any noise from the premises remains below the noise limits in consents and environment protection licences. When a noise limit is breached, regulatory authorities can take appropriate action to ensure that owners meet their obligations and reduce noise impacts from their premises.

The policy sets out requirements for the assessment and management of noise from industrial premises in NSW to be used in each of the assessment processes mentioned above. The policy aims to ensure that noise is kept to acceptable levels whilst supporting the social and economic value of industry in NSW.

What is the policy used for?

The policy will provide a framework and criteria for the consistent assessment of the impact and control of noise from industrial developments. It is specifically for large industrial developments that require development approval from the Department of Planning and Environment under the *Environmental Planning and Assessment Act 1979* and/or that the NSW Environment Protection Authority (EPA) regulates, such as mines, quarries and other large industries listed in Schedule 1 of the *Protection of the Environment Operations Act 1997*. It also has information that may be useful for assessing and controlling noise from smaller industrial premises that are typically regulated by councils.

The policy **does not apply** to the assessment of transportation noise, motorsport facilities, wind farms, blasting, construction activities, noise sources covered by regulations (domestic/neighbourhood noise) or occupational noise within any workplace regulated by SafeWork NSW.

Why do different noise policies exist for different noise sources such as road, rail, and industry?

Different types of noise each have a distinct noise policy because of the different reactions people have to different noise sources. This occurs because annoyance reactions that people have due to noise depend on many factors, not just the actual level of noise. For example, social and psychological factors such as how necessary or useful a noise source is perceived to be (for example, benefits of a local industrial premises may not be as directly apparent to a nearby resident as would a nearby road or railway line), or perceptions about how easy it would be to reduce noise levels (for example, a point source [industry] versus a line source [transportation]).

Why is the policy needed?

Land-use planners need guidance about appropriate levels of noise amenity in areas surrounding industrial premises when they are preparing local and regional environmental plans. These plans determine what land uses are allowable at a location, and can be used to avoid incompatible land uses being located close together.

Approval authorities need clear benchmark noise levels against which noise from new or substantially-modified developments can be evaluated. They also need a consistent and transparent process to follow when setting achievable noise limits in statutory documents such as development consents and licences.

Proponents of proposed industrial developments need guidance on how they should assess noise impacts from their proposals, choosing the best way to reduce unacceptable noise levels, and monitoring noise from their premises.

The policy is designed to deliver this guidance by setting out:

- clear noise levels against which noise impacts are evaluated
- procedures for predicting noise impact
- strategies and options that can be used to reduce noise impacts
- a process that guides how to set achievable noise limits in development consents and licences by considering noise impacts within the economic, social and environmental context of industrial developments.

Who is the policy for?

The main users of this policy will be:

- proponents and operators of industrial developments and associated noise consultants
- planning authorities responsible for developing local and regional plans
- determining or regulatory authorities that have the statutory responsibility for setting or regulating noise performance of industrial premises.

Evaluating industrial noise

To ensure acceptable noise outcomes are achieved, the assessment and management of noise from industrial noise sources should include the following elements:

- setting project noise trigger levels which are the benchmark levels against which potential noise impacts from industrial developments are assessed and managed
- predicting noise from the proposed development, and adjusting for any annoying noise characteristics and weather conditions that increase noise levels
- applying all feasible and reasonable measures to reduce predicted noise levels to the project noise trigger levels when predicted noise levels are above these levels
- managing residual noise after all feasible and reasonable measures have been applied by considering the significance of residual noise and use of appropriate requirements in consents and licences.

The above process ensures that new or modified industrial premises are designed to emit the lowest-possible noise levels that can be reasonably achieved.

Setting the project noise trigger level

The scientific literature indicates that the emergence of a noise above background levels (that is, intrusiveness of a source) as well as the absolute level of noise are important factors in determining how a community will respond to noise from industrial sources. The project noise trigger level established in the policy addresses each of these components of noise impact.

The project noise trigger level for a project is the lower (that is, most stringent) value of two different noise levels:

1. The **intrusiveness noise level** protects the community from intrusive noise by limiting the extent to which a noise source can exceed the background level (that is, background plus 5 decibels [dB]) above a minimum threshold.
2. The **project amenity noise level** preserves community amenity by providing an overall noise-level cap for different land uses.

The intrusiveness noise level aims to protect the community against significant changes in noise levels, whilst the project amenity noise level seeks to protect against uncapped incremental changes in noise level from multiple industrial noise sources (that is, cumulative noise impacts). Applying the most stringent requirement as the project noise trigger level ensures that intrusive noise is limited and long-term amenity is protected. It also ensures that no single industry can unacceptably change the noise level of an area.

Different project noise trigger levels apply based on the time of day (day, evening and night), the existing level of background noise, and the type of sensitive land use potentially affected by noise from the industrial premises.

What level of noise protection does the project noise trigger level provide?

In low-noise environments, such as in rural and quiet suburban areas, the project noise trigger level allows controlled increases in existing noise levels until the amenity noise level for that land use is reached. The controlled increase in noise levels is limited to five decibels above the background noise level; however, minimum background noise levels are applied to ensure that trigger levels are not set at levels that are well below what current science would suggest is acceptable. At this level the noise source is likely to be clearly heard by a nearby resident but should not be excessive.

In areas that have higher ambient background noise levels, a new industrial noise source may range from being clearly heard (but not excessive) to only just perceptible by a nearby resident.

The reaction to noise varies widely from individual to individual. Because of this, it is not possible to set noise levels that will guarantee no one will experience an impact. There will usually be some members of the community who find any noise unacceptable, regardless of whether it meets the project noise trigger level, and others who will not be bothered by noise even if it is above the project noise trigger level.

Determining intrusiveness and project amenity noise levels

To determine the **intrusiveness noise level**, a proponent must first monitor the existing background noise level and determine a rating background noise level, as outlined in Fact Sheets A and B of the policy; or simply adopt the minimum background levels nominated in the policy. The intrusiveness noise level then becomes the rating background noise level plus 5 dB, determined for each period (for example, day, evening or night), within which the new development is proposed to operate.

To determine the **project amenity noise level**, the appropriate amenity noise level for the receiver area is first selected from Table 2.2 of the policy. The project amenity noise level is then set at the amenity noise level minus 5 dB, except in the following cases:

- areas subjected to high existing levels of traffic or industrial noise
- where multiple new industrial premises are proposed; the project amenity noise level is equitably shared among each of the proposed industrial premises to ensure that the combined noise level from these premises does not exceed the amenity noise level minus 5 dB
- where there is a low likelihood of multiple industrial noise sources being located in an area.

Maximum noise level event assessment for sleep disturbance

To determine the potential for a new development to cause sleep disturbance, two screening levels are provided that identify whether a sleep disturbance assessment is required. If either of these levels are exceeded, proponents must undertake a detailed assessment of

maximum noise level events as outlined in Section 2.5 of the policy to determine the potential for sleep disturbance to occur.

Predicting noise levels from a proposed development

Proponents of new industrial developments must work out what level of noise their proposed new development is likely to make, to determine whether there will be a noise impact. For small or simple projects, manual calculations can be carried out that take account of the distance from the premises to a nearby receiver and any intervening shielding that exists. For large or complex projects, computer noise modelling is used to predict noise levels. Modelling programs use information about equipment noise levels, location of sources, topography between the premises and receivers, and weather conditions to calculate overall noise levels at receivers.

Certain weather conditions (for example, temperature inversions and/or source-to-receiver wind) have the potential to increase noise levels heard at a receiver, whereas others (for example, receiver-to-source wind) have the potential to reduce the noise levels heard. The policy requires a reasonable range of weather conditions that may occur at a site to be accounted for in the prediction model to ensure noise levels from the proposed premises are adequately predicted. Proponents can simply assume that inversions and wind (noise-enhancing conditions) are a feature of the project area, and predict noise levels using set meteorological parameters specified in Fact Sheet D of the policy. Alternatively, a detailed assessment of the weather conditions that actually occur in the project area can be conducted to determine whether the set meteorological conditions (noise-enhancing conditions) are relevant for the assessment, based on whether they occur for more than 30% of the time.

Certain characteristics of a noise source have the potential to make it more annoying. For example, a source that is tonal, intermittent, or contains dominant low-frequency content can cause greater annoyance than other noise at the same noise level. In contrast, some sources may cause less annoyance where a single event occurs for a limited duration. Fact Sheet C of the policy outlines correction factors to be applied to the predicted noise levels to account for these effects and arrive at a final predicted noise level.

Determining whether a noise impact exists

Once the project noise trigger level has been determined and the noise level from the proposed industrial premises has been predicted, then these can be compared to determine whether a potential noise impact exists. If the predicted noise level is greater than the project noise trigger level, then a potential noise impact exists and measures to reduce noise need to be considered by the proponent.

Applying feasible and reasonable measures to reduce noise

When a noise impact exists, proponents must apply all feasible and reasonable mitigation to reduce noise towards the project noise trigger level. If it is feasible and reasonable to achieve the project noise trigger level, then proponents should do so. If not, then the best achievable noise levels should be identified. It is not mandatory to achieve the project noise

trigger levels, but proponents must provide justification if they cannot be met. Proponents should also provide an assessment of the acceptability of any residual impacts that remain.

A noise mitigation measure is feasible if it can be engineered and is practical to build, given project constraints such as safety and maintenance requirements. Selecting reasonable measures from those that are feasible involves judging whether overall noise benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the mitigation measure. Guidance on the interpretation of feasible and reasonable mitigation measures is provided at Fact Sheet F of the policy.

Section 3.4 in the policy provides a comprehensive list of the types of strategies that can be used to reduce industrial noise. There are three main mitigation strategies that can be used.

1. **Controlling noise at the noise source:** includes measures that reduce noise from the industrial noise source through the use of better technology or better management practice; for example, use of quieter equipment, source enclosures, or scheduling the use of noisy equipment to least sensitive times.
2. **Controlling the transmission of noise:** includes measures that reduce the noise transmitted from the source to the receiver; for example, noise barriers and appropriate land-use controls for the intervening land between source and receiver.
3. **Controlling noise at the receiver:** includes measures that reduce the receipt of noise; for example, home insulation, double glazing of windows or, in extreme cases, voluntary home acquisition.

Assessing the acceptability of residual noise impacts

A residual noise impact is the noise level above the project noise trigger level that remains after all feasible and reasonable mitigation measures have been considered. The significance of the residual impact and the need to consider receiver-based treatment options may need to be considered as part of an authority's determination/approval process. An exceedance of the project noise trigger levels does not necessarily imply an unacceptable noise impact.

The significance of the residual noise impact is assessed based on how much it exceeds the project noise trigger level, and how the cumulative industrial noise level (predicted plus existing) relates to the amenity noise levels in Table 2.2 of the policy. The policy rates the noise impact as negligible, marginal, moderate or significant. For example, a residual impact of less than 2 dB is considered negligible, whereas a residual impact greater than 5 dB is considered significant. Weighing this significance against the broader social, economic and environmental considerations then occurs as part of the planning approval system.

Setting appropriate consent/licence conditions

A planning authority's decision to approve a new development takes into account all social, economic and environmental considerations. For noise, this includes the assessed noise impact, feasible and reasonable mitigation measures, identification of achievable noise levels, consideration of trade-offs, and the impact of the final noise level. Approved developments include appropriate consent/approval and licence conditions. Appropriate conditions set for noise include:

- a noise level limit that is achievable

- weather conditions under which the noise limit applies; and an upper limit of plus 5 dB for very noise-enhancing weather conditions, for example, strong inversions
- other conditions set by a planning authority, which may include an obligation on proponents to undertake noise mitigation at receiver locations; receiver treatments, including the extreme case of acquisition, are usually only applicable for isolated residences in rural areas and are considered as part of the planning determination process. Other government policies deal with mitigation and acquisition.

It should be noted that compliance with noise limits will not always safeguard against complaints because it is not possible to protect the whole range of individual sensitivities in a community to noise.

Addressing noise impacts from expanding ports and other clusters of industrial premises

The policy provides guidance on noise levels that will apply to new projects planned in areas near existing or proposed clusters of industry. The noise levels take account of the number of new developments proposed, the likelihood of additional development in the future, and the proximity and nature of sensitive receivers likely to be impacted.

The policy also outlines a noise management precinct concept that can be used to manage noise from multiple premises within an area as a single site. This allows greater flexibility for how noise from an entire area can be reduced and managed; for example, a new activity might be able to be relocated, or noise levels at other existing sources might be able to be reduced to accommodate the new activity.

These measures seek to ensure that noise impacts from expanding ports and other industrial clusters are appropriately managed, while allowing these areas to be fully utilised in a cost-effective and efficient manner.

Applying the policy to existing industrial noise

The policy will not be retrospectively applied to existing sites. However, it does provide a process for assessing and managing an existing source of industrial noise where the site becomes the subject of serious and persistent noise complaints, or there is a proposal to significantly upgrade or expand the site. The policy recognises options are more limited for reducing noise from existing sites and allows for feasible and reasonable noise reduction strategies to be implemented over time. Different amenity noise level targets may also apply in the policy for existing situations.

Noise monitoring for compliance

Once a new development has been built and starts operating, the owner is responsible for ensuring the development meets its statutory noise limits. Alternatively, if a new development is the subject of significant complaints, a regulatory authority would investigate whether the noise limits applicable to the development have been breached. For both these situations, the noise levels from the development need to be monitored.

Noise limits apply only to noise from the development in question and not to general ambient noise; therefore, it is often necessary to use techniques to attempt to isolate the premises

noise from ambient noise. The policy outlines different ways that this can be done, as well as providing information on what needs to be monitored and included in test reports.

Community involvement

Community input and engagement is vital for the effective management of industrial noise impacts. Communities can provide input during the formal consultation phase of the environmental assessment processes, and this is particularly important where it has been determined that residual noise impacts exist. Communication mechanisms implemented by industrial operators will facilitate ongoing dialogue between community members and industries in their area.