



Noise Guide for Local Government

Cover images:

Large: The most common problem for councils is barking dogs. Photo: EPA

Top right: Leaf blowers need to be used in a way that doesn't cause 'offensive noise'. Photo: EPA

Centre right: Measuring noise from a commercial site in a residential area. Photo: EPA

Bottom right: Avoid using noisy power tools in a way that could annoy neighbours. Photo: EPA

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Overview

This *Noise Guide for Local Government* aims to provide practical guidance to council officers in the day-to-day management of local noise problems and in the interpretation of existing policy and legislation.

It focuses on how to assess and manage noise issues dealt with by council officers, such as neighbour-to-neighbour problems and those resulting from commercial or industrial premises.

Importantly, the Guide is also aimed at planners. It outlines planning considerations that can have a significant bearing on prevention of future noise problems.

The Guide is advisory in nature, and council officers are encouraged to use it to develop council procedures or policy to deal with noise issues relevant to local circumstances.

Part 1 — Framework for noise control outlines the legal framework for noise control and the distribution of responsibility for dealing with noise problems. It includes a quick reference guide for common neighbourhood noise issues showing which agency is responsible and how the issue can be both assessed and managed.

Part 2 — Noise assessment describes the key noise assessment procedures that council officers may use when deciding whether noise is a problem. These cover the audibility test, duration of noise test for intruder alarms and the offensive noise test. Advice is also provided on procedures for assessing noise using a sound level meter and when this may be needed to determine if noise is offensive or intrusive.

Part 3 — Noise management principles describes how current planning instruments and policies can prevent noise problems from occurring. Mitigation strategies are described that can prevent or minimise noise impacts.

Part 4 — Regulating noise impacts identifies the statutory processes that are available to avoid or control noise.

Case studies appear in Parts 2, 3 and 4. They describe typical situations and show how assessment, management and regulatory tools can be used to help control common noise problems.

Part 5 — Appendixes provide technical notes that can assist in measuring noise levels and assessing noise impacts. The appendixes also include templates for issuing Noise Abatement Directions and warning notices under the POEO (Noise Control) Regulation 2008. They also refer to the *Guide to Notices* on the Environment Protection Authority (EPA) website where additional templates are available. This Part also includes guidance on noise control when installing air conditioners, heat pumps, swimming pool and spa pool pumps, and rainwater tank pumps.

Part 6 has a list of further reading and a glossary that explains commonly used terms.

Specific guidance material on noise management for industrial noise, road traffic noise and construction noise is in the following documents.

The **NSW Industrial Noise Policy** — is specifically aimed at large industrial developments, but also provides guidance on measuring and assessing noise from small commercial and industrial premises regulated by councils. The EPA has commenced a review of this policy.

NSW Road Noise Policy – criteria for assessing road traffic noise from road developments with the aim of promoting the consideration of noise pollution impacts early in the planning of new roads and freeways.

The **Interim Construction Noise Guideline** describes how noise impact assessment can be done for construction sites, how sites can be managed to minimise noise and how compliance with approved conditions can be determined.

The **Environmental Noise Control Manual** previously published by the EPA does not contain current information on noise management and should not be used or relied upon. It has been superseded by the above policy documents and this Guide. Current noise policies are available at www.epa.nsw.gov.au/noise/index.htm

Noise Guide for Local Government

Part 1 Framework for noise control



Part 1 Framework for noise control

Part 2 Noise assessment

Part 3 Noise management principles

Part 4 Regulating noise impacts

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Part 1 Framework for noise control

1.1 Introduction

Noise pollution can be defined as unwanted noise that unreasonably intrudes on daily activities. In urban areas, noise pollution has many sources, most of which are associated with urban living: road, rail and air transport; industrial noise; and neighbourhood and recreational noise. The level of annoyance or discomfort depends on the type, timing, duration and frequency of noise or if the disturbance is out of the ordinary. Noise pollution can have negative impacts on the quality of life and health, and needs to be addressed in planning and pollution control strategies.

The impact of noise on human health has emerged as an increasingly significant issue that justifies considerable management effort. The *Guidelines for Community Noise* (WHO 1999) and *The Health Effects of Environmental Noise – Other than Hearing Loss* (enHealth Council 2004) identify the significant health effects of exposure to environmental noise.

This implies that access to quiet areas would be beneficial to health. This was confirmed in a study by Gidlof-Gunnarsson & Ohrstrom in 2007 which showed that access to quiet green areas, such as parks and reserves, reduced noise annoyance and stress-related psychological symptoms. These findings reinforce the need for judicious planning of residential developments as the pressures of population growth and greater urban density increase our exposure to various forms of unwanted noise.

Neighbourhood noise is a serious environmental amenity issue that affects many in the community and noise nuisance can escalate into serious confrontations within neighbourhoods. Management of these issues results in resource intensive compliance activities by enforcement agencies.

In NSW, local councils, NSW Police, Roads and Maritime Services (RMS) and the Environment Protection Authority (EPA) receive and manage complaints about noise. The aim of the Noise Guide for Local Government is to help councils assess, manage and regulate noise issues. Subsection 1.5 in this part of the guide provides a summary of how commonly occurring noise issues can be dealt with by councils or other regulatory authorities, and it directs the reader to the sections of the Noise Guide that contain further detail.

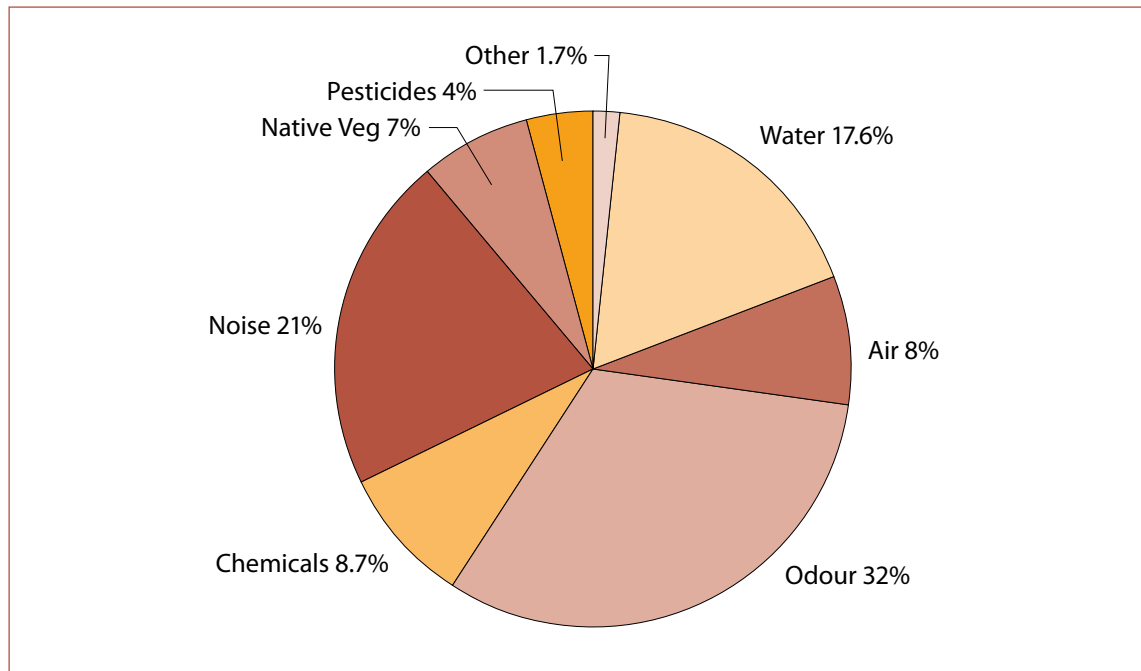
1.2 Noise complaints

Many councils have data on the number and type of noise related calls received, but information is not available on the total number of calls received by all 152 councils in NSW. The EPA and NSW Police also have information on the number and type of calls they receive. Some of the available data is provided below.

Calls to Environment Line

In 2008–09, Environment Line received 1480 noise incident reports accounting for 21% of all incident calls. Of these noise incident reports, 77% were about activities that are regulated by the EPA. In addition, the agency dealt with 1411 noisy vehicle incidents. There were also 4985 requests for information about noise issues to Environment Line or 8% of all information calls received.

Figure 1.1: Environment Line incident calls, 2008–09



Source: NSW Department of Environment, Climate Change and Water data 2009

Calls to NSW Police

NSW Police record all calls received within the computer dispatch system (NSW PoliceCAD). Table 1.1 shows the number of noise and alarm incidents recorded on PoliceCAD in 2008 and the number attended by police. These complaints were initially reported as noise complaints, however, they may be the result of other activities (e.g. building alarm as a result of a break-in and enter).

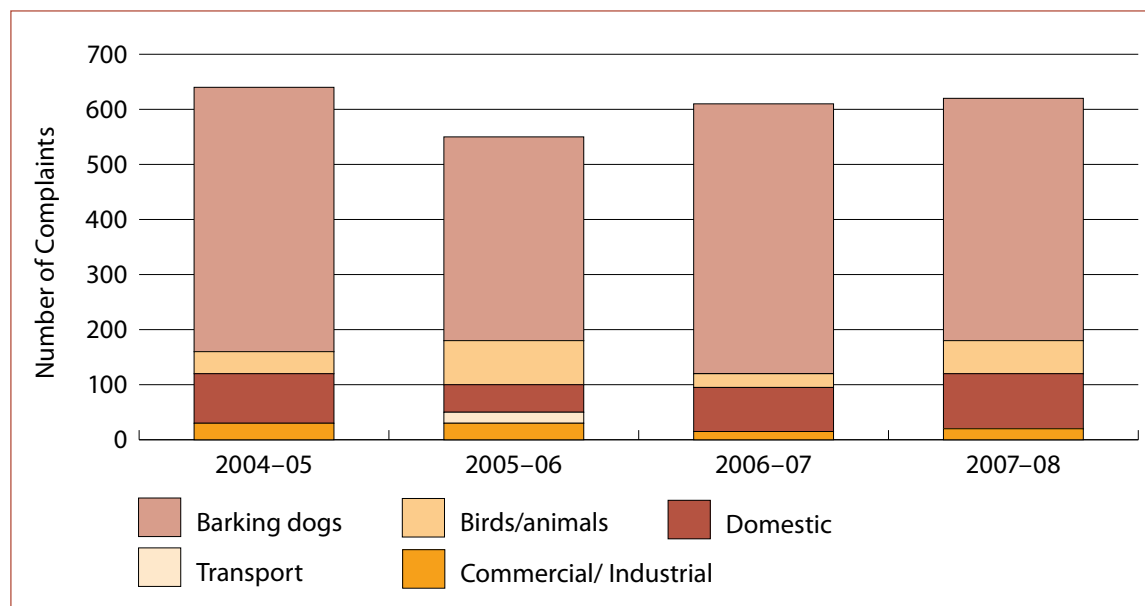
Table 1.1: Number of noise and alarm incidents recorded and attended 2008

Type of incident	Recorded on PoliceCAD
Noise complaint	100,273 (65%)
Alarm (vehicle and/or building)	55,087 (35%)
Total	155,360

Source: NSW Police Data 2009

Calls to Wollongong City Council

Figure 1.2: Complaints received by council for noise pollution



Source: Wollongong City Council State of the Environment Report 2007-08

Calls to Blacktown City Council

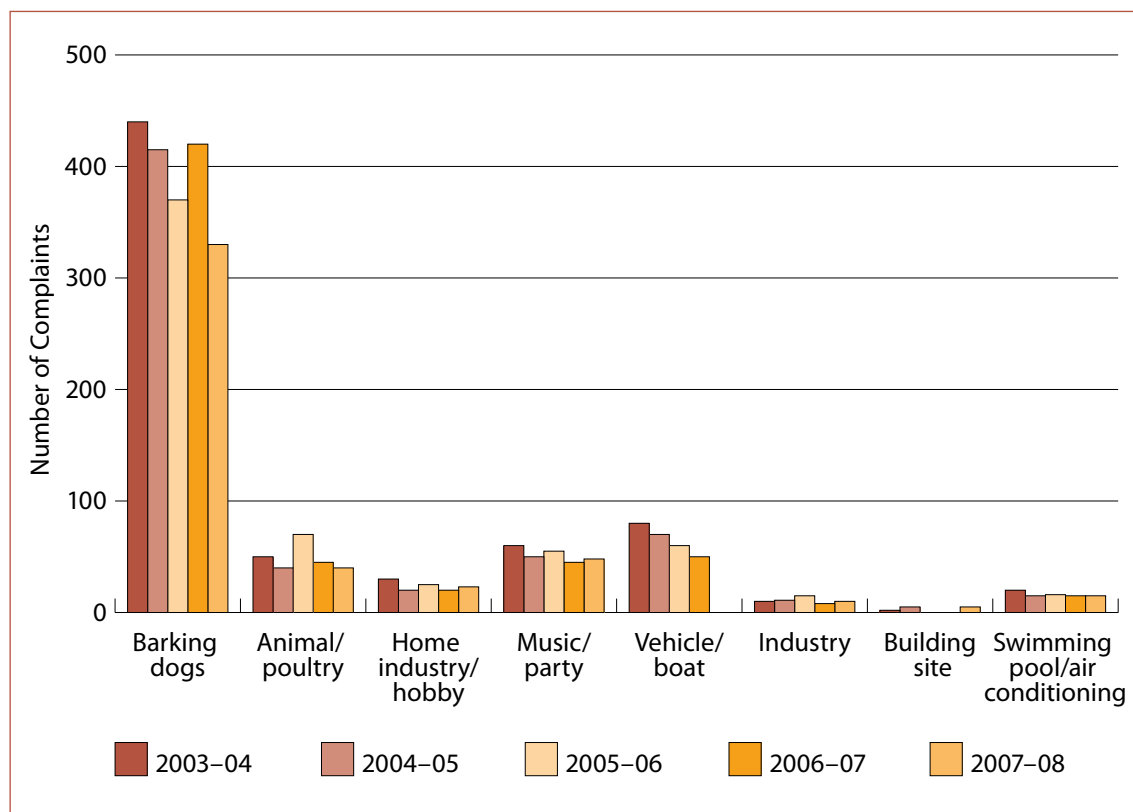
Table 1.2: Complaints received by council for noise pollution

Noise source	2003-04	2004-05	2005-06	2006-07	2007-08
Barking dogs	771	867	786	827	870
Industrial commercial	53	64	61	61	83
Air conditioners	44	49	46	51	47
Alarms	23	36	30	36	42
Music	142	194	229	240	264
Pool filters	10	13	16	9	5
Total	1043	1223	1168	1224	1311

Source: Blacktown City Council State of the Environment Report 2007-08

Calls to Shoalhaven City Council

Figure 1.3: Complaints received by council for noise pollution



Source: Shoalhaven City Council State of the Environment Report 2007-08

1.3 Responses to noise

An individual's response to noise is subjective and can depend on specific circumstances, such as the time of day and the type of activity being undertaken. This can make it difficult to determine a noise level that is satisfactory to all people, so it is important to ensure that there is an independent and unbiased assessment of noise problems. This will help find the balance between being able to conduct legitimate activities that may emit noise and the responsibility to minimise noise.

Where noise is a problem, there is a general expectation that whoever is creating the noise should take all reasonable and feasible measures to minimise it.

Councils and Police have a key role in managing local and neighbourhood noise problems by providing an impartial and fair assessment of what level of noise is reasonable, taking into consideration the nature of the activity, the surrounding area and number of people likely to be affected. RMS plays a similar role with regard to noise from vessels on navigable waters.

Resolving noise problems successfully will often rely not just on identifying the problem and developing a suitable noise management strategy, but also on managing the complaint effectively. This is important so that the complainant sees that action is being taken, has realistic expectations about the end result (i.e. the noise may still be audible) and understands the time it will take to resolve the problem.

Part 3 of the Noise Guide describes the range of noise management strategies from proactive planning strategies to reactive regulatory action and in what circumstances each of these may be employed.

1.4 Legal framework for noise control

The *Protection of the Environment Operations Act 1997* (POEO Act) and the *Protection of the Environment Operations (Noise Control) Regulation 2008* (Noise Control Regulation) provide the main legal framework and basis for managing unacceptable noise.

The POEO Act:

- identifies the authority responsible for regulating noise (s. 6 of the Act)
- defines 'noise' and 'offensive noise' (Dictionary in the Act)
- provides a range of regulatory tools to manage noise, including Noise Control Notices, Prevention Notices, Noise Abatement Directions and Noise Abatement Orders (see Part 4 of this Guide)
- makes it an offence to breach the conditions of a Notice, Direction or Order
- requires activities listed in Schedule 1 to the POEO Act to be licensed by the EPA (see ss. 42–88 of the Act)
- makes it an offence to:
 - sell certain articles emitting more than the prescribed noise (s. 136 of the Act)
 - sell certain articles not fitted with the prescribed noise control equipment (s. 137 of the Act)
 - emit noise through the operation of plant at a premises, unless the plant is maintained in an efficient condition and operated in a proper and efficient manner (s. 139 of the Act)
 - emit noise through processing or otherwise dealing with materials (including raw materials) in or on premises, except where those materials are dealt with in a proper and efficient manner (s. 140 of the Act)
- provides authorised officers appointed by the EPA with the power to stop, inspect and test motor vehicles (ss. 206–210 of the Act)
- provides NSW Police officers with the power to stop, inspect and test motor vehicles (ss. 206 and 208 of the Act)
- provides marine park rangers authorised by the Marine Parks Authority and officers authorised by RMS with the power to stop, inspect and test vessels (ss. 206 and 208 of the Act)
- provides authorised officers with the power to turn off or disable building intruder alarms and motor vehicle intruder alarms that have been sounding for longer than the permitted time (s. 198A of the Act)
- enables regulations to be made in order to give effect to the Act provided these are not inconsistent with the Act (s. 323 of the Act).

The POEO Act and the *Protection of the Environment Operations (General) Regulation 2009* (POEO General Regulation) make certain agencies the **appropriate regulatory authority (ARA)** responsible for various premises/activities. This includes local councils, the EPA, Marine Parks Authority and RMS. The Act enables these agencies to make their officers **authorised officers** for the purpose of exercising certain regulatory functions in relation to regulating these premises/activities. Authorised officers are also by default **authorised persons** for the purposes of issuing noise abatement directions. The POEO Act makes NSW Police authorised persons for the purposes of issuing noise abatement directions.

All of these agencies and other agencies such as Port Corporations and the Sydney Harbour Foreshore Authority can also make their officers **enforcement officers**. Details of the ARAs and the powers of the different officers/persons are outlined below.

The **ARA** is the body responsible for regulating particular premises/activities and can issue, for example, Prevention Notices, Noise Control Notices and Compliance Cost Notices related to the premises/activities for which it is the ARA. Only the ARA can issue these Notices for the activities/premises for which it is responsible.

Appropriate regulatory authorities

Local councils

Section 6 of the POEO Act makes local councils the ARA for any premises/activities in its local government area other than those covered by other ARAs as noted below.

Environment Protection Authority (EPA)

Section 6 of the POEO Act makes the EPA the ARA for:

- premises, and all activities carried on at those premises, on which scheduled activities are carried out that are listed in Schedule 1 to the POEO Act (these are generally large industrial sites)
- premises, and all activities carried on at those premises, to which an environment protection licence has been issued for the purpose of regulating water pollution
- activities conducted by state or public authorities, whether at premises occupied by the state or a public authority or otherwise (e.g. noise from public schools, local council road works etc).

The POEO General Regulation makes the EPA the ARA for certain non-scheduled activities, which may involve noise issues, for example:

- route of the Inner West Light Rail (cl 89)
- large outdoor entertainment activities and certain sporting activities at certain state facilities (cl 90)
- other activities such as large plants that mix crushed rock with bituminous materials, large concrete batching plants and certain mobile plants (cl 92).

Clause 87 of the POEO General Regulation relates to Kosciuszko National Park and makes the EPA the ARA for:

- non-scheduled activities
- premises which have a scheduled activity, premises to which an environment protection licence applies and activities conducted by a state or public authority.

Olympic Park Authority

Clause 90A of the POEO General Regulation 2009 makes the Olympic Park Authority the ARA for entertainment activities at Olympic Park that are not carried out by the state or a public authority.

Marine Parks Authority

Clause 84 of the POEO General Regulation makes the Marine Parks Authority the ARA for activities/premises in marine parks other than those for which the EPA is the ARA, that is, premises which have a scheduled activity, premises to which an environment protection licence applies and activities conducted by a state or public authority.

Roads and Maritime Services (RMS)

Clause 86 of the POEO General Regulation makes RMS the ARA for activities involving non-pilotage vessels in navigable waters other than those for which the:

- EPA is the ARA, that is, premises that have a scheduled activity, premises to which an environment protection licence applies and activities conducted by a state or public authority
- Marine Parks Authority is the ARA, that is, non-scheduled activities in marine parks.

(**Note:** Non- pilotage vessels include, for example, any vessels outside of designated ports and recreational vessels, vessels less than 30 metres, vessels over 30 metres that are exempt from the pilotage requirements, and sea planes within designated ports. Refer to section 4.3.4 for details.)

Authorised officers are appointed by an ARA under s. 187 of the POEO Act, and act on its behalf in investigating alleged environmental problems relating to activities/premises for which it is the ARA. Authorised officers have a range of investigative powers. The POEO Act provides authorised officers with powers to:

- require information or records (Part 7.3 of the Act)
- enter and search premises (Part 7.4 of the Act)
- question and identify persons (Part 7.5 of the Act).

Section 187 of the POEO Act enables a local council to appoint officers and employees of other local councils (as well as its own officers and employees) as authorised officers for the purposes of the Act, in relation to its area. This is to facilitate investigations under the Act that require action across local government boundaries.

Authorised persons can issue Noise Abatement Directions under Part 8.6 Division 3 of the POEO Act. Section 275 of the POEO Act makes Police officers and people who have been made authorised officers under s. 187 of the POEO Act authorised persons.

Enforcement officers are people who are authorised by the agencies listed under cl 81 of the POEO General Regulation to issue Penalty Notices for certain offences. There are different classes of enforcement officers depending on which organisation has authorised the enforcement officer. Schedule 6 of the POEO General Regulation sets out which classes of enforcement officers can issue Penalty Notices for offences. ARAs will usually also appoint those it has appointed as 'authorised officers' as 'enforcement officers', however, there may be occasions on which an ARA decides it is appropriate to appoint a person as one but not the other. As well as the ARAs, other organisations such as NSW Police, Port Corporations (Sydney, Port Kembla and Newcastle) and the Sydney Harbour Foreshore Authority may also appoint enforcement officers.

An enforcement officer can use all the investigatory powers of an authorised officer (i.e. a person appointed under s. 187 of the POEO Act), except for certain specified powers, but only for the purposes of issuing a Penalty Notice. Only the ARA and the EPA can initiate court proceedings rather than issue a Penalty Notice for a breach of the POEO Act or the Noise Control Regulation. However, if a person elects to have a matter for which they have been issued with a Penalty Notice heard by the court, an enforcement officer may then commence court proceedings.

Section 189 requires that authorised officers and enforcement officers who are not Police officers are provided with identification cards and these must be produced if requested by any person affected by the exercise of the officer's functions. Similarly, Police officers must produce their identification.

The **Noise Control Regulation** contains specific provisions relating to common noise problems, including restrictions on the use of:

- air conditioners, heat pump water heaters, pool pumps, power tools etc.
- building and car alarms
- individual motor vehicles, including defective mufflers and car sound systems
- recreational marine vessels, including sound systems on vessels and the use of sirens.

Section 136 of the POEO Act makes it an offence to sell certain prescribed articles emitting more than the prescribed noise. The regulation lists the prescribed articles and noise limits related to s. 136 of the POEO Act, which include limits for motor vehicles and, for example, grass cutting machines. Section 137 of the POEO Act makes it an offence to sell prescribed articles not fitted with the prescribed noise control equipment, or where the fitted noise control equipment has not been maintained in accordance with the regulation. The regulation prescribes motor vehicles and motor vehicle noise control equipment for the purposes of s. 137 of the POEO Act.

For offences prosecuted in the court, in some cases the maximum penalty is stated in the POEO Act. For example, s. 97 states that the maximum penalty for failure of an individual to comply with a Prevention Notice is \$250,000 and a further \$60,000 for each day the offence continues. In other cases, the maximum penalty is stated as a number of penalty units. For example, s. 277 states that the maximum penalty for a person who contravenes a Noise Abatement Direction is 30 penalty units. The maximum penalty is also stated as a number of penalty units for offences in the Noise Control Regulation. For example, cl 52 related to noise from air conditioners states that the maximum penalty is 50 penalty units for an individual. At the time of publication of this Guide, s. 17 of the *Crimes (Sentencing Procedures) Act 1999* set a penalty unit at \$110. The penalties associated with offences for which penalty notices may be issued are noted in the POEO General Regulation. For example, for an individual, a penalty notice issued for a contravention of s. 140 of the POEO Act related to noise from dealing with materials has a penalty of \$200 and a contravention of cl 52 of the Noise Control Regulation related to noise from air conditioners has a penalty of \$200.

A detailed description of the Notices, Directions, Orders and Penalty Notices that can be used in relation to noise issues is contained in Part 4 of this Guide, Regulating noise impacts.

1.4.1 NSW Office of Liquor, Gaming and Racing

Under the *Liquor Act 2007*, Police, local councils and residents can make a disturbance complaint to the Director of Liquor and Gaming. The Director has a range of statutory powers and enforcement functions under the liquor laws including the power to deal with disturbance complaints against licensed venues.

A disturbance complaint can be made to the Director of Liquor and Gaming when the quiet and good order of a neighbourhood is unduly disturbed by the:

- conduct of licensed premises, and/or
- behaviour of patrons after leaving the premises (such as alcohol-related antisocial behaviour and violence).

A disturbance complaint can be made to the Director of Liquor and Gaming by:

- local residents (three or more residents are required)
- Police
- a local council
- a person who satisfies the Director that their financial or other interests are adversely affected by the licensed premises (e.g. another business operator in the neighbourhood).

A disturbance complaint form, which is available from www.olgr.nsw.gov.au/safer_nights_out.asp must be supported by a statutory declaration.

The Director of Liquor and Gaming is responsible for dealing with disturbance complaints made in relation to hotels and other licensed venues including registered clubs.

Section 79 of the *Liquor Act 2007* provides an informal mechanism for complaints to be made (by residents, Police, local consent authorities and others) where the amenity of local neighbourhoods is unduly disturbed by the conduct of licensed premises and registered clubs (or their patrons). The Director is responsible for resolving such complaints and may impose temporary or permanent conditions on the licence.

Complaints to the Director can relate to noise emitted from licensed premises and registered clubs from within the physical structure of the premises and disturbance from patrons, especially when departing. Complaints may include other issues such as antisocial behaviour of patrons, including vandalism, method and timing of delivery vans, and disposal of refuse such as bottles, glassware and food packaging. In some instances the NSW Office of Liquor, Gaming and Racing (OLGR) will consider complaints where the operation of the licensed premises or registered club is alleged to be the cause of an increased requirement for Police resources owing to its operation or the type of clientele it attracts.

Generally noise created by mechanical equipment is outside OLGR's responsibility, and the local council should manage these issues.

Officers of OLGR assist complainants by providing information on their legislative measures and requirements. Councils may seek assistance from the OLGR in resolving a noise issue from premises licensed under the *Liquor Act 2007*.

A s. 79 complaint must be made by statutory declaration and where necessary be accompanied by authorisation forms from at least two people residing in the neighbourhood of the licensed premises/registered club. Forms are available from OLGR including its website – www.olgr.nsw.gov.au/safer_nights_out.asp

Complainants are required to provide their contact details and must be advised that the complaint cannot proceed anonymously, that is, a copy of the complaint and accompanying documents will be forwarded to the licensed premises and the complainant's attendance will be required at a conference, if convened.

However, the Director requires the venue not to publish identifying information about complainants to other persons who are not party to the complaint.

Matters are usually dealt with at a conciliation conference between the licensee or secretary and the complainant. The local Police and local council are also invited to attend, along with any party who has a financial interest in the premises.

The types of condition that can be imposed on licensees by the Director include, but are not restricted to:

- noise conditions
- prohibition on amplified entertainment
- requirement for acoustical testing and amelioration work
- provision of licensed security
- restriction on time of entry to the premises.

Further information is available from the OLGR website (www.olgr.nsw.gov.au/olgr_default.asp or telephone the Disturbance Complaints Team on 9995 0715).

A copy of a noise condition currently imposed is as follows:

Current noise condition

The L_{A10}^* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz–8kHz inclusive) by more than 5dB between 7:00 am and 12:00 midnight at the boundary of any affected residence.

The L_{A10}^* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz–8kHz inclusive) between 12:00 midnight and 7:00 am at the boundary of any affected residence.

Notwithstanding compliance with the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 7:00 am.

* For the purpose of this condition, the L_{A10} can be taken as the average maximum deflection of the noise emission from the licensed premises.

This is a minimum standard. In some instances the Director may specify a time earlier than midnight in respect of the above condition.

Interior noise levels which still exceed safe hearing levels are in no way supported or condoned by the Director.

1.4.2 Strata schemes

Under the *Strata Schemes Management Act 1996* each strata scheme must have a set of by-laws, but they may be different for each strata scheme. It is likely that most strata schemes relating to residential premises will have a by-law relating to noise that is similar to the model by-law provision. The model by-law provision about noise provides that:

An owner or occupier of a lot must not create any noise on a lot or the common property likely to interfere with the peaceful enjoyment of the owner or occupier of another lot or of any person lawfully using common property.

Owners and occupiers of the strata scheme lots are required to comply with the by-laws. If the owners corporation (principal manager) is satisfied that an owner or occupier of a lot has contravened a by-law, the owners corporation can serve a notice requiring the owner or occupier to comply with the by-law. If the person to whom the notice is issued contravenes the notice within 12 months of the notice being served, the owners corporation can apply to the Consumer, Trader and Tenancy Tribunal for the person to be fined up to \$550. Action to enforce a by-law cannot be taken by an individual but can only be taken by the owners corporation. Also, the enforcement of a by-law by the owners corporation can only be pursued where there is a noise issue within a particular strata scheme. It is not relevant where noise made within a strata scheme impacts on a property that is not part of the strata scheme.

Frequently asked questions about noise control in strata schemes

Can action under the POEO Act/Noise Control Regulation and action under the Strata Schemes Management Act be taken at the same time?

Action under strata titles legislation and the POEO Act/Noise Control Regulation could be taken at the same time or sequentially. In some situations where there is a noise issue within a particular strata scheme, council may consider that it is appropriate for the strata corporation to take action to attempt to enforce the by-laws, rather than or before council takes any action under POEO legislation.

Are common property and private residential strata lots 'premises' for the purposes of issuing a noise abatement direction?

A building and its surrounds which is under strata title constitutes a 'premises' and an individual strata lot also constitutes a premises. A Noise Abatement Direction can be issued to the occupier of the premises, being the person with management or control of the premises, or the person believed to be making or contributing to the noise. This is the case whether the noise is being emitted from an individual strata lot or the common property. Where the noise is being emitted from common property, the occupier of the premises would generally be the owners corporation of the strata scheme, unless the common property has been transferred or leased. If possible, Noise Abatement Directions should be issued to the person believed to be making or contributing to the noise.

Do the powers in the Noise Control Regulation relating to 'residential premises' apply to noise from one strata lot impacting on another strata lot in the same strata scheme?

The clauses within the Noise Control Regulation relating to 'residential premises' (cl 14, cl 50, cl 51 and cl 52) apply where one strata lot impacts on another strata lot in the same strata scheme.

Do the powers in the Noise Control Regulation relating to 'residential premises' apply to noise being made on another residential premises that can be heard on the common property?

Whether cl. 14, 50, 51 and 52 can be used to prevent noise being made on another residential premises (that is not part of the strata scheme) that can be heard on the common property of the strata scheme depends on the nature of the common property. Common property will constitute residential premises, provided that it is not used for some non-residential use. The clauses deal with the impact on a habitable room in any other residential premises. 'Habitable room' means 'any room other than a garage, storage area, bathroom, laundry, toilet or pantry'. Most common property would generally not constitute a habitable room. For example, entranceways, stairways and landings within a building would not constitute a habitable room. However, rooms such as games rooms or lounge rooms which are part of the common property would constitute a habitable room in a residential premises.

Do the powers in the Noise Control Regulation relating to 'residential premises' apply to noise emitted from common property?

In a strata building, parts of the common property within or around the physical building would generally constitute residential premises. For example, areas such as entranceways, hallways, stairs and common parts of a basement garage, as well as grassed or landscaped areas, pool areas, clothes line areas or playground areas, would constitute residential premises, provided that those areas are not being used for some non-residential use, such as for commercial use. When the items that make noise are being used on common property within one residential premises that can be heard within a habitable room of another residential premises that is not part of that strata scheme, e.g. a neighbouring property, the clauses (cl. 14, cl. 50, cl. 51 and cl. 52) would apply. When the items that make noise are being used on common property that can be heard within the habitable room of a strata lot within the strata scheme, the clauses do not apply. The clauses refer to noise that can be heard within a habitable room in any other residential premises. As the common area is essentially tied to each strata lot within the strata scheme, the strata lot and common areas are essentially part of the same residential premises.

1.4.3 The NSW Ombudsman

The NSW Ombudsman investigates and reports on complaints about the conduct of NSW agencies or their employees, including both government (state and local) and some non-government agencies.

If a person thinks they have been unfairly treated by a local council, and council officials such as councillors, administrators, members of staff of council, members of council committees, or delegates of council to whom a function of council is delegated such as contractors, consultants, volunteers, members of advisory and section 355 committees, independent hearing assessment panels and community representatives, they can complain to the Ombudsman.

The Ombudsman helps to make sure councils act fairly and reasonably and can look at the conduct of councillors and council employees and the administrative conduct of the council itself.

Some issues that can be investigated by the Ombudsman include:

- noise complaints
- inadequate inspection or investigation
- failure to comply with proper procedures or the law
- failure to enforce development conditions
- failure to act on complaints about unauthorised work and illegal activities
- failure to enforce compliance with the law and conditions of consent
- failure to notify people before decisions that affect them are made
- failure to comply with tendering procedures
- unreasonable, discriminatory or inconsistent treatment
- failure to reply to correspondence
- failure to provide relevant information
- unauthorised disclosure of information.

The Ombudsman will not usually investigate decisions such as the setting of rates, the merits of particular development applications or the adoption of particular policies. It is best for a person to lobby the council or councillors directly if they are unhappy about these sorts of decisions.

The Ombudsman does not have the power to amend or revoke development consents. Generally there needs to be some issue of public interest or evidence of abuse in the determination processes for the Ombudsman to investigate such matters.

The Ombudsman is independent and impartial and offers services free of charge. Further information can be obtained by contacting the Ombudsman's office:

NSW Ombudsman

Inquiries 9.00 am – 4.00 pm, Monday to Friday or by appointment.

Level 24, 580 George Street, Sydney, NSW 2000

Phone: (02) 9286 1000; Fax: (02) 9283 2911

Tollfree: 1800 451 524

Email: nswombo@ombo.nsw.gov.au

Web: www.ombo.nsw.gov.au

1.4.4 The Community Justice Centre

The Community Justice Centre (CJC), a part of the Attorney General's Department, provides mediation services to the community with the aim of reaching agreement between disputing individuals without involving legal proceedings. This service can assist in resolving noise disputes. Requests to use their services can come from both councils receiving complaints and local courts that receive enquiries from affected parties about starting legal proceedings.

The Community Justice Centre has published material that can assist residents to deal with situations of potential conflict with neighbours. A brochure called *Some Suggestions on How to Deal with Conflict* can be viewed at www.cjc.nsw.gov.au under 'publications and pamphlets'.

1.5 Responsible authorities – quick reference guide

Table 1.3 provides a quick reference guide to which agency is responsible for different noise sources and how issues may be assessed and managed. Although this Guide is primarily for councils, information relating to all of the ARAs is noted in the table to provide the context within which councils operate. The approaches described are indicative only and may not be the only or best approach for individual situations. For more detail go to the section in the Guide noted in **bold** in brackets. The last column notes additional reference material that may be useful.

The agency listed as the ARA has primary responsibility for the noise source and can issue, for example, Prevention Notices or Noise Control Notices and initiate court proceedings or issue Noise Abatement Directions or Penalty Notices as appropriate. Where other agencies are noted, including the NSW Police, they may be able to issue Penalty Notices where appropriate. The NSW Police may also issue Noise Abatement Directions as appropriate. Other agencies such as the NSW Police, may be able to take regulatory action but are unlikely to do so if an ARA is clearly defined for a noise source. These other agencies have not been listed under 'Responsibility' for that noise source.

In some circumstances, such as where the activity is being undertaken by or on behalf of a public authority, the EPA would be the ARA. The POEO Act and POEO General Regulation may need to be checked in relation to the particular activity in question in order to determine the correct ARA.

Table 1.3 – Approaches to managing common neighbourhood noise issues

Agricultural activities						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Farm machinery such as tractors and harvesters on private farms	Council (ARA)		Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate implementation of reasonable and feasible best practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		
Frost fans	Council (ARA)		Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate implementation of reasonable and feasible best practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		Example Guidelines: Griffith City Council – Frost Fans Policy 47 EPA Victoria Guideline – Publication 1043: Guidelines on Noise from Frost Fans
Gas scare guns	Council (ARA)		Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate implementation of reasonable and feasible best practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		Example Guidelines: EPA Victoria Publication 1254: Noise Control Guideline, Chapter 12 EPA South Australia – Audible Bird Scaring Devices – Environmental Noise Guideline
Intensive agriculture such as poultry farms, piggeries, and feedlots, that do not require an environment protection licence	Council (ARA)		Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate implementation of reasonable and feasible best practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		

Note: Relevant sections of the Guide are shown in bold, bracketed text.

Aircraft						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Aircraft in flight and Commonwealth-owned airports	Commonwealth – Airservices Australia	See comments for 'Noise resulting from privately operated airports' and 'Noise resulting from airports operated by NSW public authorities such as local councils'				<i>Air Navigation Act 1920</i> Air Navigation (Aircraft Noise) Regulations 1984 Air Navigation (Aircraft Engine Emissions) Regulations
Aircraft when landing, taking off or taxiing at: <ul style="list-style-type: none"> Commonwealth-owned and leased airports Non-Commonwealth owned and leased airports 	Commonwealth – Airservices Australia	International Civil Aviation Organisation definitions: 'Take-off' commences with the application of power to the aircraft once it is on the runway to bring the aircraft to the speed necessary to become airborne. 'Landing' ends when an aircraft leaves the runway or comes to a stop on the runway.		The Airport Environment Officer employed by the Commonwealth Department of Infrastructure and Transport, has regulatory powers		Airports Act 1996 Airports (Environment Protection) Regulations 1997 Air Navigation Act 1920 Air Navigation (Aircraft Noise) Regulations 1984 Air Navigation (Aircraft Engine Emissions) Regulations

Aircraft on the ground at Commonwealth owned and leased airports – e.g. noise from aircraft engines being tested or when aircraft are parked at a gate or in a designated aircraft parking area	Commonwealth Department of Infrastructure and Transport – Relevant airport lessee company under the <i>Airports Act 1996</i>	There are four Commonwealth owned and leased airports in NSW: 1. Sydney (Kingsford Smith) Airport – Sydney Airport Corporation Limited 2. Bankstown Airport – Bankstown Airport Limited 3. Camden Airport – Camden Airport Limited 4. Gold Coast Airport (part only) – Queensland Airports Limited				Airports Act 1996 Airports (Environment Protection) Regulations 1997
Noise resulting from privately operated airports – e.g. aircraft on the ground undergoing excessively noisy engine maintenance	Council (ARA)	Noise from aircraft on the ground not taxiing, taking off or landing can be directly controlled through the POEO Act provisions. Therefore, noisy aircraft engine maintenance activities on the ground can be controlled by, for example, specifying permitted hours and/or noise limits at affected residences.	Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate alternative times for engine testing, acceptable hours etc. Prevention Notice (4.2.4)		NSW Industrial Noise Policy
Noise resulting from airports operated by NSW public authorities such as local councils – e.g. aircraft on the ground undergoing excessively noisy engine maintenance	EPA (ARA)		Offensive noise test (2.1.4) or assessment against any relevant policy	Negotiate alternative times for engine testing, acceptable hours etc. Prevention Notice (4.2.4)		NSW Industrial Noise Policy

Aircraft *(continued)*

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Helicopter premises not covered by POEO Act Schedule 1 – e.g. aircraft on the ground undergoing excessively noisy engine	Council (ARA)	Air Services Australia is responsible for noise from aircraft in flight and aircraft movements (taxiing, taking off and landing). The POEO Act provisions can not be applied to these activities. This includes conditions specifying, for example:	Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate alternative times for engine testing, acceptable hours etc. Prevention Notice (4.2.4)		NSW Industrial Noise Policy
Helicopter premises covered by POEO Act Schedule 1 – e.g. aircraft on the ground undergoing excessively noisy engine maintenance	EPA (ARA)	<ul style="list-style-type: none"> • noise limits that apply to aircraft in flight and aircraft movements • permitted hours for movements • permitted number of movements • (except in limited circumstances) permitted aircraft models – e.g. models certified to meet a certain noise level in certain specified test conditions 	Offensive noise test (2.1.4) or assessment against any relevant policy	Negotiate alternative times for engine testing, acceptable hours etc. Environment protection licence		NSW Industrial Noise Policy.

Animal noise						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Barking dogs	Council (ARA)		Assess whether dogs are a 'nuisance' as defined in the <i>Companion Animals Act 1998</i> s. 21 or POEO Act – Offensive noise test (2.1.4)	Companion Animals Act s. 21 or POEO Act – Noise Abatement Direction (4.2.2) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court	Part 4 Case Study 1 EPA Dealing with barking dogs brochure
Dog kennels	Council (ARA) Police	Although the NSW Police may issue Noise Abatement Directions related to this type of noise, as any issues are likely to be related to a particular premise and to be ongoing in nature, councils are typically the main agency for control.	Offensive noise test (2.1.4)	Negotiate noise management plan Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court (4.2.3)	EPA Victoria Publication 1254 – Noise Control Guideline Chapter 4
Other animal noise	Council (ARA) Police	Although the NSW Police may issue Noise Abatement Directions related to this type of noise, as any issues are likely to be related to a particular premise and to be ongoing in nature, councils are typically the main agency for control.	Offensive noise test (2.1.4)	Negotiate reduction of noise level – noise management plan Noise Abatement Direction (4.2.2) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court (4.2.3)	

Commercial premises

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Commercial premises – e.g. noise from deliveries, garbage collection, public address systems, air conditioners etc at shops or offices	Council (ARA)		Offensive noise test (2.1.4) or assessment against any relevant council policy.	Negotiate implementation of reasonable and feasible best practices. Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		NSW Industrial Noise Policy Part 4 Case Study 2

Construction noise

General residential/commercial building construction	Council (ARA)			Negotiate changes to work practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Action under the <i>Environmental Planning and Assessment Act 1979</i> if the construction noise is in breach of the planning approval	DECC Interim Construction Noise Guideline City of Sydney Construction Hours/ Noise within the CBD – Code of Practice 1992
Major public infrastructure construction	EPA (ARA)			Negotiate implementation of reasonable and feasible best practices Environment protection licence or Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		DECC Interim Construction Noise Guideline
Public road construction	EPA (ARA)			Negotiate implementation of reasonable and feasible best practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		DECC Interim Construction Noise Guideline

Educational facilities						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Private childcare centres, schools, colleges and universities	Council (ARA)			Negotiate changed times for activities Noise Abatement Direction (4.2.2) or Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court	Fairfield City DCP – Child Care Centres
Public schools and TAFEs, council childcare centres	EPA (ARA)			Negotiate changed times for activities Noise Abatement Direction (4.2.2) or Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court	
Public university activities	EPA (ARA)	Public universities have been determined to be public authorities – therefore the EPA is the ARA for activities conducted by or on behalf of the university		Negotiate changed times for activities Noise Abatement Direction (4.2.2) or Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court	

Entertainment						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Loud music, patron noise etc from hotels and liquor licensed premises (not including noise from equipment such as air conditioners, coolers etc)	NSW Office of Liquor, Gaming and Racing (OLGR)				If conditions in the development consent relating to noise have been breached, council (or any other person) could take action under the <i>Environmental Planning and Assessment Act 1979</i>	Noise Guide (1.4.1)
Pyrotechnic displays	WorkCover NSW	A fireworks and pyrotechnician's licence from WorkCover NSW is required. The licensee must notify council and WorkCover 7 days prior to the event and Police and Fire Brigade 2 days prior to the event.				Guidelines for councils are on the Division of Local Government, Department of Premier and Cabinet website www.dlg.nsw.gov.au
Outdoor concerts, festivals and cinematic or theatrical events using sound amplification equipment with 200 or more people at venues designated under cl. 90 of the POEO General Regulation	EPA (ARA)	Venues designated under cl. 90 of the POEO General Regulation are: Royal Botanic Gardens, the Domain, Centennial Park, Moore Park, Parramatta Stadium, Sydney Cricket and Sports Ground (i.e. Sydney Cricket Ground and Sydney Football Stadium), Opera House and Darling Harbour.		Prevention Notice (4.2.4)		Part 3 Case Study 1

Entertainment activities at Sydney Olympic Park carried on by the state or a public authority	EPA	Venues designated under cl. 90 of the POEO General Regulation are: Royal Botanic Gardens, the Domain, Centennial Park, Moore Park, Parramatta Stadium, Sydney Cricket and Sports Ground (i.e. Sydney Cricket Ground and Sydney Football Stadium), Opera House and Darling Harbour		Prevention Notice (4.2.4)		
Entertainment activities at Sydney Olympic Park not carried on by the state or a public authority	Sydney Olympic Park Authority	Cl. 90A of the POEO General Regulation makes Sydney Olympic Park Authority the ARA.		Prevention Notice (4.2.4)		
Public entertainment facilities such as amusement parks, public concerts (other than those noted above)	Council (ARA)	Cl. 95 of the POEO General Regulation makes the Luna Park site exempt from the noise provisions within the POEO Act.	Offensive noise test (2.1.4)	Negotiate implementation of reasonable and feasible best practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		Part 3 Case Study 1

Industrial premises						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Activities listed in cl. 92 of the POEO General Regulation. These activities include plants with a capacity greater than 30,000 tonnes per year that mix crushed rock with bituminous materials or are concrete batching plants and mobile plants that include any of the activities in Part 1 of Schedule 1 to the POEO Act.	EPA (ARA)	Because these activities are considered to be low risk, they are not required to hold an environment protection licence, however the EPA remains the ARA for these activities.		Negotiate implementation of reasonable and feasible best practices Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		NSW Industrial Noise Policy
Large industrial complexes required to hold an environment protection licence issued by the EPA	EPA (ARA)	Relevant activities/premises are listed in Schedule 1 of the POEO Act		Negotiate implementation of reasonable and feasible best practices Environment protection licence		NSW Industrial Noise Policy
Small factories and backyard workshops – e.g. noise from plant and equipment, reversing alarms, public address systems, deliveries, garbage collection	Council (ARA)		Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate implementation of reasonable and feasible best practices. Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		NSW Industrial Noise Policy Part 4 Case Study 2 and Case Study 5 NSW Interim Construction Noise Guideline

Motor vehicles						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
General road traffic noise on local roads	Council (ARA)					Department of Environment, Climate Change and Water (DECCW) NSW Road Noise Policy
General road traffic noise on freeways, tollways, main roads	EPA (ARA)	The EPA will liaise with RMS		Advise on planning consent		DECCW NSW Road Noise Policy
Motor vehicle on residential premises causing unnecessary noise during the night or early morning	Council (ARA) Police		Audibility test (2.1.2)	Negotiate for activity to cease Cl. 14 of the Noise Control Regulation (4.3.3)		EPA Managing vehicle noise brochure
Noisy motor vehicles (including trail bikes) off road on private property and public land such as parks and reserves	Council (ARA) Police	Police have the power to stop, inspect and test vehicles. The Office of Environment and Heritage (OEH) also has powers in relation to motor vehicles in national parks under the National Parks and Wildlife Regulation 2009	Offensive noise test (2.1.4) or assessment against any relevant council policy	Negotiate for activity to cease, fitting of appropriate mufflers, conducting activity well away from sensitive receivers such as residences Cl. 13 of the Noise Control Regulation (4.3.3) or Noise Abatement Direction (4.2.2) or Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		EPA Managing vehicle noise brochure

Motor vehicles (continued)

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Noisy motor vehicle engine/exhaust on roads, verges and car parks	EPA Police	EPA authorised officers and police can stop, inspect and test vehicles. Under the Noise Testing and Anti-tampering Inspection Scheme, there is an EPA-approved network of inspection stations across NSW. RMS also has responsibility for noise from heavy vehicles.		Issue of penalty notices: EPA – cl. 12 and 18 of the Noise Control Regulation and NSW Police – cl. 18 of the Noise Control Regulation EPA authorised officers may also issue Defective Vehicle Notices		EPA Managing vehicle noise brochure
Motor vehicle on residential premises causing unnecessary noise during the night or early morning	Council (ARA) Police		Audibility test (2.1.2)	Negotiate for activity to cease Cl. 14 of the Noise Control Regulation (4.3.3)		EPA Managing vehicle noise brochure
Vehicle alarms	Council (ARA) Police Sydney Harbour Foreshore Authority	Councils should liaise with their Police Local Area Commands regarding alarms.	Alarm should not sound for longer than permitted time (Table 4.4)	Identify owner and arrange for alarm to be deactivated Cl. 24 of the Noise Control Regulation (4.3.2)	Council authorised officers can turn off or disable alarms sounding for longer than the permitted time (POEO Act s. 198A).	EPA Managing noise from intruder alarms brochure
Vehicle refrigeration units	Council (ARA) Police		Audibility test (2.1.2)	Negotiate for vehicle to be moved Cl. 15 of the Noise Control Regulation (4.3.3)		EPA Managing vehicle noise brochure
Vehicle sound systems	Council (ARA) Police		Offensive noise test (2.1.4)	Cl. 16 of the Noise Control Regulation (4.3.3)		EPA Managing vehicle noise brochure

Neighbourhood noise						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Air conditioners	Council (ARA) Police	Although the Police may issue Noise Abatement Directions and Infringement Notices related to this type of equipment, as it is fixed in place and any noise issues are likely to be ongoing in nature, councils are typically the main agency for control.	Night time: audibility test (2.1.2) Day time: offensive noise test (2.1.4)	Negotiate reduction of noise level – move equipment away from neighbours, install acoustic shielding, install quieter model. Night time: Cl. 52 of the Noise Control Regulation (4.3) Any time: Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court (4.2.3)	Part 5 Appendixes 3 and 4
Amplified music, musical instruments	Council (ARA) Police	Police are typically the main agency for control of noise from late night parties, or where the safety of officers may be a concern or where council officers may not be available.	Night time: audibility test (2.1.2) Day time: offensive noise test (2.1.4)	Negotiate reduction of volume. Mediation may be an option, either informally or through a CJC. Night time: Cl. 51 of the Noise Control Regulation (4.3) Day time: Noise Abatement Direction (4.2.2)	Police may seize equipment being used in contravention of a Noise Abatement Direction (POEO Act s. 282) (4.2.2). Council authorised officers may seize offending equipment if connected with an offence (POEO Act s. 198)	Part 4 Case Study 3

Neighbourhood noise *(continued)*

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Building intruder alarms	Council (ARA) Police	Councils should liaise with their NSW Police Local Area Commands regarding alarms.	Alarm should not be heard in habitable room of residences for longer than permitted time (Table 4.6)	Identify owner/occupier and arrange for alarm to be deactivated Cl. 53 of the Noise Control Regulation (4.3.2) Prevention Notice (4.2.4)	Council authorised officers have the power to turn off or disable alarms that have been sounding for longer than the permitted time (POEO Act s. 198A).	EPA Managing noise from intruder alarms brochure
Electric power tools, powered garden equipment	Council (ARA) Police	Police may become involved when council officers are not available.	Night time: audibility test (2.1.2) Day time: offensive noise test (2.1.4)	Negotiate reduction of noise level – using quieter equipment, changing times of use, closing doors, moving equipment away from neighbours. Night time: Cl. 50 of the Noise Control Regulation (4.3) Day time: Noise Abatement Direction (4.2.2)	Police may seize offending equipment being used in contravention of a Noise Abatement Direction (POEO Act s. 282) (4.2.2) Council authorised officers may seize offending equipment if connected with an offence (POEO Act s. 198)	Part 3 Case Study 4 and Part 4 Case Study 5
Heat pump water heaters	Council (ARA) Police	Although the Police may issue Noise Abatement Directions and Infringement Notices related to this type of equipment, as it is fixed in place and any noise issues are likely to be ongoing in nature, councils are typically the main agency for control.	Night time: audibility test (2.1.2) Day time: offensive noise test (2.1.4)	Negotiate reduction of noise level – move equipment away from neighbours, install acoustic shielding, install quieter model. Night time: Cl. 52 of the Noise Control Regulation (4.3) Any time: Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court (4.2.3)	Part 5 Appendixes 3 and 4 Note: Some of the guidance relevant to air conditioners may also be applied to heat pump water heaters.

Model vehicles, boats and aircraft	Council (ARA) Police	The EPA does not consider models to be included within the definitions of vehicles, vessels and aircraft for the purposes of making other agencies the ARA for noise issues related to these items	Offensive noise test (2.1.4)	Negotiate reduction of noise level – alternative times, relocation of activity Noise Abatement Direction (4.2.2) or Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Council authorised officers may seize offending equipment if connected with an offence (POEO Act s. 198) Police may seize offending equipment being used in contravention of a Noise Abatement Direction (POEO Act s. 282) (4.2.2)	
Rain water pumps Swimming pool pumps Spa pumps	Council (ARA) Police	Although the Police may issue Noise Abatement Directions and Infringement Notices related to this type of equipment, as it is fixed in place and any noise issues are likely to be ongoing in nature, councils are typically the main agency for control.	Night time: audibility test (2.1.2) Day time: offensive noise test (2.1.4)	Negotiate reduction of noise level – move equipment away from neighbours, install acoustic shielding, install quieter model Night time: Cl. 50 of the Noise Control Regulation (4.3) Any time (council): Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)	Individuals may seek a Noise Abatement Order from a local court (4.2.3)	Part 5 Appendixes 3 and 5

Public authorities

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information
Activities undertaken by or on behalf of public authorities such as state government agencies and local councils	EPA (ARA)			Negotiate implementation of reasonable and feasible best practices. Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		Part 3 Case Study 1

Rail

Inner West Light Rail	EPA (ARA)			Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		
Rail noise	EPA (ARA)	Transport for NSW is overseeing the development of a comprehensive approach to managing rail noise.		Negotiate implementation of reasonable and feasible best practices Environment protection licence and Pollution reduction programs		DECC Interim guideline for the assessment of noise from rail infrastructure projects Department of Planning Development near rail corridors and busy roads – Interim Guideline

Sporting venues						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information
Motor boat racing	RMS (ARA)		Offensive noise test (2.1.4)	RMS Aquatic Licences		
Motor sports – on private land e.g. Eastern Creek	Council (ARA)	Note: Special legislation may be in place exempting certain events from the POEO Act and Noise Control Regulation e.g. s. 30 of the <i>Homebush Bay Homebush Motor Racing (Sydney 400) Act 2008</i> and s. 12 of the <i>Mount Panorama Motor Racing Act 1989</i>	Offensive noise test (2.1.4)	Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		Part 3 Case Study 2
Motor sports – on road	NSW Police	NSW Police are responsible for a race, speed record attempt or speed trial approved by the Commissioner of Police under s. 40 of the <i>Road Transport (Safety and Traffic Management) Act 1999</i> .				

Sporting venues *(continued)*

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information
Outdoor sporting events involving sound amplification equipment for 200 or more people at venues designated under cl. 90 of the POEO General Regulation	EPA	Venues designated under cl. 90 of the POEO General Regulation are: the Royal Botanic Gardens, the Domain, Centennial Park, Moore Park, Parramatta Stadium, Sydney Cricket and Sports Ground (i.e. Sydney Cricket Ground and Sydney Football Stadium), the Opera House and Darling Harbour	Offensive noise test (2.1.4)	Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		
Private gun/rifle/pistol clubs	Council (ARA)		Offensive noise test (2.1.4)	Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		Section 3.3 of Part 3
Sporting facilities/events (other than as noted above)	Council (ARA)		Offensive noise test (2.1.4)	Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		

Vessels						
Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information
Amplified music from vessels (other than vessels for which the EPA is the ARA)	RMS Port Corporations Police Council	RMS and Police have the power to stop, inspect and test vessels.	Offensive noise test (2.1.4)	RMS, Port Corporations, Police and council may issue penalty notices under cl 33 of the Noise Control Regulation (4.3.4)		
Recreational vessels, including, jet skis Any vessel outside of a designated port (including container ships, bulk carriers, tankers, cruise ships, fishing vessels and recreational vessels) Vessels within designated ports that are less than 30 metres and vessels over 30 metres declared exempt from the pilotage requirements (Note: Excludes vessels for which the EPA or Marine Parks Authority is the ARA)	RMS (ARA) Port Corporations Police Council EPA	RMS and Police have the power to stop, inspect and test vessels. Designated ports are Newcastle Port, Sydney Harbour, Botany Bay, Port Kembla, Yamba and Eden. Vessels declared exempt from the pilotage requirements include large harbour cruise vessels that do not leave the harbour		Negotiate implementation of reasonable and feasible best practices RMS, Ports Corporations and Police may issue penalty notices under cl.. 29, 30, 32, 33, 34 and 35 of the Noise Control Regulation. Councils may issue penalty notices under cl.. 29, 30 and 33 of the Noise Control Regulation (4.3.4) RMS and EPA may issue penalty notices under ss. 139 and 140 of the POEO Act (4.2.6) RMS, Police, council and EPA may issue a Noise Abatement Direction (4.2.2) RMS, Police, council, EPA and Marine Park Authority may issue a Defective Vessel Notice (4.3.4) RMS may issue a Prevention Notice (4.2.4)		

Vessels (continued)

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information
<p>Vessels over 30 metres (such as large container ships, bulk carriers, tankers and cruise ships) within designated ports other than those:</p> <ul style="list-style-type: none"> declared exempt from the pilotage requirements for which the EPA is the ARA. 	<p>Council (ARA) RMS Port Corporations Police EPA</p>	<p>RMS and EPA authorised officers and Police have the power to stop, inspect and test vessels.</p> <p>Designated ports are Newcastle Port, Sydney Harbour, Botany Bay, Port Kembla, Yamba and Eden.</p> <p>Vessels declared exempt from the pilotage requirements include large harbour cruise vessels that do not leave the harbour.</p>		<p>Negotiate implementation of reasonable and feasible best practices</p> <p>RMS, Ports Corporations and Police may issue penalty notices under cl.. 29, 30, 32, 33, 34 and 35 of the Noise Control Regulation. Councils may issue penalty notices under cl.. 29, 30 and 33 of the Noise Control Regulation (4.3.4)</p> <p>RMS, Councils and EPA may issue penalty notices under ss. 139 and 140 of the POEO Act (4.2.6)</p> <p>Council, RMS, Police and EPA may issue a Noise Abatement Direction (4.2.2)</p> <p>RMS, Police, council, EPA and Marine Park Authority may issue a Defective Vessel Notice (4.3.4)</p>		
Vessels berthed at a port facility subject to an environment protection licence, which covers vessels berthed at the facility.	EPA (ARA)	Some environment protection licences cover vessels berthed at the facility and some do not.		<p>Negotiate implementation of reasonable and feasible best practices</p> <p>EPA may issue penalty notices under ss. 139 and 140 of the POEO Act. (4.2.6)</p> <p>Environment protection licence</p>		

Vessles related to activities carried on by the State or a public authority	EPA (ARA)	EPA authorised officers have the power to stop, inspect and test vessels.		<p>Negotiate implementation of reasonable and feasible best practices</p> <p>EPA may issue penalty notices under ss. 139 and 140 of the POEO Act (4.2.6)</p> <p>EPA may commence legal proceedings as the ARA for breach of cll.. 29, 30, 32, 33, 34 & 35 of the Noise Control Regulation</p> <p>EPA may issue penalty notices under ss. 139 and 140 of the POEO Act.(4.2.6)</p> <p>EPA, RMS and Police may issue a Noise Abatement Direction (4.2.2)</p> <p>EPA, RMS and Police may issue a Defective Vessel Notice (4.3.4)</p> <p>EPA may issue a Prevention Notice (4.2.4)</p>		
Vessels within marine parks, other than vessels for which the EPA is the ARA.	<p>Marine Parks Authority (ARA)</p> <p>RMS</p> <p>Port Corporations</p> <p>Police</p> <p>Council</p> <p>EPA</p>	Marine Parks Authority and EPA authorised officers have the power to stop, inspect and test vessels.		<p>Negotiate implementation of reasonable and feasible best practices</p> <p>RMS , Ports Corporations and Police may issue penalty notices under cll.. 29, 30, 32, 33 , 34 & 35 of the Noise Control Regulation. Councils may issue penalty notices under cll.. 9, 30 & 33 of the Regulation (4.3.4)</p> <p>The Marine Park Authority may commence legal proceedings as the ARA for a breach of cll.. 29, 30, 32, 33, 34 & 35 of the Noise Control Regulation</p> <p>RMS and EPA may issue penalty notices under ss. 139 and 140 of the POEO Act (4.2.6).</p> <p>Marine Park Authority, EPA, RMS and Police may issue a Noise Abatement Direction (4.2.2)</p> <p>Marine Park Authority, EPA, RMS, Police and council, may issue a Defective Vessel Notice (4.3.4)</p> <p>The Marine Parks Authority may issue a Prevention Notice (4.2.4)</p>		

Vessels *(continued)*

Noise source	Responsibility	Comments	Assessment	Suggested management/Regulation	Possible further action	Further information (see 1.6 Useful links)
Naval vessels	Commonwealth – Defence Department					

Wind Farms

Wind farms covered by Schedule 1 of the POEO Act 1997 (e.g. wind farms that are State Significant Development).	EPA (ARA)	A regulation to make the EPA the ARA for large-scale wind farms is being considered at the time of publication	Environment protection licence			Draft NSW Planning Guidelines Wind Farms
Wind farms not covered by Schedule 1 of the POEO Act 1997.	Council – Consent Authority	The planning approval should be the primary regulatory tool		Noise Control Notice (4.2.1) or Prevention Notice (4.2.4)		Draft NSW Planning Guidelines Wind Farms

1.6 Useful links

NSW Government

Community Justice Centre (CJC): provides a free mediation service www.cjc.nsw.gov.au

Environment Protection Authority (EPA): the lead environmental agency in NSW

- Policies and guidelines (available at: www.epa.nsw.gov.au/noise):
 - *NSW Road Noise Policy* – This policy document provides guidance on the acceptable noise levels from the operation of public roads.
 - *NSW Industrial Noise Policy* – This policy document provides guidance on the measurement and assessment of noise and acceptable noise levels for large industrial complexes, but it may also be applied to small industrial and commercial premises regulated by councils (currently being revised).
 - *Assessing Vibration: A Technical Guideline* – This guideline presents preferred and maximum vibration values for use in assessing human response to vibration within buildings.
 - *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* – This guideline deals with the management of noise from the operation of railways (currently being revised and will be replaced by the Rail Infrastructure Noise Guideline).
 - *Interim Construction Noise Guideline* – This guideline sets out ways to deal with the impacts of construction noise on residences and other sensitive receivers. It provides approaches tailored to the scale of the project and details a range of regulatory mechanisms and work practices that can be employed to minimise noise. It is primarily intended to be used to manage large infrastructure projects, but it may be applied to construction work regulated by councils.
- Brochures (available at www.epa.nsw.gov.au/noise/noise_brochures.htm):
 - Dealing with neighbourhood noise
 - Dealing with barking dogs
 - Managing vehicle noise
 - Managing noise from intruder alarms
 - Seeking noise abatement orders
- Web pages and registers:
 - EPA noise policy web page (www.epa.nsw.gov.au/noise)
 - EPA public register – Provides electronic access to information about environment protection licences, environment protection notices, noise control notices, exemptions from the provisions of the POEO Act or regulations, prosecution convictions and the results of civil proceedings, as required by s. 308 of the POEO Act (www.epa.nsw.gov.au/prpoeo/index.htm).

Division of Local Government, Department of Premier and Cabinet: provides guidance to local government and administers the *Companion Animals Act 1998*

- www.dlg.nsw.gov.au
- *Fireworks guidelines for councils*, available at www.dlg.nsw.gov.au/Files/Information/Gudeline_Fireworks.pdf

Department of Planning and Infrastructure: principal agency for planning issues

- www.planning.nsw.gov.au/
- *Development near Rail Corridors and Busy Roads – Interim Guideline*, available at www.planning.nsw.gov.au/planningsystem/pdf/guide_infra_devtrailroadcorridors_interim.pdf. This guideline aims to assist in reducing the impacts of rail and road noise and adverse air quality on sensitive adjacent development.

Office of Liquor Gaming and Racing (OLGR): regulates liquor licensed premises

- OLGR website: www.communities.nsw.gov.au or www.olgr.nsw.gov.au/olgr_default.asp.
- *Disturbance Complaints Information Sheet*, available at www.olgr.nsw.gov.au/pdfs/L_FS_DC.pdf

Parliamentary Counsel's Office: administers NSW Government Legislation

- All NSW legislation including *Protection of the Environment Operations Act 1997* and *Protection of the Environment Operations (Noise Control) Regulation 2008*, available at www.legislation.nsw.gov.au

Roads and Maritime Services (RMS)

- Responsible for the construction and management of main roads and the management of vessels
- www.rta.nsw.gov.au/
- *Addressing Noise* – A fact sheet about reducing and minimising impacts of road traffic noise, available at www.rta.nsw.gov.au/environment/noise/index.html
- *Environmental Noise Management Manual* – A manual detailing RMS's framework for managing noise and vibration impacts from road traffic, individual vehicles, and road construction and maintenance activities, available at www.rta.nsw.gov.au/environment/noise/noise_management_manual.html (**Note:** RMS is preparing a series of practice notes that will incrementally supersede the Manual)
- RMS website: www.rms.nsw.gov.au/

WorkCover New South Wales: principal agency responsible for fireworks

- WorkCover NSW website: www.workcover.nsw.gov.au/Pages/default.aspx
- *Fireworks Display Checklist*, available at www.workcover.nsw.gov.au/formspublications/publications/Pages/WC05629_FireworksDisplayChecklist.aspx

Other government organisations

City of Sydney

- *Construction Hours/Noise within the Central Business District: Code of Practice, 1992*, available at www.cityofsydney.nsw.gov.au/Development/Documents/PlansAndPolicies/Policies/ConstructionHours_Noise92.pdf

Environment Protection Authority Victoria

- Guidelines on noise from frost fans – Publication 1043, 2006, available at www.epa.vic.gov.au/noise/noise_publications.asp
- Noise Control Guideline – Publication 1254, 2008, available at www.epa.vic.gov.au/noise/noise_publications.asp

Environment Protection Authority South Australia

- *Audible Bird Scaring Devices – Environmental Noise Guideline, 2007*, available at www.epa.sa.gov.au/xstd_files/Noise/Guideline/guide_bird.pdf

Fairfield City Council

- *Fairfield City Wide Development Control Plan Chapter 13 – Child Care Centres Version 8*, available at www.fairfieldcity.nsw.gov.au/upload/dtgrb96642/Chapter13ChildCareCentres.pdf

Griffith City Council

- *Council Policy – Frost Fans – Policy 47*, Griffith City Council, phone (02) 6969 4813

Non government organisations

Association of Australian Acoustical Consultants: professional society of noise-related professionals, available at www.aaac.org.au

Australian Acoustical Society: professional society of noise-related professionals, available at www.acoustics.asn.au

Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH)

- *Air Conditioning Residential Best Practice Guideline (NSW)* – provides general information and appropriate locations for air conditioners, available at www.airah.org.au/Content/NavigationMenu/Resources/BestPracticeGuide
- *Air conditioner noise calculator*, available at www.fairair.com.au/

Australian standards and codes

- AS 2021:2000 *Acoustics Aircraft Noise Intrusion – Building Siting and Construction*; required construction standards for noise insulation, available at www.standards.org.au/
- AS/NZS 2107:2000 *Acoustics – recommended design sound levels and reverberation times for building interiors*; required construction standards for noise insulation, available at www.standards.org.au/
- *The Building Code of Australia*, Australian Building Codes Board, available at www.abcb.gov.au

1.7 References

Gidlof-Gunnarsson, A. & Ohrstrom, E., 2007, Noise and well-being in urban residential environments: The potential role of perceived availability to nearby green areas, *Landscapes and Urban Planning*, 83(2–3), pp.115–26

WHO, 1999, *Guidelines for Community Noise*, World Health Organization, Geneva
www.who.int/docstore/peh/noise/guidelines2.html

enHealth Council, 2004, *The Health Effects of Environmental Noise – Other than Hearing Loss*, enHealth Council, Canberra [www.health.gov.au/internet/main/Publishing.nsf/Content/33165540CB3C78CBCA256F1900042E72/\\$File/env_noise.pdf](http://www.health.gov.au/internet/main/Publishing.nsf/Content/33165540CB3C78CBCA256F1900042E72/$File/env_noise.pdf)

Noise Guide for Local Government

Part 2 Noise assessment



Part 2
Noise assessment

Part 1 Framework for noise control

Part 2 Noise assessment

Part 3 Noise management principles

Part 4 Regulating noise impacts

Part 5 Appendixes

Part 6 Glossary, Further reading and Index

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Part 2 Noise assessment

A noise assessment is an examination of the nature and characteristics of a noise. It may involve verifying aural factors such as:

- the location of the noise source
- its audibility at certain locations
- the time the noise is made and its duration
- its characteristics
- the reported effect it has on people.

A noise assessment may require measurement of the noise level and its physical characteristics. Noise assessments are important in situations where the *Protection of the Environment Operations Act 1997* (the POEO Act) and the Protection of the Environment Operations (Noise Control) Regulation 2008 (the Noise Control Regulation) are being applied. Depending on the circumstances, the Noise Control Regulation may require an assessment of a noise's **audibility, time of occurrence, duration or offensiveness**.

The POEO Act does not always require noise to be measured to determine whether it is offensive. However, noise measurement can help in deciding what action, if any, is necessary. From the outset, it is important to establish what the purpose or possible outcome of a noise assessment will be. This will also make it easier to ensure that all necessary information is collected during the assessment.

This part of the Guide discusses how an authorised officer, authorised person or enforcement officer can judge whether a noise is audible, excessively long in duration, or offensive, as defined by the legislation. It also outlines the techniques for measuring noise where this is desirable or necessary to support decision-making.

2.1 Assessment of offensive noise

2.1.1 Definition of offensive noise

Depending on the type of noise under consideration, noise can be considered as offensive in three ways according to its:

- audibility
- duration
- inherently offensive characteristics.

'Offensive noise' is defined in the dictionary of the POEO Act as noise:

- (a) *that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
 - (i) *is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
 - (ii) *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- (b) *that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.*

The POEO Act and Noise Control Regulation allow for an assessment of offensive noise in some neighbourhood noise situations without the use of a sound level meter to measure actual noise levels.

2.1.2 Audibility test applied to 'times of use' provisions

Audibility in a neighbouring residence is used to determine whether noise from certain activities that often result in neighbourhood complaints is offensive. This makes it easy for council officers assessing the noise as it avoids the need for lengthy investigations and noise measurements.

The Noise Control Regulation restricts the times that certain equipment can be used, including motor vehicles on residential premises, refrigerated vans, power tools, swimming pool pumps, air conditioners, heat pump water heaters and musical equipment (see Part 4 of this Guide for details of time restrictions). These provisions aim to minimise noise when many people are sleeping or resting.

Noise from this equipment must not be able to be heard in a habitable room in a neighbouring residence during the restricted hours. (A 'habitable' room is any room other than a garage, storage area, bathroom, laundry, toilet or pantry.) Authorised or enforcement officers intending to give a warning under the Noise Control Regulation need to satisfy themselves that the noise is audible in the habitable room and is coming from the alleged source outside the permitted times. This may involve listening to the noise inside or outside the affected residence. It is expected that a complainant would give the investigating officer access to the relevant habitable room(s) of their home to conduct the audibility test. (See also 'What constitutes an offence?' in Part 4, subsection 4.3.1 of this Guide.)

The officer should request a signed statement from the affected person about the audibility of the noise inside the residence, particularly if they have not entered the affected residence. The statement should say what effect the noise is having on them. Where statements are relied upon by an officer to determine that a noise is 'offensive', the person making the statement should be told that they might need to give evidence in court.

Tips for assessing audibility

Where an authorised officer is having difficulty accessing the habitable rooms of a complainant's residence, they could consider conducting the audibility test outside the affected neighbour's house and making an allowance for a reduction in the noise level from the outside to the inside of the residence. In these cases, the officer should be aware that there is no certainty in determining the level of noise inside the complainant's residence. There have been instances where noise levels inside a dwelling from an external source have been higher than the outside noise level because 'standing sound waves' in the room produce noticeably louder noise inside than outside.

If cases involving the audibility test go to court, the hearing ability of the assessing officer may be brought into question. Officers likely to perform these assessments should obtain an audiogram every one or two years. Audiograms assess a person's ability to hear the normal range of frequencies and identify those frequencies where hearing is impaired.

2.1.3 Duration of noise test for intruder alarms

The Noise Control Regulation specifies how long motor vehicle and building intruder alarms may sound (see Table 4.6 in Part 4 of this Guide for details on restrictions on duration). This duration test simply means an offence occurs where an alarm sounds for longer than the time permitted by the Regulation.

It does not matter whether the alarm sounds continuously or intermittently. For example, a car alarm that sounds for 30 seconds, stops for 1 minute and then sounds again for another 30 seconds is taken to sound for 60 seconds, which is more than the 45 seconds prescribed for a vehicle alarm manufactured on or after 1 September 1997.

The location where the alarm is heard may be important. For building intruder alarms, the assessment needs to be made inside a habitable room in a neighbour's residence. For vehicle intruder alarms the assessment can be made anywhere.

2.1.4 Offensive noise test

In the above cases, the times of use or duration of the noise automatically make the noise offensive. In other cases it will be necessary to consider a range of factors to determine whether the noise is offensive, including the following:

- the loudness of the noise, especially compared with other noise in the area
- the character of the noise
- the time and duration of the noise
- whether the noise is typical for the area
- how often the noise occurs
- the number of people affected by the noise.

The checklist below is a guide for council officers and authorised persons to making a systematic judgement about whether a particular noise is offensive. It is important to conduct any tests at the location where the complainant is affected by the noise. This checklist is not exhaustive and it is not intended that all the questions are answered 'yes' before a noise can be deemed offensive. The steps taken in the test should be well documented to support the officer's decision.

The offensive noise test applies to a wide range of situations, including:

- a Noise Abatement Direction – POEO Act, ss. 275–79
- a Noise Abatement Order – POEO Act, ss. 268–74
- offensive noise caused by vehicles used off-road – cl 13 of the Noise Control Regulation
- offensive noise from a motor vehicle sound system – cl 16 and 17 of the Noise Control Regulation
- offensive noise from a vessel or a musical instrument or sound system used on a vessel – cl 30 and 33 of the Noise Control Regulation.

The offensive noise test relies on the judgement of:

- an authorised person for Noise Abatement Directions
- a Local Court for Noise Abatement Orders
- council officers, officers authorised by the EPA under cl 13 and 16 of the Noise Control Regulation, and enforcement and Police officers
- RMS authorised and enforcement officers, Ports Corporation or council enforcement officers or Police officers for cl 30–33 of the Noise Control Regulation.

When determining whether noise is offensive, officers need to have regard to the definition of offensive noise in the POEO Act and put aside any personal preferences that might bias their assessment. An example of this might be a personal preference for classical music when assessing noise from a party playing rock music.

It is important to note that an article or activity may cause offensive noise **at any time of the day or night** even if it occurs at a time when the use of the article or activity is permitted to be audible under the Noise Control Regulation.

Although noise measurements are not essential to test whether noise is offensive, an officer may choose to take measurements using a calibrated sound level meter if they think it will assist the process, especially to support a prosecution or where a penalty notice is likely to be challenged.

Any existing regulatory instruments (for example, consents, approvals, notices etc) that apply directly to the premises or any relevant guidelines, policies or regulatory instruments that apply to that type of activity should also be considered when making a determination about offensive noise. An activity that complies with noise limits determined in the light of relevant noise policies or guidelines is unlikely to be regarded as offensive.

'Offensive noise' has been considered by the Land and Environment Court in *Meriden v Pedavoli* (2009), NSW Land and Environment Court judgement 183 (22 October 2009).

Offensive noise test: Checklist of considerations

Q1: Is the noise loud in an absolute sense? Is it loud relative to other noise in the area?

This establishes that the noise is likely to be heard by neighbours. Its volume alone may be annoying. An example would be music being played at a very high volume in a residence so it can be heard over very noisy activity outside, such as construction work. The noise may also be loud relative to the background noise. An example would be loud fireworks set off late at night. Noise measurements using a sound level meter would help to determine how loud the noise is relative to the background noise level in the area.

Q2: Does the noise include characteristics that make it particularly irritating?

The presence of tones, impulses or fluctuations in volume can make people more likely to react to the noise. These can be judged subjectively but noise measurements will help to quantify the extent of these characteristics. Examples might be screeching sounds from poorly maintained equipment or a 'beeper' alarm that uses a pulsed sound made up of one or two alternating frequency tones, usually higher pitched, that are louder than the background noise in the area.

Q3: Does the noise occur at times when people expect to enjoy peace and quiet?

People usually expect their surroundings to be quieter during the evening and at night. Talk to the complainants about how the noise affects them to see if it is interfering unreasonably with their comfort at home. Is it regularly disturbing their sleep, making it difficult to have a conversation, study, read or hear the TV? Noise that regularly disturbs sleep is likely to be considered offensive by complainants and this should be taken into account in your assessment.

Q4: Is the noise atypical for the area?

Where noise from an activity that is causing nuisance is new or unusual for an area, people are more likely to react. Look at the typical uses of the area and determine whether the activity is consistent with the local environmental plan. An example might be a community event with amplified music affecting a residential area that has not traditionally been affected by such events..

Q5: Does the noise occur often?

Noise can be more annoying when it occurs frequently. Examples might be a leaf blower used every morning or a band that practises frequently without regard to the impact on neighbours.

Q6: Are a number of people affected by the noise?

Only one person needs to be affected by the noise for it to be deemed offensive. However, talking to other neighbours likely to be exposed to the same noise about how it affects them may assist in deciding what action to take. Some councils have a policy of requiring a minimum number of complaints from different individuals before taking formal action.

Working through the offensive noise checklist

Example 1

Three trail bike riders are riding around a makeshift motocross circuit adjacent to the back fences of three residences. George, a council officer, attends the scene when alerted by a complainant and assesses whether the noise is offensive. He talks to the complainant and the other two neighbours exposed to the noise and finds out that the noise occurs regularly during the afternoon. In going through the checklist of questions, he answers 'yes' to Q1, Q2, Q4, Q5 and Q6 and 'no' to Q3. On balance the council officer determines the noise to be offensive. To back up his assessment he seeks statements from the neighbours adjacent to the complainant who have also been affected by noise from the trail bikes.

Example 2

Harry uses his garage as a workshop. He operates a circular saw to cut timber whenever he needs to during the day. The saw emits a whining sound clearly heard by his neighbour who can't get Harry to reduce the noise by, for example, shutting the garage door. Kavita, the council officer, arrives while Harry is operating the saw. She works through the checklist and answers 'yes' to Q1, Q2, Q4 and Q5 but 'no' to Q3 and Q6. Even though the saw is being used within the times permitted by the Noise Control Regulation, on balance Kavita considers the noise to be offensive because of its level, duration and whining characteristics.

Example 3

Peter and Jane are in a Country and Western band and practise occasionally at Glen's house during the day. Klaus, the next door neighbour, can hear them play and complains to the council about their noise. Alicia, a council officer, attends the scene. Alicia only likes classical music. In conducting the offensive noise test Alicia puts aside her personal dislike for the Country and Western musical style. She answers 'yes' to Q1 and Q5 and 'no' to Q2, Q3, Q4 and Q6. On balance she considers the noise is not offensive as it is not particularly loud, is not heard during the evening or night and is not likely to significantly affect the neighbour's comfort or repose.

2.2 Assessing noise with a sound level meter

A sound level meter should be used to measure noise levels when:

- determining an acceptable noise level for inclusion in a planning approval or a Noise Control Notice or Prevention Notice
- testing whether a particular noise complies with a level prescribed in a planning approval or notice
- gathering evidence to support an offensive noise test, such as:
 - quantifying how loud the noise is
 - assessing how loud it is relative to the background noise (see subsection 2.2.1 'Intrusive noise', below)
 - determining the presence of annoying characteristics such as tones supporting a prosecution or disputed Penalty Notice.

Any noise measurements taken in relation to an assessment may be used as evidence in court. They may also be challenged on various technical grounds including:

- invalid calibration or out-of-date NATA-approved calibration certificate or manufacturer's conformance certificates for the measurement equipment, based on the *AS IEC 61672.1–2004* (Standards Australia 2004a) and *AS IEC 61672.2–2004* (Standards Australia 2004b)
- whether a professional sound level meter of Class 1 or 2 was used

- rough handling of equipment which may affect the accuracy of readings
- failure to undertake field calibration correctly
- the location of the measurement
- the way the measurement was taken, such as the effects of weather and the settings on the equipment
- whether the noise under investigation was correctly measured without other unrelated noises being included in the results, such as road traffic or other neighbourhood noises like barking dogs or lawn mowers.

2.2.1 Intrusive noise

Noise is identified as 'intrusive' if it is noticeably louder than the background noise and considered likely to disturb or interfere with those who can hear it. Councils may have local policies about what they consider constitutes intrusive noise from specified activities in particular situations or locations. In these circumstances, it may be **council policy** that a particular intrusive noise is treated as offensive. It is expected that such a policy would take into account the factors in the offensive noise checklist when setting local intrusive noise levels and descriptors.

In the absence of a council policy, intrusive noise would not automatically be considered offensive. Where council policy determines that a particular noise level is intrusive, the subject noise will need to be measured to determine if it complies with the policy.

This type of policy may assist councils in determining appropriate noise limits for development approvals or notices such as Noise Control Notices or Prevention Notices, as well as when considering the second part of Q1 in the offensive noise checklist about whether the noise is loud relative to other noise in the area.

Measuring intrusive noise for comparison against criteria

In many situations L_{Aeq} will be the most suitable descriptor for describing the noise under investigation. This should be measured at the most affected point on or within the residential property boundary or, if this is more than 30 metres from the residence, at the most affected point within 30 metres of the residence. Note, however, that other descriptors may be more appropriate: see subsection 2.3.4 for alternatives.

The background level is the L_{A90} measurement of all noise in the area of the complaint without the subject noise operating or affecting the measurement results.

Establish the difference between the background noise level and the noise under investigation.

Check compliance with the council's noise policy, if any.

Intrusive noise levels have been defined for a number of situations as outlined below.

- The *NSW Industrial Noise Policy* (EPA 2000), which is specifically aimed at large and complex industrial activities, defines intrusive noise as 5 decibels above the background noise level. The policy recognises that industrial operations run for extended periods or all day and night and generate steady and continuous noise. The policy also reduces the permitted noise level where tones or impulses are predicted.
- The *Interim Construction Noise Guideline* (DECC 2009) notes there may be some community reaction to noise from major construction projects where this is more than 10 decibels above the background noise level for work during the daytime. This recognises that construction noise is generally temporary with the community having a slightly higher tolerance for it.

- The *Code of Practice for Construction Hours/Noise within the Central Business District* (Sydney City Council 1992) specifies noise criteria for certain categories of hours.
- Some court decisions about intrusive noise from schools have taken into account the nature of the activity compared with similar activities, such as child care centres: for example, see Land and Environment Court judgement 10534 of 2008: *Al Noori Muslim Primary School Ltd v Bankstown City Council*. However, care needs to be taken when applying court decisions as each situation needs to be assessed according to the particular circumstances.
- Many councils impose noise limits for specific activities in development consents.

Local councils are encouraged to develop noise policies which specify intrusive noise levels and appropriate descriptors for particular activities in certain situations and locations. Such a policy could, for example, specify that noise from mechanical plant at commercial or industrial premises that exceeds the background noise by more than 5 dB(A) as measured over a 15-minute period (L_{Aeq} (15 minute)) is intrusive.

2.2.2 Difference between offensive and intrusive noise

Offensive noise is a subjective concept and in a number of situations it can be assessed without the use of a sound level meter. However, in order to answer the second part of Q1 in the checklist, it may be necessary to measure the level of the subject noise that is above the background noise. Measured noise levels may also be useful when discussing with others how loud the subject noise is relative to other noises in the area.

An intrusive noise level (which is a certain defined level above background) requires measurement. Noise Control Notices and Prevention Notices can prescribe noise levels that need to be achieved which are below an intrusive noise level, as defined.

However, when considering whether a Noise Control Notice or Prevention Notice should be issued, the broader considerations in assessing offensive noise should be taken into account.

Even if noise is above the intrusive noise level defined in a particular policy, officers should use their discretion about whether to take action. For example, issuing a direction or notice may not be in the public interest if no one has complained.

2.2.3 Noise levels in Noise Control and Prevention Notices

Noise Control Notices (see subsection 4.2.1 in Part 4 of this Guide for a full description) specify noise limits for particular locations. A local council that is the appropriate regulatory authority (ARA) for an activity may issue a Noise Control Notice to prevent, control or minimise noise pollution from the carrying out of an activity or the use or operation of an article. 'Noise pollution' is defined in the POEO Act as 'the emission of offensive noise'. A notice may also be issued for the same purpose for *proposed* activities or use or operation of an article. Councils should generally be satisfied on reasonable grounds that the activity or use or operation of an article is causing or is likely to cause noise pollution before issuing a Noise Control Notice¹.

A council that is an ARA for an activity may issue a Prevention Notice for noise pollution arising from the activity if:

- the ARA is reasonably satisfied that the activity has caused, is causing or is likely to cause noise pollution, and
- the ARA reasonably suspects that:
 - there are practicable means of carrying out the activity that controls or minimises the emission of noise and the activity is not being carried out under those means, and
 - there are recognised standards or practices relating to noise control from the activity and it is not being carried out in accordance with those standards or practice.

1. This Guide should not be relied upon as legal advice and local councils should obtain their own legal advice about the operation and application of the legislation referred to in the Guide.

Prevention Notices may specify one or a number of different controls; setting a noise limit is just one option. Noise measurements are usually necessary to establish an acceptable and achievable noise limit for inclusion in the notice. The limit is often based on an intrusive noise level – e.g. background plus 5 dB – so it is necessary for the background noise to be determined before an intrusive limit can be specified. Background noise levels can vary so a level representative of the period of the notice is needed. Background noise differences between day and night need to be taken into account where the source operates across both.

Notices can also specify an absolute level for an event such as a concert. Subsequent noise measurements may be required in order to check that the noise limit is not exceeded during the event.

Rather than base noise limits on an exceedance above background levels, some notices simply specify a single noise level. This avoids a variable prescribed level dependent on the background noise level that provides no certainty for the operator who has to comply with the notice. Specifying a single noise level also makes ascertaining compliance easier as well.

2.2.4 Assessment of sleep disturbance

Currently, there is no definitive guideline to indicate a noise level that causes sleep disturbance and more research is needed to better define this relationship. Where likely disturbance to sleep is being assessed, a screening test can be applied that indicates the potential for this to occur. For example, this could be where the subject noise exceeds the background noise level by more than 15 dB(A). The most appropriate descriptors for a source relating to sleep disturbance would be L_{A1} (1 minute) (the level exceeded for 1% of the specified time period of 1 minute) or L_{Amax} (the maximum level during the specified time period) with measurement outside the bedroom window.

2.3 Measuring noise

Noise measurements should be undertaken by officers properly trained to use noise equipment.

1. **If you are inexperienced with noise measurements**, it is desirable that you get to know what typical decibel levels sound like. To do this take a sound level meter into the field and compare the noise you are hearing to the noise level indicated on the meter. This may improve your judgement about what levels are typical in certain circumstances.
2. **Become familiar with the sound level meter** and its controls. Set it to 'Fast' time response and 'A' weighting and know how to obtain the 15-minute L_{Aeq} and L_{A90} values from the meter after the measurement period (typically 15 minutes) has finished.
3. **Decide when the noise is representative of the worst case** level of noise from the source or activity being investigated and take measurements at this time. It is also important to measure background noise that is representative of the minimum background noise level during the time the activity typically occurs: for example, avoid measuring the background level during peak traffic hours if the noise source operates during both this period and other periods.
4. **Avoid taking measurements when it is raining or the average wind speed exceeds 5 metres per second** at microphone height. (Typically at a wind speed of 5 m/s, leaves and small twigs are in constant motion and the wind extends a small flag.) An anemometer may be used to measure the wind speed at the microphone height.

5. **Calibrate the sound level meter** before and after each set of noise measurements in accordance with *AS IEC 61672.1-2004* (Standards Australia 2004a). The sound pressure level shown on the meter should match the stated sound pressure level for the calibrator being used. The variation in reading between before and after calibrations should be no more than 1 decibel. If it is more than this, the measurements may be invalid. The meter type should be either Class 1 or Class 2 and have a current calibration certificate (usually between one and two years' validity).
6. **Ensure the sound level meter is in the correct position.** Hold the meter at arm's length or set it upon a tripod so the microphone's height is 1.2 to 1.5 metres above the ground. The location of vegetation also needs to be considered, because noise levels can be influenced locally by even a light breeze rustling leaves. Take care not to make noise by talking or walking near the instrument as it will affect the readings.



Typical sound level meter panel.

Photo: EPA

7. **Measure the noise under investigation for long enough** to establish that the measured value is representative of the subject noise. Typically this will be for 15 minutes continuously, excluding all distinct extraneous noises as described in paragraph 8 below. Usually the noise level of the source under investigation will be measured as an L_{Aeq} level, although other descriptors may be more suitable in specific circumstances as explained in subsection 2.3.4 of this Guide.
8. **Measure the noise at the location where the impact occurs.** Typically this will be at a point on the boundary of the complainant's property closest to the noise source. In rural areas where the dwelling is remote from the boundary, the point of measurement should be within 30 metres of the complainant's dwelling on the side closest to the noise.
9. **When the noise under investigation is affected by extraneous noise**, be sure that the subject noise is what you are measuring. This can be done by taking two measurements: one when the noisy activity is occurring and another when it is not. Care needs to be taken to ensure that both measurements are taken under similar conditions, for example, similar weather conditions and with no distinct noise events occurring in only one of the measurements, so that the results can be readily compared. Where L_{Aeq} levels for each measurement are within 8 dB(A) of one another, the noise level measured when the noisy activity is operating is being affected by extraneous noise and the measured L_{Aeq} will overstate the true value. Logarithmically subtracting the L_{Aeq} measured with the subject noise off from the L_{Aeq} measured with the subject noise on will give a more accurate estimate of the true subject noise level. (See Appendix 1 of this Guide for technical details.) This approach is unsuitable when using other descriptors (such as L_{A10} or L_{Amax}) as their levels cannot be added or subtracted.

An alternative method for measuring the noise under investigation is to move the sound level meter closer to the noise source to a point where the source clearly dominates, note this new position, and take a new reading. Measured levels may then need to be extrapolated back to the position of the affected resident. Appendix 1 also provides technical details of this procedure.

10. **Where a measuring position is close to a wall or other structure** that may reflect sound, two methods for measurement are available:

- Take readings at the determined measuring position. If the readings are between one and three metres from the reflection surface, subtract 2.5 dB(A) from the readings. The result will approximate what would be the true reading if the reflective surface was absent. Measurements should not be taken closer than one metre from the reflective surface. However, if the measuring point and affected point are both within 3 metres of the reflective surfaces, do not subtract 2.5 dB(A) from the readings.
- Take measurements in the free field, the area more than three metres from a reflective surface and which is not affected by it. If this increases the distance from the source under investigation, the true source reading at the desired closer position can be calculated by extrapolating back as explained in Appendix 1 of this Guide.

11. **Background noise measurement** should only be done at times or locations unaffected by noise from the source under investigation. To do this, measure the background noise level continuously for 15 minutes, excluding all distinct extraneous noises. If extraneous noise is present, pause the meter when this occurs, choose another measuring time or restart the measurement at another location with an equivalent land use. 'Extraneous' noise in the context of measuring background noise is noise resulting from activities that are not typical of the area. Atypical events may include construction activities or traffic generated by holiday periods or special events, such as concerts or sporting events, or even a person having a conversation near the active sound level meter. Normal daily traffic is not considered to be extraneous noise.

The background noise level for assessment purposes is usually the L_{A90} (15 minute) level measured by a sound level meter.

If more than one valid measurement of the background noise for a location is obtained, use the lowest reading as the background noise level. If the measured background level is less than 30 dB(A), the background noise is usually taken as 30 dB(A).

The procedure of taking a number of 15-minute readings and then selecting the lowest reading produces a value called 'lowest background noise' level. Knowing what this level is allows you to more accurately assess the impact of the noise under investigation as it is likely to have its greatest impact when background noise is low. All background noise measurements must be taken during the times of the day when the noise under investigation would be operating but this noise **must not affect** these background noise measurements.

12. **Use correction factors.** The particular characteristics of a noise, such as an audible impulsive or tonal component, may result in a higher level of disturbance and annoyance than would be suggested by the measured sound pressure level alone. In this situation, a positive correction factor should be applied to the measured noise level. For more information on the use of correction factors see Section 4 of the *NSW Industrial Noise Policy* (EPA 2000) available at www.epa.nsw.gov.au/noise/industrial.htm.

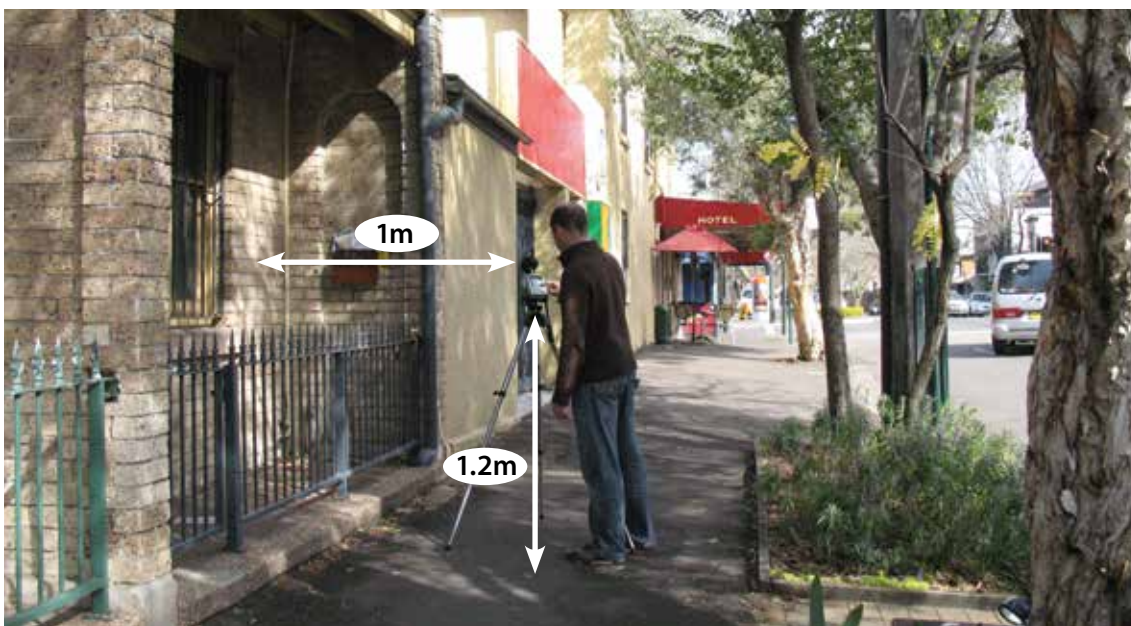


Measuring noise from a commercial site in a residential area.
Photo: EPA

2.3.1 Sequence of steps for measuring noise

The recommended sequence of steps for conducting noise measurements is shown below.

1. Before going out to take a measurement, check that the sound level meter has a current calibration certificate issued by an accredited laboratory (for example, NATA).
2. Familiarise yourself with the meter and its settings.
3. Select a representative location and time of day to take measurements, taking into account information about the subject noise and any complaints received.
4. Set the microphone at 1.2 to 1.5 metres above the ground and, where feasible, avoid measurements within 3 metres of any walls, buildings and other reflecting surfaces.
5. Ensure weather conditions are suitable: no rain and a wind speed of less than 5 m/s and note these prevailing conditions in a log book.
6. Do a field calibration of the sound level meter to comply with *AS IEC 61672.1-2004* (Standards Australia 2004a).
7. Measure the subject noise for a pre-determined period (such as 15 minutes) and check that the selected descriptor (for example L_{Aeq}) is suitable. If there is variation in the source noise level during the set period of measurement, increase your confidence in the value being representative of the worst case by taking a second and perhaps a third reading for the same period of time.
8. If necessary, measure the L_{A90} background noise level for the same set period in the absence of the subject noise.
9. Where noise other than that under consideration occurs during measurement, take another reading to avoid the readings being contaminated.
10. At the end of the measurements do another field calibration of the sound level meter. If there is more than a 1 decibel variation between the calibrated level and the first calibrated level, the measurements may be invalid, in which case the measurement procedure will need to be repeated.
11. Document observations of weather and noise that were heard during the measurements, including the time of specific events that may affect readings, such as a frog croaking or a dog barking.



Minimum distance s from surfaces for the measurement position.

Photo: EPA

2.3.2 Longer term noise monitoring

Improvements in technology and noise measurement instrumentation have led to greater use of instruments for longer term unattended noise monitoring to assist in determining the noise level from a particular source. Noise loggers can be left unattended for long periods while they measure and record sound levels. Considerable skill, experience and judgement are needed to correctly interpret results from unattended noise measurements.

Unattended monitoring is most often used to characterise background noise levels with greater reliability due to the longer duration of measurements, such as over one week. The process for determining a longer term approximation of the background noise based on noise logger data is described in Chapter 3 of the *NSW Industrial Noise Policy* (EPA 2000). The data from noise loggers can be used to graph noise level over time as shown in Figure 2.1.

This graph shows data from a noise logger located in a residential area near a sub-arterial road. The extraneous noise indicated on the graph may be due to people talking close to the microphone and is an example of noise that should not be included when determining background noise levels.



Analysing results from long-term noise monitoring.
Photo: EPA

2.3.3 Some rules of thumb

Decibels (dB) are measured on a logarithmic scale, resulting in the following:

- An increase of 2 dB is hardly perceivable.
- An increase of 10 dB is perceived as twice as loud. Therefore an increase of 20 dB is 4 times as loud and an increase of 30 dB is 8 times as loud etc.
- The addition of two identical noise levels will increase the dB level by about 3 dB. For example, if one pneumatic drill is operating at 90 dB and then another identical drill starts operating next to it, the total dB level will be about 93 dB.
- The addition of a second noise level of similar character which is at least 8 dB lower than the existing noise level will not add significantly to the overall dB level.

A doubling of the distance between a noise source and a receiver results approximately in:

- a 3 dB decrease for a line source (for example, a heavily used road or railway line); and
- a 6 dB decrease for a point source (for example, plant or equipment such as a pneumatic drill or an air conditioner).

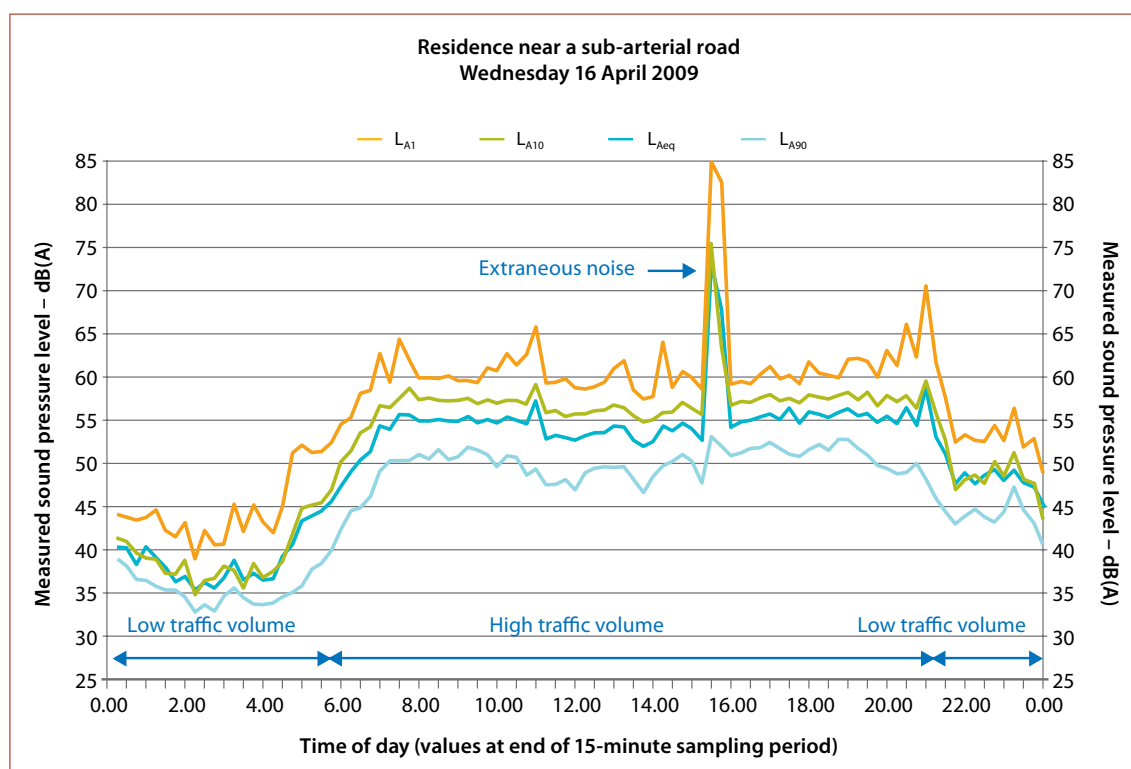
The level of attenuation across a building façade with an open window is generally around 10 dB(A). It may vary several dB either side of this, mainly depending upon the size of any window.

A barrier that is not solid, has holes in it or does not block line of sight, will not reduce the noise level. When a noise source is several metres from a receiver, a solid fence (e.g. solid timber, solid masonry, solid metal) with no gaps and flush to the ground that only just blocks

the line of sight will reduce the level of noise by about 5 dB. A typical paling fence (e.g. planks 13 mm thick and overlapped by 25 mm) that blocks the line of sight by at least 1 metre will reduce the level of noise by about 6 dB. A solid fence (e.g. solid timber, solid masonry, solid metal) with no gaps and flush to the ground that blocks the line of sight by at least 1 metre will reduce the level of noise by about 10 dB.

The closer a barrier is to the noise source or receiver, the more effective it will be. A barrier is least effective when it is midway between these two points.

Figure 2.1: Sample noise logger graph



2.3.4 Use of noise descriptors

Choosing the appropriate noise descriptor

In most situations, the L_{Aeq} is the most appropriate noise descriptor to use when measuring noise impacts. The L_{Aeq} is the equivalent continuous (average energy) level of the noise under investigation which is used to assess noise impacts against existing limits and identify an acceptable noise limit that should be met.

Before the introduction of the *NSW Industrial Noise Policy* (EPA 2000) in 2000, the L_{A10} descriptor was used. This measures the level exceeded for 10% of the specified period. The reasons why the L_{A10} descriptor has been superseded include the following:

- L_{Aeq} is a measure of energy and can be mathematically manipulated, while L_{A10} is a statistical descriptor which cannot be accurately added to or subtracted from other L_{A10} measures or other descriptors.
- L_{Aeq} is supported as a better measure of the effect of noise – for example the World Health Organization uses it.
- There is a general worldwide move towards the use of L_{Aeq} as the preferred descriptor of source noise for most situations.

In certain circumstances, noise descriptors other than the L_{Aeq} may be more appropriate for measurement and assessment or compliance purposes, depending on the characteristics of the noise source. For example, where the noise emissions from a source of interest are constant (such as noise from a fan, air conditioner or pool pump) and the ambient noise level has a degree of variability (for example, due to traffic noise), the L_{A90} descriptor may adequately describe the noise source and be much easier to measure or assess (see the case study below). (The L_{A90} is the level exceeded for 90% of the time.) This is because a constant noise source is present at a fixed level for all of the measurement period so that any shorter term noise events from other sources will not affect the L_{A90} . The short-term extraneous noise in Figure 2.1 indicates that the L_{A90} descriptor is little affected by this event.

Shorter term events are not likely to be represented by a level exceeded for 90% of the time. The short-term events may be better represented by levels that are exceeded for only 10% of the time. The aim is to ensure that the descriptor chosen adequately represents the subject source noise rather than the other extraneous noise in the environment. Where the noise descriptor chosen for noise measurement is not the L_{Aeq} , the reasons for the variation should be set out in any noise assessment report.

Modern integrating sound level meters can measure values for a number of descriptors, including L_{A1} , L_{Aeq} and L_{A90} .

Differences between noise descriptors

L_{Aeq} should not be confused with L_{A50} which is a statistical measure of the level exceeded for 50% of the time of the measurement. L_{Aeq} is a measure of sound energy, not a statistical measure or statistical average.

Figure 2.1 provides an example of how relationships between different noise descriptors can change when the character of the measured noise changes. This figure shows changing levels of traffic noise over time for both light traffic and heavy traffic situations. The figure demonstrates the relative levels of four noise descriptors for light and heavy traffic: L_{A1} , L_{A10} , L_{Aeq} and L_{A90} . The light traffic occurring at night includes some individual noisy vehicles which increase the L_{Aeq} level because of the extra sound energy being measured. However, the L_{A10} level is not as responsive as the number of noisy vehicles may occupy less than 10% of the measurement period, resulting in the L_{Aeq} level exceeding the L_{A10} level for short periods.

The figure also shows typical noise characteristics from a stream of daytime heavy traffic. Typically the L_{A10} is about 3 dB(A) above the L_{Aeq} . As descriptor values behave differently relative to one another for differing acoustic situations, it is important to select the descriptor that fulfils the desired function. For the subject noise source this is almost always L_{Aeq} because this descriptor indicates the sound energy of the source and has a direct relationship with annoyance.

Case study: Choosing an appropriate noise descriptor to measure a source

Lucy runs a bookshop located in a shopping centre. All was quiet until the newsagency next door installed a new air conditioning system with the motor and intake installed on a wall facing Lucy's bookshop. The constant noise coming from the unit annoyed Lucy and her patrons so she contacted Paolo, the Environment and Health Officer at her council, to complain.

Paolo visited the site and agreed that the air conditioning noise was annoying and unreasonable and considered imposing a noise limit on the air conditioner by means of a Noise Control Notice.

This course of action required initial measurement of the noise from the air conditioner to establish its current level and the noise reduction required to meet the desirable level. Paolo then had discussions with Ajay, the newsagent, about noise control measures that could be taken and the achievability of the desired levels to be prescribed in the notice.

A measurement problem existed because traffic from the main street interfered with measurements of the noise level from the air conditioner. Sometimes the air conditioner could not be heard because of the traffic. The normal descriptor L_{Aeq} was unlikely to measure the true level of air conditioner noise, because it is sensitive to the high levels of noise energy from individual traffic pass-by events.

Paolo recorded measurements from the bookshop window facing the wall where the air conditioner was located using an L_{A10} noise descriptor (which is the level exceeded for 10% of the time). The sound level meter read 70 dB(A) as an L_{A10} . For this descriptor the meter was in fact capturing noisy traffic events, which occupied more than 10% of the time during measurements.

Paolo then switched the meter to the L_{A90} noise descriptor, which read 62 dB(A). As the air conditioner noise was constant, the noise level of the air conditioner occupied close to 100% of the measurement period. In contrast to this, the traffic noise was variable, and there were times when there was no significant traffic outside the shop. These periods of infrequent traffic occupied about 15% of the measurement time, during which the air conditioner noise was dominant.

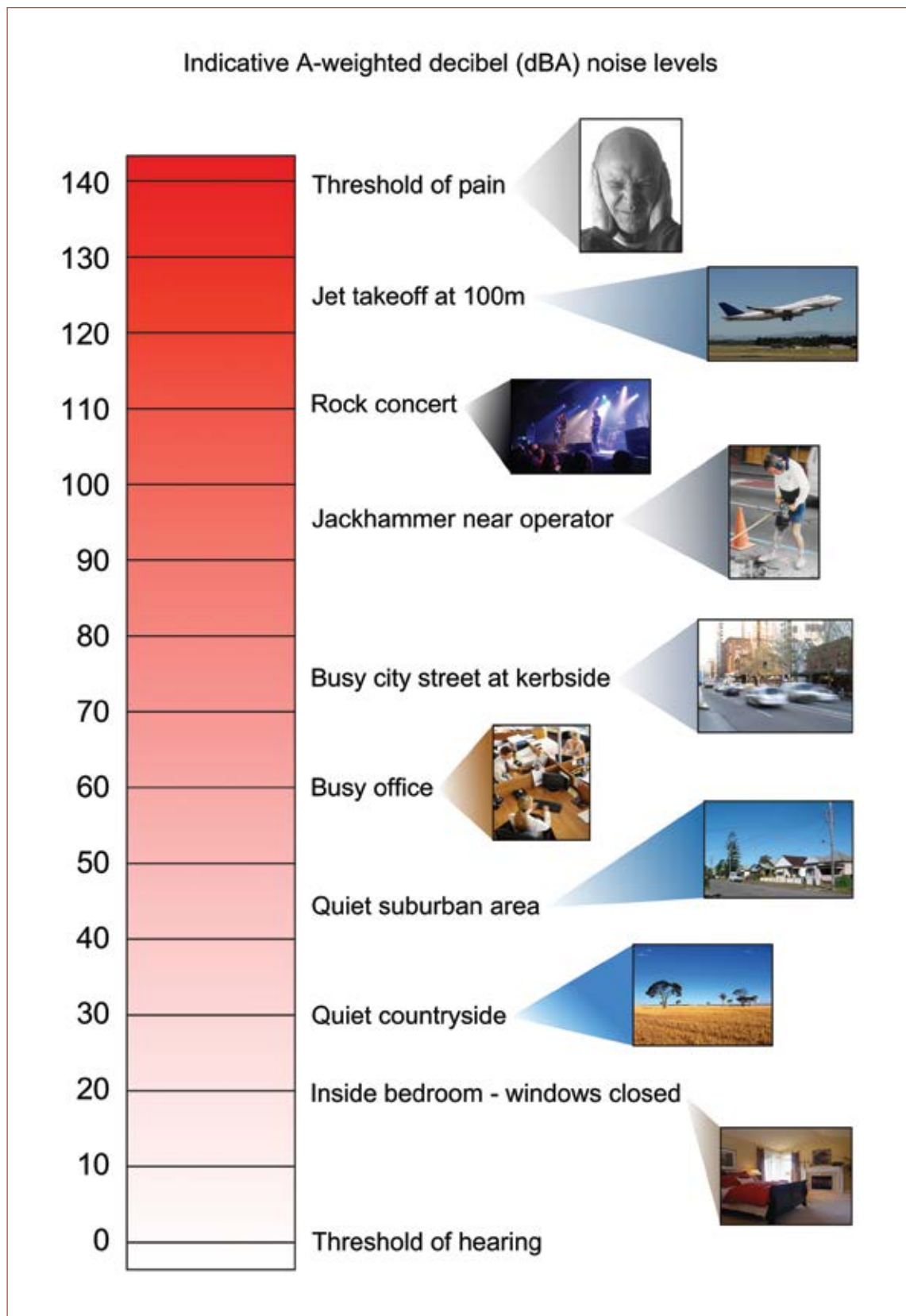
For this situation the use of the L_{A90} noise descriptor effectively filtered out the short-term traffic noise, measuring only the constant noise output of the air conditioner.

To determine the background noise level in the area, Paolo moved down the street away from the influence of the noise from the air conditioner. At this location the L_{A90} during periods of infrequent traffic was measured to be 52 dB(A). Paolo set a noise level limit of 57 dB(A) to be achieved by the air conditioner.

In prescribing a noise level to be complied with in the Noise Control Notice, Paolo also specified the measuring point and that the measurements use the L_{A90} descriptor, which would avoid the contaminating effect of the adjacent traffic.

2.4 Common sources of noise

Figure 2.2: Some common sounds and their typical noise level



2.5 References

DECC 2009, *Interim Construction Noise Guidelines*, Department of Environment and Climate Change NSW, Sydney, www.epa.nsw.gov.au/noise/constructnoise.htm

EPA 2000, *NSW Industrial Noise Policy*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/noise/industrial.htm

Standards Australia 2004a, *AS IEC 61672.1-2004: Electroacoustics – Sound Level Meters – Specifications*, Sydney

Standards Australia 2004b, *AS IEC 61672.2-2004: Electroacoustics – Sound Level Meters – Pattern Evaluation Tests*, Sydney

Sydney City Council 1992, *Code of Practice for Construction Hours/Noise within the Central Business District*, www.cityofsydney.nsw.gov.au/Development/Documents/PlansAndPolicies/Policies/ConstructionHours_Noise92.pdf

Noise Guide for Local Government

Part 3 Noise management principles



Part 1 Framework for noise control

Part 2 Noise assessment

Part 3 Noise management principles

Part 4 Regulating noise impacts

Part 5 Appendixes

Part 6 Glossary, Further reading and Index

Part 3 Noise management principles

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Part 3 Noise management principles

When managing noise impacts, prevention is always better than cure. Resolving noise problems after they occur may not always be possible and can be difficult and costly. It is best to anticipate, avoid or manage potential noise impacts as early as possible in the planning process. Noise impact assessment and management should therefore be incorporated into processes for making land use planning decisions.

Successful noise management involves a spectrum of considerations and options. At one end of the spectrum is prevention using long-term strategic approaches that aim to avoid or minimise potential noise impacts before they occur. Effective land use planning plays a key role in preventing potential noise impacts, both at the strategic planning level for an area and at a project-specific level.

At the other end of the noise management spectrum is the need to remedy existing noise impacts that are unacceptable and causing disturbance to the community. The *Protection of the Environment Operations Act 1997* (POEO Act) provides regulatory tools for managing noise impacts from new and existing noise-producing developments. Of course, non-regulatory approaches also have an important role to play in managing noise problems and should be used in conjunction with regulatory mechanisms.


Figure 3.1 shows how adopting proactive noise control measures during the planning process can be more efficient than using reactive regulatory measures to remedy existing noise problems. It illustrates the range of options available to prevent and manage noise impacts. Options located in the middle of the spectrum can be used both to prevent noise impacts and to manage existing problems.


Subsection 3.1 describes the strategies that are available and can be included in the planning process.

Subsection 3.2 deals with the management of noisy situations that already exist or are likely to occur.

Figure 3.1: Noise management spectrum

Noise management tools (non-regulatory and regulatory)

Proactive measures: Preventing noise impacts			Reactive measures: Remedying existing noise impacts
Land use planning including zone and land use tables	Information & education	Negotiation & mediation	POEO Act and Noise Control Regulation – application and enforcement (See Part 4)
Site selection	Communication	Complaint management	Retrofitting acoustic treatment
Use of topography		Liaison with other agencies	
Distance attenuation	Positioning of sensitive land uses within subdivision		
Site & building layout	Separation of conflicting land uses		

Proactive measures: Preventing noise impacts			Reactive measures: Remedying existing noise impacts
Building insulation & construction methods			
Conditions of Consent e.g. hours of operation or noise levels			
Best practice guidelines, Register of Development Assistance Guidelines, Development near Rail Corridors and Busy Roads – Interim Guideline			:

3.1 Preventing noise impacts through planning

3.1.1 Strategic planning

This is planning at the highest level to optimise land use in NSW. A key strategic planning document is the *Metropolitan Plan for Sydney 2036* (DoP 2010). This outlines a strategic plan to guide Sydney's growth and change till 2036. The plan is being revised in light of feedback received from a discussion paper on Sydney's growth over the next 20 years (NSW Government 2012a).

On 14 July 2012, the NSW Government released A New Planning System for New South Wales – Green Paper (NSW Government 2012b). This paper outlines the major changes in key areas of the planning system. These reforms will:

- involve the community early in the planning and decision making processes that shape the growth and the future of cities, towns, and neighbourhoods
- place more emphasis on preparing good policies upfront to guide growth and development
- reduce red tape and delay when assessing development applications for all types of proposals
- ensure that infrastructure is planned and delivered to support new and existing communities
- promote a 'can do' culture in the planning system and ensure that councils and the government are accountable for delivering the results they have committed to
- provide greater access to information about planning policies, planning decisions, and your rights in the planning process.

Submissions on the Green Paper closed on 14 September 2012. The following information about the planning system may need to be revised in the light of decisions taken about the new planning system. Readers should refer to the Department of Planning and Infrastructure's website for the latest information. See www.planning.nsw.gov.au/

State Environment Planning Policies

State Environment Planning Policies (SEPPs) address matters of state and regional environmental planning significance. Noise control can be a key element at this planning level. An example is the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP), which provides a consistent planning regime for infrastructure and the provision of services across NSW.

Higher density residential land use tends to be developed near major public transport nodes. While encouraging greater use of public transport this land-use strategy can result in more people being exposed to high noise levels. The Infrastructure SEPP contains noise control measures that aim to prevent the problem.

The Infrastructure SEPP provides that if the consent authority considers that land that is in or adjacent to a rail corridor or a busy road that carries more than 40,000 vehicles a day and is likely to be adversely affected by noise or vibration, the consent authority must not consent to a residential development unless it is satisfied that appropriate measures will be taken to ensure that the following noise levels are not exceeded:

- (a) in any bedroom in the building — Laeq 35 dB(A), at any time between 10.00 pm and 7.00 am
- (b) anywhere else in the building (other than a garage, kitchen, bathroom or hallway) — Laeq 40 dB(A) at any time.

The prescription of internal noise level limits means that the building must be constructed to a standard that provides for sufficient reduction of the external noise so that the internal levels are achieved. The Infrastructure SEPP is an example of how planning measures can assist in preventing noise problems. The *Development near Rail Corridors and Busy Roads Interim Guideline* (DoP 2008) provides guidance for the planning, design and assessment of development in or adjacent to rail corridors and busy roads to support the Infrastructure SEPP.

Local Environment Plans

Local Environment Plans (LEPs) guide planning decisions for local government areas. Through zoning, application of land uses and principal development standards, they enable councils to manage the way in which land is used. For noise control, this may mean separating land uses that are inherently noisy from areas and land uses where the expectation is for a quieter environment.

For further advice see the Department of Planning and Infrastructure's *Making LEPs: maps and guideline register* at www.planning.nsw.gov.au/LocalEnvironmentalPlans/MakingLEPsMapsandGuidelines/tabid/252/language/en-AU/Default.aspx. This register complements the *Register of Development Assessment Guidelines* at www.planning.nsw.gov.au/register-of-development-assessment-guidelines.

Development Control Plans

Development Control Plans (DCPs) can identify:

- areas where existing noise levels are already high, such as near an existing noisy industry, a busy road or a rail line
- acceptable noise criteria (internal/external) for noise-sensitive developments (e.g. setting acceptable noise levels for inside residential dwellings)
- acceptable performance criteria for noise-sensitive developments, such as specifying setbacks, boundary walls, solid balconies and window glazing
- activities that are likely to be noisy
- acceptable performance criteria for noisy activities such as the location of the proposed activity
- circumstances where an acoustic report may be required.

The DCP on Child Care Centres addresses the impact that child care centres may have on the adjoining community.

Council policies

Some councils and government agencies have prepared policies or guidelines that let developers know what information needs to accompany development applications (DAs) and let residents know what noise levels or conditions certain activities should meet. Councils can implement noise control measures as part of development consents given for subdivisions and for individual developments, and may include specific conditions of consent to address noise issues. Subsection 1.6 (in Part 1 of this guide) provides references to some government and council policies on a range of community noise issues. Councils may find these useful when formulating a position on a similar noise problem. Subsection 3.3 offers guidance on some specific neighbourhood noise issues that could be developed into a policy tailored for specific sites under council jurisdiction.

DCP on Child Care Centres

13.1.3 Location Requirements

Objectives

- (b) To minimise the impact of child-care centres on residential amenity in terms of traffic generation and movement, traffic noise and noise from children by encouraging an even distribution of small centres in residential areas.

13.1.8 Visual and Acoustic Privacy

Objectives

- (a) To minimise noise generation from the centre and intrusion of noise from external sources.
- (b) To ensure the privacy of surrounding premises is maintained and protected from overlooking.

Controls

- (a) Child-care centres must achieve an ambient noise level within the centre not exceeding 40 dB(A) within learning areas. Designated sleeping areas are to achieve a level not exceeding 35 dB(A) within the room. Designs should aim to locate sleep rooms and play areas away from the principal noise sources. Where necessary the impact of noise must be reduced by solid fencing and double glazing.
- (b) Centres must be carefully designed so that noise is kept to a minimum and does not create an "Offensive Noise" as defined by the Protection of the Environment Operations Act 1997. Factors to consider, and which Council may require to be addressed include:
 - Orienting the building having regard to impacts on neighbours. This may include locating play areas away from neighbouring bedrooms.
 - Providing double-glazing of windows where necessary;
 - Erection of noise barriers, which may include fencing types that minimise noise transmission;
 - Insulation of external noise sources such as air conditioners;
 - Placing restrictions on the number of children to be outdoors at any one time.
- (c) All applications for Type B child-care centres shall be accompanied by an 'acoustic' report, prepared by a suitably qualified person addressing the above issues to Council's satisfaction;
- (d) Overlooking of adjoining principal living areas and private open spaces must be kept to a minimum. This may be done by a number of means including appropriate building layout, landscaping or screening.

Source: Extract from the Fairfield City Wide DCP (Fairfield City Council 2006)

3.1.2 Noise control at each stage of land development

There are generally three major stages of development and planning where potential noise impacts should be considered and managed.

- 1. The initial planning stage** — A green field (undeveloped) site offers the greatest management flexibility in zoning industrial and noise-sensitive land uses. This is the point where compatibility of different land uses should be considered. During the initial planning stage it may be possible to identify a potential for land-use conflict due to noise. The land should be zoned appropriately taking potential conflicts into account and then, in the development phase, to produce management strategies to address these. Clear goals for new noisy activities (industry) can be developed that provide an equitable share of noise while protecting the amenity of nearby (planned or existing) residential areas. For undeveloped industrial estates an equitable share of the total noise goal for the estate can be allocated among the industrial lots within the subdivision. Some industries create more noise than others and this may be accommodated by resiting noisy industries at a site on the estate away from adjacent residential areas resulting in the overall noise goal for the estate being achieved.

Examples of this approach are the Tomago Road Industrial Area near Newcastle and the Southern Distribution Hub at Goulburn (see the discussion box below).

Discussion box – How to share noise – opportunities at green field sites

The scenario

A new industrial estate is planned alongside an existing residential area. Noise from the estate as a whole will not be allowed to exceed 50 dB(A) during the day at the closest house to the estate in the residential area.

The problem

There are six industries planned for the area, occupying the six sites on the industrial estate. Industries A and B are predicted to produce noise at 60 dB(A) each that will be heard at 10 m from their sites. Two other industries, C and D, are predicted to produce noise at 70 dB(A) each that will be heard at 10 m from their sites. The remaining 2 industries, E and F, involve machinery that is very noisy. The noise predictions from these industries at 10 m distance from their site boundaries are 85 dB(A) and 75 dB(A) respectively.

The solution

Assuming that all feasible and reasonable mitigation has already been applied to achieve the predicted levels, the way to achieve the required noise levels at the residences is to site the noisiest industries furthest away from the residential area, and the quietest industries closest to the residential area within the confines of the industrial estate. The general rule is that by increasing the distance from a noise source it becomes quieter by 6 dB for every doubling of distance away from the source. The arrangement of industries on the estate to achieve the best noise outcome is shown in the diagram below. The noisy industries E and F are furthest away from the residential area. Their noise is also blocked to some extent by the intervening industries acting as a noise barrier.

Industry E in spite of its location was predicted to be still too noisy at the residences but if a noise barrier was constructed near industry E's site (as shown in the diagram), it was predicted to comply.

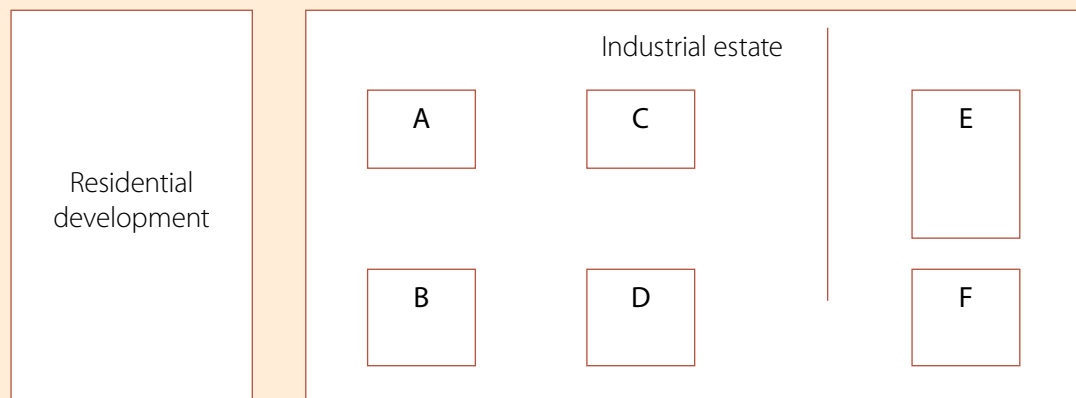
The result

Assuming a worst case scenario, with all industries operating at their predicted maximum noise output at the same time, the result of the noise levels heard at the closest residence would be:

Industry A = 43; Industry B = 42; Industry C = 40; Industry D = 40; Industry E = 46;

Industry F = 44. Total noise from estate = **50 dB(A)**

Note: The noise reductions shown here compared with the levels measured at 10 metres are due to the greater distances to the receivers, the more remote locations of C, D, E and F, the barrier effects of A and B to industries further away from residences and the noise barrier near E.



2. **The subdivision stage** — When a commitment has been made to locate residential and industrial land use areas close to one another but subdivision development has not started, there is an opportunity to design the internal subdivision layout to minimise noise impacts. This may apply to new residential or industrial developments. Noise mitigation strategies that can be used at this stage of development include:
 - using the natural topography to prevent line of sight between the noise source and residential areas and thus block direct propagation of noise
 - locating activities that are not noise sensitive, such as commercial areas and parkland, between residences and the noise source
 - orienting dwellings so that living areas face away from noise sources
 - defining areas affected by noise where building and subdivision design needs to incorporate noise mitigation. An example is the Shellcove residential development in Shellharbour Council area, which is near a quarry access road.
3. **The building design stage** — Noise control measures can be applied to buildings to ensure that internal noise levels are acceptable. It is far more cost effective to install appropriate noise insulation at the building stage, rather than adding it later to a finished building. Internal noise can be minimised by:
 - locating living areas away from the area most exposed to a noise source
 - using thick or double-glazed windows, solid walls and doors, and window and door seals
 - carefully selecting the location for installation of noise sources, such as air conditioners and water heaters.

Similar approaches can be used to prevent noise escaping from properties that generate noise. Consideration of the impact of a new building's noise sources (e.g. an air conditioning unit) is important to minimise impacts on current or future neighbours.

Site layouts for premises with noisy activities should consider using building structures to shield noisy operations and should locate areas of access to the site or buildings away from noise-sensitive areas (see *Development near rail corridors and busy roads – Interim Guideline* (DoP 2008)).

3.1.3 Land use noise control – who does what

The following people have a key role to play in preventing and managing noise impacts:

- **Strategic planners** should consider the potential noise impacts of different land uses when developing a strategy for an area. Planning instruments or policies should be developed to provide a consistent approach to managing potential noise impacts. This is particularly important where a key local industry generates noise and there is a need to balance its noise impacts and the role of industry in an area.
- **Development control planners** should consider potential noise impacts during the DA phase for new or changing land uses. This applies to both noise-producing and noise-sensitive activities.
- **Industry and developers** should consider noise impacts in their development proposals and operating procedures so that noise impacts are minimised.
- **Managers and elected representatives of council** have an important role as decision-makers in many development and land use planning instruments.
- **Environmental health and compliance officers** should provide support and advice to planners and councillors in relation to existing and future noise impacts and offer advice on individual DAs where noise impacts may occur.
- **Transport corridor regulators and managers**, such as RMS, local government and managers of railway activities should ensure that noise from transport under their control complies with applicable guidelines, noise abatement programs and environment protection licences.

3.1.4 Considering noise in the DA process

As with many environmental considerations, noise issues are best addressed early in the DA process. The steps below summarise the assessment process and give examples of circumstances where noise issues should be considered.

Pre-application/lodgement opportunities

There are various non-statutory and statutory opportunities for councils to identify noise issues early in the DA process. For example, many councils offer pre-DA meetings to discuss assessment requirements with proponents prior to lodgement of a DA. These meetings provide an opportunity for council to discuss legislative, policy and local requirements related to noise issues. The *Environmental Planning and Assessment Act 1979* (EP&A Act) includes opportunities, and obligations, for councils to be involved in the preparation of environmental assessment requirements for major projects and DAs. Environmental health officers and statutory planners should work together to ensure that environmental issues including noise are addressed early in the process using these opportunities.

Assessment/determination process

When a council is determining a DA, or being consulted on a project application, noise issues need to be considered. Generally, it is relatively easy to identify a potentially noisy development and, conversely, a development that may be sensitive to noise. Typically these include residences, schools, hospitals, places of worship and some community centres. The next step is to consider where the development is being proposed. When a noise producing development is proposed near noise sensitive areas, or conversely where a noise sensitive development is proposed in a noisy area, a noise impact assessment is warranted. The complexity of the noise impact assessment and council's capacity to critically review the assessment will vary, however, the first critical step is to identify the potential for noise-related land-use conflicts. Councils need to determine, on a case-by-case basis, whether a

noise impact assessment should be reviewed internally, or whether external experts should be commissioned. Conditions of approval/consent can be used to require noise mitigation.

Notes:

1. Often noise mitigation requires physical measures such as noise barriers, enclosures etc. The aesthetics of these structures should be considered as part of the development assessment process.
2. Noise conditions placed by the EPA on environment protection licences and prevention notices that may be useful as guidance, can be accessed from licences and notices on the Public Register at www.epa.nsw.gov.au/prpoeoapp/

Post assessment/determination process

Often project approvals and development consents include commitments and conditions relating to noise performance. Often physical examination can establish whether these requirements are being met. For example, a requirement for a noise wall at a particular location and height can be verified visually. In other circumstances, noise performance requirements may be expressed as 'noise limits', where noise measurements are required. Council should consider whether compliance should be measured by council, or should be the responsibility of the proponent.

Changing land uses

Changing land-use patterns in an area can sometimes lead to new noise impacts or can exacerbate existing noise impacts. This can occur in both rural and urban areas owing to:

- new residential development being located close to existing noisy activities
- new or intensified noisy activities being located close to existing residential areas
- changing expectations of residents about the amenity of a local area.

Common noisy activities include commercial or industrial premises, main roads, rail lines and some entertainment facilities.

Existing use rights

The POEO Act does not give priority to existing uses. This means that where, for example, a farm is encroached on by residential development and residents moving in object to the noise of the farm, the farm owners may need to reduce their noise irrespective of how long the farm has been operating. The EP&A Act upholds the integrity of an existing DA approval condition for a land use activity, such as a farm, without regard to complaints about the noise from the activity by residents moving into the area affected by the existing activity, provided the activity adheres to the conditions in its consent.

3.1.5 Notifying potential noise impacts

Section 149 certificates are used to notify a land owner of activities or policies that may affect the land. A certificate could, for example, reference the fact that a particular planning policy applies to the land, such as a DCP, LEP or SEPP.

Where land is likely to be affected by nearby noisy activity, potential purchasers of affected property could be made aware of the situation by recording the relevant information on a certificate issued under s. 149(5) of the EP&A Act. Advice under s. 149(5) certificates should not be seen as a regulatory tool, but as a means of providing advice, for example, to note that a nearby industry operates on a 24-hour basis. Section 149(5) certificates are not required under the Conveyancing Act 1919 so they function in a 'buyer beware' role. This approach has been taken by some councils in relation to noise from aircraft or port activities. It allows a purchaser of the land to make a decision on its suitability for the intended purpose, taking into account personal sensitivities. Recording information on s. 149 certificates to notify potential environmental impacts needs careful consideration and should only be contemplated after all feasible and reasonable noise mitigation measures have been applied to the source of the noise, and there is a need to manage potential land-use conflicts.

Other information and education programs could be used to encourage consideration of neighbours' sensitivities to noise. Advice for hobby farm residents on what is reasonable to expect in a working rural area is one example. These programs can be aimed at encouraging responsible behaviour and cooperative neighbourhood relationships. Council can play a role in providing information to new residents through a welcoming kit, or via leaflets available at council offices. This advice is particularly relevant for city dwellers moving to rural areas who expect a very quiet environment.

3.1.6 Acoustic reports as a noise planning tool

Acoustic reports are noise impact assessments made by professional acousticians and have an important role to play in both preventing and remedying noise problems. It is often advisable for people who are planning activities that have the potential to cause noise impacts to seek professional advice on how to prevent, minimise or control noise impacts.

Requesting an acoustic report as part of the DA process can help council in its decision-making and ensure that appropriate control measures are integrated into the development.

An acoustic report may be needed in situations where:

- it is required by a planning instrument, a council endorsed policy or DCP
- a new development is proposed that will create significant noise (e.g. new industry, or commercial premises with refrigeration, air conditioning or exhaust equipment)
- a new noise-sensitive development is proposed in an area where existing noise sources are present (e.g. an existing industrial site, main road or rail line is located nearby)
- a new development will generate a significant amount of traffic
- complaints are received about noise from an existing activity.

It is recommended that a suitably qualified and experienced acoustic practitioner (e.g. a member of the Australian Acoustical Society, the Institution of Engineers, the Association of Australian Acoustical Consultants or a person with other appropriate professional qualifications) prepare acoustic assessment reports.

Information provided in an acoustic report should include at least the following:

- the name and qualifications or experience of the person(s) preparing the report
- the project description, including proposed or approved hours of operation
- relevant guideline or policy that has been applied
- results of background and any other noise measurements
- meteorological conditions and other relevant details at the time of the measurements
- details of instruments and methodology used for noise measurements (including reasons for settings and descriptors used, calibration details)
- a site map showing noise sources, measurement locations and potential noise receivers
- noise criteria applied to the project
- noise predictions for the proposed activity
- a comparison of noise predictions against noise criteria
- a discussion of proposed mitigation measures, the noise reduction likely and the feasibility and reasonableness of these measures
- how compliance can be determined practically.

The *NSW Industrial Noise Policy* (DECCW 2011) and the *NSW Road Noise Policy* (DECCW 2011) provide detailed guidance on the areas that need to be covered in an acoustic report. Ultimately the decision to request an acoustic report from a developer rests with council.

3.2 Managing noise

This section deals with the management of existing noise problems through action that is feasible and reasonable. Some specific examples of noise management are in the case studies in subsection 3.6. These include noise from garbage collection, outdoor concerts, motor sport and power tools. Managing noise from residential air conditioning units, heat pump water heaters, pool/spa pumps and rain water tank pumps is provided in Appendix 3. The terms 'feasible' and 'reasonable' are defined below.

3.2.1 Feasible measures

A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements.

3.2.2 Reasonable measures

Selecting reasonable measures from those that are feasible involves making a judgement to determine whether the overall noise-reduction benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the noise abatement measure. To make such a judgement, consideration may be given to the following situations.

Noise level impacts

- existing and future levels and projected changes in noise levels
- number of people affected or annoyed
- any noise performance criteria required for associated land uses

Noise mitigation benefits

- the amount of noise reduction expected including the cumulative effectiveness of the proposed work practices/abatement measures
- potential ability of the work practices/abatement measures to reduce noise during both the construction and operational stages of the project
- the number of people protected

Cost effectiveness of noise mitigation

- total cost of mitigation measures, taking into account the physical attributes of the site, such as topography and geology, and the cost variation attributed to the project given the benefit expected
- noise mitigation costs compared with total project costs taking into account capital and maintenance
- impact of disruption to essential transport and utility networks (for example, main roads, railways, water supply, electricity supply)
- risk to worker safety during live traffic (road or rail) conditions

Community views

- engagement with affected land users when deciding about the aesthetic or other impacts of work practices/abatement measures
- views of all affected land users not just those making complaints, determined through early community consultation
- practices/measures with majority support from the affected community.

Many of the noise mitigation measures discussed here can be applied at the planning stage for a new area or development as well as in dealing with existing situations.

3.2.3 Noise control

There are three main areas where noise mitigation measures can be applied:

- at the source
- in the transmission path
- at the noise receiver.

Control of noise at the source is always the preferred method of noise control as it reduces the impact on the entire surrounding area.

Noise path control or mitigation at the receiver usually requires measures that block the transmission of noise such as erecting barriers or making architectural modifications to building facades. As the benefit from these measures would only apply to a limited area, in general, this should only be done after endeavouring to control noise at the source.

Selecting the right approach to noise mitigation will depend on the nature of the noisy activity, the location of noise receivers, the cost and viability of various solutions, the degree of noise mitigation required, any special characteristics of the noise, and individual site considerations. Often a mixture of noise control measures works best.

3.2.3.1 Controlling noise at the source

There are generally two approaches to controlling noise at source: use of **noise-efficient technology** and **best management practices**. Both these approaches aim to reduce the amount of noise at the source so the entire surrounding area is protected.

Noise-efficient technology

This involves selecting and using the most advanced and affordable technology, equipment, plant and machinery, so that the noise emitted is minimised, including the use of noise control equipment. Some ways to do this include:

- **Choosing quiet equipment** — noise should be a factor in selecting equipment. Equipment often has manufacturer specifications identifying noise output and this can be used to compare equipment. The Noise Control Regulation (cl 36–49) includes labelling requirements to provide information to help choose quiet equipment. The EPA is working through the Standing Council on Environment and Water to develop a national noise labelling scheme that would initially cover noisy domestic equipment.
- **Managing equipment operation** — equipment can be operated in such a way as to manage noise optimally. For example, use equipment such as leaf blowers for short periods and avoid revving it repeatedly. These devices are often much quieter but just as effective when used at around half the maximum power.
- **Using broad band or other low impact reversing alarms** in place of beeper and tonal alarms. These alternative systems can reduce off-site noise impacts while maintaining on-site worker safety.
- **Using vibratory piling** instead of impact piling.
- **Using high-pressure hydraulic rock crushers** to split rock, instead of hydraulic or pneumatic hammers.
- **Choosing fan design features that will reduce noise** — these may include blade length and speed of rotation.
- **Ensuring that equipment has an efficient muffler system** or suitable noise insulation (e.g. compressors or jackhammers with insulation, or trucks that have efficient muffler systems).
- **Providing insulation** to line metal trays, hoppers or bins on equipment such as macadamia nut de-huskers, grain containers or hoppers. This helps to stop impact noise and reverberations.



Enclosed noise sources at car cleaning station near residences. Photo: Pittwater Council

- **Using vibration isolation**, such as placing rubber mats or springs between noisy equipment and a rigid floor or wall. This approach may be helpful in boiler rooms, for commercial mixers in bakeries, or in refrigeration motors and exhaust equipment and ducting.
- **Building an enclosure** around the noise source so that noise is contained. The enclosure may need to allow for sufficient ventilation and cooling. Any gaps need to be properly designed to limit the amount of noise that can escape. The enclosure should be made of dense material and be lined with noise-absorbing material like glass or polyester batts.

Best management practices

Best management practices involve adopting particular operational procedures that minimise noise while retaining production efficiency. Some common noise reduction strategies include:

- **Considering alternatives** to the noisy activity (e.g. using nets to protect crops instead of gas scare guns).
- **Changing the activity** to reduce the noise impact or disturbance (e.g. reorganising the way the activity is carried out).
- **Choosing a suitable time** — schedule noisy activity to less sensitive times of the day. There are sensitive times of the day for different people, for example, schools during the day, times of religious services, and residences during evenings and night. Where several noisy pieces of equipment are used, their operation should be scheduled to minimise impacts.
- **Relocating the noise source** away from receivers or behind existing structures that can act as a barrier. Examples for which this approach may be suitable include power tools, air conditioners, pool pumps and music practice.
- **Conducting regular maintenance** of equipment. This helps minimise noise levels as well as keep equipment working efficiently. Poorly maintained equipment can be very noisy, such as when bearings are worn or an engine needs to be tuned. Examples include motor vehicles, lawn mowers, power tools, and commercial equipment such as refrigeration and exhaust systems.

- **Changing the orientation of equipment** away from receivers (e.g. changing the direction of a gas scare gun or a diesel generator exhaust outlet).
- **Locating pets or farm animals** away from noise-sensitive areas, and using management practices that minimise noise. Applications include poultry sheds or dog kennels.
- **Following 'quiet' work practices**, such as requiring trucks to turn engines off rather than idle for long periods.
- **Keeping neighbours informed** of a planned noisy activity, its duration and the reasons for the activity. Neighbours may be more accepting of temporary noise if they know when and why the noise is happening, and how long it will last.
- **Educating staff and contractors** about noise and quiet work practices. This could include signage, for example, some construction sites have signs reminding contractors to consider neighbours and be quiet, and to not start noisy work too early (e.g. before 7.00 am).

3.2.3.2 Controlling noise in the transmission path

Noise can be controlled in the transmission path by using separation distances, barriers and sound absorptive materials.

- **Increasing the separation distance** (distance attenuation) between the noise source and receiver reduces the noise level. As a rule of thumb, each doubling of the distance from a noise source equates to a reduction of sound pressure level of 6 dB (the inverse square law). This does not apply close to a loud noise source. It may also be affected by wind and temperature inversions for distances over 300 metres between the source and receiver.
- **Careful site selection** for a new noisy activity can help minimise noise impacts where it is possible to provide adequate separation distances. Taking advantage of topographic features by siting the noisy activity behind a hill can reduce the distance needed to adequately reduce noise levels.
- **Barriers** are most effective when they are located close to the noise source and block the line of sight between the source and receiver. The amount of noise reduction achieved depends on the height and mass of the barrier and the frequency of the noise (barriers are less effective for low-frequency noise). Noise barriers should have no gaps. Use of absorptive material on the side of the barrier facing the noise source can also help to reduce noise levels by reducing noise reflections.
- **Materials commonly used for noise barriers** include solid brick walls, concrete blocks or panels, earth mounds, trenches and cuttings. Natural topography and existing buildings can also provide an effective noise barrier and should be considered when developing a new noisy activity. Trees or other vegetation do not provide an effective noise barrier. Some limited attenuation may be gained where trees are densely planted but little attenuation is achieved for low frequencies.
- **Sound-absorptive materials** reduce the level of reflected sound. They are porous materials such as glass fibre, wool and mineral wool. Thin layers are capable of absorbing only high frequencies, whereas thicker layers can absorb a wider frequency range.

3.2.3.3 Controlling noise at the receiver

This can be cost effective if used at the planning and construction stage, but is typically the least desirable of the three types of noise mitigation for treating existing problems. Applying noise mitigation to affected buildings may be appropriate and cost effective where only a few receivers are affected by noise and the alternative is to retrofit expensive controls at the noise source.



Noise barrier near kennels. Photo: EPA

Common approaches to controlling noise at receiver locations, such as residential dwellings, schools or hospitals, can include a combination of the following three measures which would generally be applied through council's DCP.

- **Site and building layout** can include the use of setbacks for a new house, or changing the shape and orientation of the building to avoid sound being reflected into noise-sensitive rooms. Orientation and placement of rooms within a building can also help to minimise noise impact (e.g. placing bedroom and sensitive living areas furthest from a noise source and placing kitchen, bathroom or garage areas closest to the noise source). This approach can also be used in designing mixed-use developments, where a commercial activity can be located closer to a noise source and residential activities can be located further away.
- **Barriers and fencing** can be placed on the residential boundary to protect a house and external areas. Barriers and fencing can also be used within a property to provide a protected external recreation area such as a walled courtyard or garden. Solid building facades closest to the noise source will also act as a noise barrier. Other options include providing solid balconies designed to reflect sound away from a building.
- **Building construction methods** are also an important noise control strategy for receiver locations. The major controls are insulating building elements such as doors, walls, windows, floors, roof and ceilings. Options for window design include sealing air gaps around windows and doors, laminated or thick glass, and double-glazing. All external building elements need to be considered to ensure that noise insulation is effective. This is because even small gaps can significantly reduce the effectiveness of noise insulation measures. Ventilation needs to be considered in conjunction with any noise insulation work; mechanical ventilation (such as air conditioning) may be necessary and it is important to locate external units so as to avoid impacting neighbours. See *Development near rail corridors and busy roads – Interim guideline* (DoP 2008) for more information.

3.3 Managing specific noise issues

Public address systems – The major noise controls are the selection and placement of speakers. Rather than have high powered speakers placed in a few locations, it is preferable to have more speakers but at a lower power. Each should be pointing downwards and directed inwards towards the ground where the activity is occurring. With this arrangement, the likelihood for noise from the public address system to spill out of the venue into adjacent neighbourhoods is a lot less. The use of a public address system should be limited to the requirements of the event so that unnecessary noise is not produced unless there is no demonstrated impact outside the venue. Case Study 1 provides details of how public address systems can be managed at an outdoor concert.

Aircraft noise at airports without Australian noise exposure forecast (ANEF) contours

– Guidance on appropriate noise levels may be obtained by consulting the *AS 2021–2000 Acoustics – Aircraft noise intrusion – Building siting and construction* (Standards Australia 2000).

Motor sports – Case Study 2 describes how noise from a motor sporting event can be managed. The case study also shows how noise from venues that accommodate several different event types can be managed so that there is an overall cap on the noise from all events over a specific time period.

Outdoor shooting ranges – As this noise comprises a set of very short duration, high intensity events, noise measurements may need to be made using a specialised noise descriptor to adequately describe the noise impact. Sound level meters used to measure noise from shooting ranges should be set at ‘peak hold’ with a linear weighting, that is, no weighting at all. Councils could develop a policy that limits the number of days and nights that the range is used according to a measured typical maximum peak hold value so that when noise levels are high, fewer days are available for events than for venues where noise levels are lower. The policies from other states may provide guidance such as *Audible Bird Scaring Devices – Environmental Noise Guidelines* (EPA SA 2007). Also refer to Case study 2 – Noise from a motor sport facility.

Residential air conditioning units, heat pump water heaters, pool/spa pumps and rain water tank pumps – How the noise impacts on the surrounding areas is determined by the amount of noise produced by the equipment, the distance from the equipment to any affected neighbours, the height and composition of any barriers, such as a boundary fence, and the proximity of any surfaces that will reflect sound. More information on the installation of this equipment is provided in Appendix 3.

3.4 Other noise management options

3.4.1 Environmental audits

Audits required by council

Environmental audits of industrial premises that are regulated by councils are becoming more common. Environmental audits provide an opportunity to identify the environmental impacts of an activity or business that may need to be improved. Audits have an important role to play in educating people and improving the environmental performance of commercial and industrial premises. The *Compliance Audit Handbook* (DEC 2006) provides information about environmental and compliance audits. Although written for EPA officers the Handbook can also be used by councils to guide local government environmental audit programs.

Voluntary audits

The POEO Act provides for voluntary audits to be undertaken by operators so that they can learn about how to comply with the legislation, codes of practice or environmental policies, and help identify ways an activity can be improved in order to protect the environment and to minimise waste (POEO Act, s. 172).

Voluntary audits differ from audits required by councils in that documents prepared for the sole purpose of a voluntary audit are protected. They cannot be used as part of enforcement action, including the issuing of notices, or for prosecution (POEO Act, ss. 180–183).

3.4.2 Environmental management plans

Environmental management plans can be used to establish clear goals and encourage best management practices during construction activities and ongoing operation. These plans can be most useful when mitigating an environmental impact through the use of best management practices. In some situations it may be appropriate for council to require a proponent to develop an environmental management plan that includes a noise management plan as part of a development consent, or to encourage the development of a plan as part of the environmental audit of a particular premises.

3.4.3 Contract specifications

Conditions set in contractual agreements can help to avoid or minimise noise impacts and can be used where council is using contractors to provide services. Council may also be in a position to recommend changes to contracts for commercial premises.

For example, contract specifications for the management of noise impacts should be applied to garbage collection contracts. The contract should include clauses specifying suitable collection times, the location where compactors can be operated or bottles can be smashed, complaint handling processes, etc. Contractors for road works could also be required to comply with a council noise policy. Case Study 3 provides a good example.

3.4.4 Working with other regulators

Fostering ongoing liaison between regulators such as council, the EPA, NSW Police, the Sydney Harbour Foreshore Authority, and RMS officers can help coordinate resources and resolve ongoing noise problems efficiently and effectively, as each of these regulators has a range of powers and responsibilities. (Part 1 of this Guide gives more details.) Liaison between regulators can help to clarify the role of each regulator in managing noise problems. It can reduce possible duplication and help to resolve difficult and ongoing noise problems in the most efficient and effective way.

An example is Rockdale City Council and the local Police who worked together to address the issue of loud car stereos, often a problem experienced in shopping precincts and in quiet neighbourhoods late at night, affecting recreation and sleep.

Another example of where the combined resources of council and Police can be used effectively is where the Police have been called to a property as a result of loud music on a regular basis, and may have issued a Noise Abatement Direction or a Penalty Notice. Rather than continue to respond to noise complaints at the same property, the Police could advise council of the ongoing problem. Council has additional powers to issue a Noise Control Notice or Prevention Notice to manage such ongoing noise problems (see Part 4 for details). The relationship between councils and Police for coordinating issues and enforcement of statutory provisions could be set out in a memorandum of understanding (MoU). An example of what to include in an MoU is provided in the discussion box below.

Where complaints are received about licensed premises it may be helpful to involve other regulators, such as the Office of Liquor, Gaming and Racing (see Part 1). When the complaint relates to the owners corporation of a Strata Plan (formerly referred to as the body corporate) or relates to a home unit within an apartment complex, NSW Fair Trading could be contacted for assistance.

Discussion box – How to set up a memorandum of understanding between police and councils

Both councils and Police deal with neighbourhood noise issues and have common enforcement powers for many of the neighbourhood noise provisions in the Protection of the Environment Operations (Noise Control) Regulation 2008. There is a likelihood that occasions will arise when both organisations are involved in the same incident or where one organisation has information that would assist the other organisation.

A memorandum of understanding (MoU) could contain agreements for issues, such as complaint handling, when administrative and enforcement duties overlap between council and the Police.

An MoU is a way of clearly defining roles and responsibilities and cooperative actions for councils and Police and can be used to set out procedures to cover all types of neighbourhood noise issues. The arrangements between each local area command (LAC) and each council within the LAC could be customised to accommodate local conditions. The material here encompasses the main principles that each MoU could contain. An MoU would be a voluntary action designed to increase the efficiency of the enforcement activities of both organisations.

An MoU could contain:

- a description of issues that council would be responsible for, such as day-time offensive noise incidents and ongoing noise matters such as air conditioning
- a description of issues that Police would be responsible for, such as night-time offensive noise incidents, 'times of use' warnings and enforcement, building and car alarms, and vehicle noise
- identification of shared areas where there are opportunities for both organisations to coordinate or possibly pool resources to increase the efficiency of the enforcement activities of each. Examples are:
 - information on warnings given under 'times of use' provisions or as a prerequisite to issuing Noise Abatement Directions, so that the other organisation is aware that a warning has already been issued
 - information on complaints to facilitate coordination of noise incidents in which both organisations are likely to be involved, or to develop strategic responses such as the use of campaigns to target 'hot' noise issues
 - information on building and vehicle ownership details for premises with continuously ringing alarms to help contact a key holder who may be able to turn off the alarm
 - information to the Police on the hours council rangers are on duty
 - Police involvement in ongoing noise impacts, such as regular band practices using amplified musical instruments or sound equipment, where councils have access to more appropriate control instruments such as noise control notices and prevention notices
 - information on the prosecution policies of both organisations to ensure consistency wherever possible.

An MoU could also be between:

- councils with shared boundaries, to determine how noise incidents that cross local government boundaries can be handled
- RMS and the Water Police
- RMS and shoreline councils, because there are overlapping jurisdictions along the shoreline, for example, at marinas.

3.5 Dealing with the community

3.5.1 Consultation, communication and mediation

Consultation

Often the most effective ways to avoid complaints about noise is for the person making the noise to consult with the affected community, particularly where noise impacts appear to be unavoidable. People consulted about an activity that may affect them are often more tolerant about the impact when their concerns have been recognised.

Further guidance on some principles about consultation and negotiation is in Table 5: Options for work practices – consultation and notification in the *Interim Construction Noise Guideline* (DECC 2009) and Chapter 8.3: Negotiated Agreements between the Proponent and the Affected Community of the *NSW Industrial Noise Policy* (EPA 2000). Both these publications are on the EPA website at www.epa.nsw.gov.au/noise

Communication between neighbours

At a neighbourhood and workplace level, people should be encouraged to discuss their noise problems in the first instance with the person or business making the noise. Communication may be all that is required to reach a mutually satisfactory solution.

The NSW Community Justice Centre (CJC) has published material that can assist residents to deal with situations of potential conflict with neighbours. The brochure, *Some Suggestions on How to Deal with Conflict* (CJC 2009), provides more information.

Where neighbours have not sought to resolve the problem themselves, the best first step for council officers may be to facilitate communication. Ways to do this range from informal discussion to more formal negotiation and mediation processes that seek to resolve a dispute. Informal approaches are often preferable to taking statutory actions and are likely to use fewer council or Police resources.

This approach may be useful where, for example, the volume of music needs to be reduced or where the time or location that people play loud musical instruments causes conflict. In this type of situation it may be possible to negotiate days and times that are acceptable to both the complainant and the person making the noise.

Mediation is a form of negotiation, in which a third party (e.g. a CJC or council) helps the people in dispute to find their own solutions and resolve problems amicably in an informal and confidential forum without strict legal rules, under the guidance of a mediator. The mediator's role is to help the parties discuss the problem and achieve a solution in an atmosphere of cooperation and good faith.

- **Informal mediation** could take place between the person making the noise and the person or people affected with, for example, the council officer acting as mediator. The aim is to reach a mutually acceptable agreement that avoids the need for more formal mediation or for regulatory intervention. A council officer may decide whether or not to offer assistance by acting as the mediator in this situation.
- **Formal mediation** may be appropriate where underlying issues contributing to the conflict also need to be resolved. CJsCs or a professional mediator may be able to help in these situations. CJC contact information can be found at www.cjc.nsw.gov.au. Individuals can contact the CJC requesting mediation. The CJC can write to the person allegedly making the noise and if that person is willing, CJsCs can arrange for a CJC mediator to conduct a mediation session at a Local Court nearest to the complainant's location.

Key strategies for successful mediation

- Remain impartial and focused on solving the problem.
- Look for areas where both sides agree.
- Listen actively and acknowledge what is being said.
- Recognise and understand emotions. Don't let emotional outbursts affect the mediation process.
- Be open to others' perceptions of the problem.
- Try to build rapport with all sides.
- Focus on possibilities, be flexible, and think laterally. With objections ask: 'Why not'?

3.5.2 Complaint management

Council officers, Police and other officers can provide an impartial and fair assessment of what level of noise is reasonable, taking into consideration the nature of the activity, the surrounding area and number of people likely to be affected.

Important steps that can contribute to resolving a noise problem include the following:

1. **Establish internal procedures** to receive and manage neighbourhood noise complaints in a consistent and transparent manner (see 'Components of a model complaints register' below).
2. **Act on the complaint as quickly as possible** to prevent the situation getting out of control. The complainant's level of tolerance may have already been lowered if a problem has been ongoing. This can make any subsequent improvement in noise unsatisfactory from the complainant's perspective.
3. **Determine whether the complaint is justified.** A site visit to witness the noise first hand is recommended to determine whether the complaint has been made on a reasonable basis. Factors that may need to be considered include the possibility that the complainant has:
 - become sensitised to the noise so that it causes more annoyance than would normally be the case. This can happen when the complainant feels that their complaints are not being treated seriously. It is important to recognise that this can occur and to be open to a complainant's views
 - a physical condition (e.g. tinnitus) which contributes to their perception of noise. The complainant may or may not be aware that the noise they hear is exacerbated by that condition.
4. **Explain to the complainant what council or the Police can do to address the noise problem** and check that the complainant has reasonable expectations about the likely result. For example, it is not usually reasonable to close a commercial activity that is otherwise operating legitimately because of noise issues. It may also not be possible or reasonable to expect absolute silence.
5. **Keep the complainant informed of progress and the action being taken** to resolve the problem. The officer also needs to give the complainant realistic expectations about the time it will take to resolve the problem. This may be within that day for a noisy party, or several months where extensive noise reduction work is required.
6. **Determine whether there is a history of noise complaints for the premises.** The complainant may be able to provide information about any previous action in regard to the same noise issue. It may also be helpful to check with other colleagues from council or the Police, as they may have had complaints about noise from the same premises. Often if noise occurs outside business hours, a council ranger or the Police may have visited the premises and given a warning or a Noise Abatement Direction.

Council officers should also be aware of activities or situations that may affect their own hearing. For example, driving on a freeway with the window partially down may cause a short-term temporal shift in the range of hearing. It will take a few minutes after arriving on site to return to normal. Exposure to loud noise (e.g. at an industrial site) before assessing a neighbourhood noise complaint could also affect an officer's perception of noise. Personal activities should also be considered (such as attending a loud concert), as these may affect an officer's hearing the next day. Officers routinely working with noise complaints or issues should consider regular hearing tests.

Components of a model complaint register

- The register should reflect the development of a standard procedure for dealing with complaints such as a set time period for a response. If a full response is not possible within the set time period an interim response could be given.
- The public part of a complaints register should be accessible on the website so that progress can be tracked by the complainant.
- The time/date of a complaint should be recorded that sets the time period provided for a response.
- The contact officer for the complaint.
- Information on what officers the complaint has been referred to and dates of referral.
- Action and resolution details and date completed.

A well constructed register would assist in:

- maintaining a consistent approach for similar complaints
- tracking complaints and measuring performance
- documenting complaint types and numbers
- providing an indication of local issues and where policies need review.

3.5.3 Warning of legal action

Non-regulatory methods should be considered as the first step in resolving a noise problem. Where non-regulatory approaches do not achieve an acceptable environmental outcome, or where the person making the noise is not willing to cooperate, or council would prefer to take stronger initial action, then regulatory tools remain an important option for resolving local noise problems. Where discussion and negotiation have been undertaken but have not resolved a problem, then a warning of legal action may sometimes be enough. An example is a letter advising of council's intention to take regulatory action against the person making the noise, if the problem is not remedied. Where this approach is taken, it is important that the warning can and will be implemented if the person making the noise decides not to heed the warning. A warning letter can also demonstrate that council has acted reasonably should legislative remedies ultimately be used, as it has given the person making the noise a chance to address the problem before legal options are implemented.

3.5.4 Education

Education of the community can be an important aspect of noise management to assist in avoiding or reducing noise conflicts. Providing written information that outlines council's requirements and/or relevant legislation can be a cost-effective means of educating the community. The EPA has a number of brochures (EPA 2012, 2013a, 2013b, 2013c & 2013d) that can be distributed by councils to the public. These can be viewed at www.epa.nsw.gov.au/noise/noise_brochures.htm.

Greater community understanding of an issue can help to promote tolerance of surrounding neighbourhood activities and an understanding of generally accepted activities and what can be done if a conflict arises. An education program could deal with a particular noise issue in the local area with written material provided directly to residents and made available at council offices or posted with other council correspondence (such as rates notices).

An education campaign could target:

- noise generators in the community to outline their responsibility to other members of the community
- existing or future noise receivers to explain the types of noise that may arise in the area and what level, duration and frequency of noise might be expected.

3.6 Case studies

Case study 1: Open-air concerts and public address systems

Last year council was inundated with complaints about noise from the annual community music festival. As in previous years, the organiser of this year's event had planned to have three music stages with musicians playing through the early hours of each morning over the three days of the festival.

To avoid a repeat of the previous year's complaints council had developed and released a *Management of Outdoor Entertainment Events Policy*. This policy specified that all events must finish at midnight, that the L_{Amax} noise level from the concert activities must not exceed 75 dB(A) at the nearest residential boundary and listed a range of management measures that the organisers should take to minimise the noise outside the venue. (Note: Council could have prescribed other noise levels that it considered appropriate for the occasion and for residents.)

This year Jill, council's Environmental Health Officer, attended meetings of the festival organising committee and provided advice to the organisers about sanitation, food handling and managing noise from the festival. The preparation of most aspects of the event was generally very good but Jill wanted to ensure that noise was managed better than in previous years and in a manner consistent with the new policy.

Jill considered two options available to council to require the concert operator to comply with council's policy. These were:

1. to include conditions in the development consent, or
2. to include conditions in the lease agreement. (As the concert was to be held in a council-owned park, council leased part of the park to the operator for the purpose of holding the event.)

The conditions included the following:

Specifying the acceptable noise limits as well as the operating times in advance of the event. It specified that the L_{Amax} noise level from the concert activities must not exceed 75 dB(A) at the nearest residential boundary, the location of which was also specified and a midnight finish time.

- Developing and implementing a noise management plan, in consultation with council. The noise management plan included:
 - siting the three stages to be as far away from residents as possible, and using the topography of the site and an old spectator stand at the football ground to provide some shielding
 - orienting stages and speakers away from residential areas
 - instructing sound engineers for each stage to keep the bass noise down
 - keeping the local community informed about the music festival operating times and providing them with a contact number for the event manager.



Concert noise can be reduced through thoughtful event planning.

Photo: S. Cottrell ©Botanic Gardens Trust

The community also had input into the noise management plan.

Noise mitigation measures for the PA system used for crowd control purposes and announcements included:

- only nominated people were permitted to use the PA system
- the system was not to be used for providing commentaries
- speakers were small low-power units (horn <20 cm across and amp <30 watts in preference to fewer but more powerful speakers)
- speakers were mounted at a downward 45 degree angle
- speakers were located as far down the poles as possible
- units were attached to a sound level limiter, so a maximum noise level could not be exceeded regardless of volume control or commentator's voice. This included removing the volume control after a suitable volume was preset.

What if ...

Council's other option was to issue a Noise Control Notice under s. 264 of the POEO Act specifying acceptable noise limits and operating times. However, Jill could not have required the development and implementation of a Noise Management Plan under a Noise Control Notice. Jill helped the organisers choose the orientation and location of the three main stages and the location of amplification equipment so that they were as far away from residential areas as possible.

Jill also participated in the sound check the day before the festival which involved playing music from each of the three stages and taking noise measurements at a number of nearby residential locations. This helped both the event organisers and the council to establish suitable volumes for the event. Following the sound check the event organisers were confident that the noise limits specified in the conditions could be met.

Noise monitoring by council officers during the event indicated that the Order had been complied with, and it was subsequently noted as finalised.

Additional information on open air events

How large concerts in Sydney are regulated by the EPA

Section 6 of the NSW *Protection of the Environment Operations Act 1997* specifies that:

- the EPA is the appropriate regulatory authority (ARA) for outdoor entertainment activities carried on by a council or a state authority, whether at premises occupied by the council or state authority or otherwise
- councils are the ARA for non-council bodies or non-state authorities (e.g. a private entrepreneur) that carry out outdoor entertainment activities on private land or land occupied by the council or on land operated by a state authority that is within the council's area. (This includes outdoor concerts with less than 200 people held at one of the seven high profile venues noted below).

Clause 90 of the Protection of the Environment Operations (General) Regulation 2009 makes the EPA the ARA for outdoor entertainment activities involving more than 200 people held at seven high profile state government owned/controlled venues within Sydney – no matter who is actually carrying out the activity (i.e. whether it is a council or state authority or a private entrepreneur). These venues are the:

- Royal Botanic Gardens and Domain
- Centennial Parklands and Moore Park
- Sydney Cricket Ground and Sydney Football Stadium (Aussie Stadium)
- Parramatta Stadium
- Darling Harbour
- Sydney Opera House.

These seven venues are required to have Noise Management Plans (NMPs) in place. These comprise three elements:

- Preventive management – details of mitigation of noise impact prior to the event such as stage orientation, barriers, sound limitation devices etc and effective community consultation before the event.
- Reactive management – noise monitoring in real time (travellers and fixed locations), use of trigger levels set below limits, modes of communication between monitors and operators, noise mitigation in real time, complaints handling in real time and communication modes between complaints handling and operators.
- Review – assessing the performance of:
 - community consultation (before/during /after)
 - monitoring in real time
 - mitigation,to inform the development and implementation of recommendations that will improve performance over time (continuous improvement).

Three of the venues specified in cl 90 of the POEO General Regulation have been issued with prevention notices containing conditions related to concerts etc. The conditions on these notices are site specific and reflect what is achievable in practice.

The overall approach is designed to achieve the best balance between the social and economic needs of the broader community, and the environmental impact on affected residents. Where they are in place, the prevention notices set the absolute maximum criteria allowable and the NMPs complement these notices to facilitate operation as far below the maximum criteria as possible.

In the example notices provided in Figures 3.2 and 3.3, Prevention Notice No 1 (Centennial Park and Moore Park) deals with quite different site characteristics compared with Prevention Notice No. 2 (Sydney Football Stadium and Sydney Cricket Ground) which is reflected in the differing conditions given for each Prevention Notice.

Figure 3.2: Summary of Prevention Notice No. 1 – Centennial Park and Moore Park Trust

All events	Monitoring to be undertaken within 1 metre of the boundary of any affected residential premise or sensitive receiver (hospitals, schools etc).
Event using sound amplification equipment with crowd capacity less than 1500 other than cinematic screenings and theatrical performances	A-weighted sound pressure level ($L_{A10,T}$) must not exceed ambient background level ($L_{A90,T}$).
Event using sound amplification equipment with crowd capacity greater than 1500 other than: <ul style="list-style-type: none"> musical concerts with a crowd capacity greater than 5000, or cinematic screenings and theatrical performances 	A-weighted sound pressure level ($L_{A10,T}$) must not exceed: <ul style="list-style-type: none"> 5 dB(A) above ambient background level ($L_{A90,T}$) between 10 am and 11 pm, and ambient background level ($L_{A90,T}$) at other times.
Musical concerts using sound amplification equipment with crowd capacity greater than 5000	<p>Maximum of 8 concerts per year.</p> <p>A series of musical concerts may be held over a maximum of 4 consecutive days.</p> <p>Each concert must be held between 10 am and 10.30 pm only. (Unless an event occurs beyond the control of the Trust and then a concert may continue to 11 pm.)</p> <p>Rehearsals for each concert audible beyond the park boundary must not exceed 4 hours and must be held between 10 am and 10 pm.</p> <p>Sound tests for each concert audible beyond the park boundary must be conducted on 1 day only, not exceed 1 hour and be held between 10 am and 8 pm.</p> <p>$L_{A \text{ Max}}$ must not exceed 65 dB(A).</p> <p>$L_C \text{ Max}$ must not exceed 85 dB(C).</p> <p>An exceedence of these noise limits during a single 5-minute period during the first 15 minutes of the performance of each new separate band or act will not be taken to be a breach.</p>
Cinematic screenings and theatrical performances using sound amplification equipment	<p>May be held during a maximum of 26 weeks in any calendar year.</p> <p>Maximum of 6 screening performance days per week.</p> <p>Each screening/performance must be held between 10 am and 11 pm.</p> <p>4 maximum levels at 4 different locations are required to be met – the highest of which is 55 dB(A).</p>
<p>Note: Due to the size of the parklands, it is possible for events to be orientated and located so they result in lower noise levels impacting upon neighbouring premises than events held at venues controlled by the other two notices. The distance from stages to neighbouring residents is generally around 500 to 600 metres.</p>	

Figure 3.3: Summary of Prevention Notice No. 2 – Sydney Cricket and Sports Ground Trust

All events	Monitoring to be undertaken within 1 metre of the boundary of most affected residential premises (these locations are specified on the Notices).
Both venues	Maximum of 4 concerts per calendar year at either the cricket ground or football stadium.
Both venues	<p>Concerts must only be held between 10 am and 10.30 pm and not be greater than 3 hours duration.</p> <p>Rehearsals for each concert must be held between 10 am and 7 pm and be kept to an absolute minimum.</p> <p>Sound tests for each concert must be held between 10 am and 7 pm and be kept to an absolute minimum.</p>
For the cricket ground	<p>$L_{A \text{ Max}}$ must not exceed 70 dB(A).</p> <p>$L_{C \text{ Max}}$ must not exceed 90 dB(C).</p>
For the football stadium	<p>$L_{A \text{ Max}}$ must not exceed 80 dB(A).</p> <p>$L_{C \text{ Max}}$ must not exceed 100 dB(C).</p>
<p>Notes:</p> <ol style="list-style-type: none"> 1. The precinct where the football stadium and cricket ground are located is historically a major noisy entertainment area (speedway events were held in this area in the past). However, the area is in close proximity to residential areas, particularly the football stadium. 2. The distance from the stage to neighbouring residents when events are held at the football stadium is around 50 to 100 metres. 3. This Notice requires justification to be provided to the EPA as to why an event needs to be held at the football stadium, for example, evidence of the unavailability of alternative suitable venues etc. 4. The maximum permitted noise levels, which are designed to enable a large concert to be just viable, have been set to prevent any unnecessarily excessive noise levels affecting residences. 	

Other conditions also apply on these notices which detail requirements regarding prior notification of residents and monitoring and reporting procedures etc. The complete notices may be viewed at: www.epa.nsw.gov.au/prpoeoapp/searchregister.aspx

There are no hard and fast rules to apply when developing noise limits for these types of events, and what is appropriate will depend upon the particular circumstances. Typically, unless the venue is very remote, it is not possible to establish noise limits that prevent annoyance at every residence. However, noise limits can prevent the noise levels from being any higher than necessary.

Once the other management strategies designed to minimise the noise impact, such as the points noted above, have been incorporated into a noise management plan, determine the noise level at the stage that would make the event viable, and the noise level at the most impacted residents. Council may require the proponent to provide these proposed noise levels. The reasonableness of these levels can be checked by, for example, obtaining key information from other regulatory notices and noise monitoring results for other similar events dealt with by the council or other councils and/or by seeking the advice of an acoustic consultant. The expected distance attenuation between the stage and residents can be checked by using the standard distance attenuation formula in Appendix 1 of this guide.

The impact on the residents is not just a function of the noise level but is also a function of, for example:

- the length of the event

- the commencement and finishing times
- the number of similar events held per year.

These can all be juggled and need to be considered collectively when establishing the noise limit. Therefore, the length of the event and commencement and finishing times etc that were originally proposed may need to be revisited.

The impact on residents needs to be weighed up against the cultural, social and economic needs/expectations of the broader community to determine if the venue is suitable and if the event should proceed.

Case study 2: Noise from a motor sport facility

Council received inquiries about a proposal to establish a motor racing facility, which would involve drag racing and circuit racing. Council advised that any proposal for such a facility would require a noise assessment predicting noise impact from the proposed development. Council further advised that the noise assessment should be undertaken in two stages. The first stage would focus on site planning, thereby providing input into the facility location, siting and orientation. The second stage would address operational noise impacts.

In this scenario the noise assessment should assess:

- the sound power level of the different types of racing vehicle
- the number and type of events planned for the facility (e.g. drag racing, motocross, circuit racing, speedway or go-karts)
- the number and location of racing cars on the circuit and in any pit or warm-up areas
- potential meteorological effects on noise propagation and impacts in the surrounding area (the *NSW Industrial Noise Policy* (EPA 2000) provides guidance on this aspect).

The noise assessment should also identify the vehicle numbers on the track and their configuration with the potential to cause maximum noise impact. Noise modelling that is applied to each proposal should be compared with actual measurements that would serve to validate the model for this use.

Council also asked that the noise assessment provide noise mitigation strategies for the facility as well as predicted noise level reductions. Council expected that such an assessment would discuss the feasibility of the following noise mitigation and management options.

On-site noise mitigation

- Orient the track to use existing topography to reduce noise at noise-sensitive receivers.
- Locate very noisy racing track types (e.g. drag racing) furthest from noise-sensitive receivers and orient them to minimise noise.
- Use earth mounds and barriers.

Noise source controls

- Use effective mufflers on racing vehicles and require all vehicles to meet Confederation of Australian Motor Sport noise specifications.
- Implement a program for testing the noise of racing vehicles to ensure they meet racing association noise limits.

Operational noise controls

- Restrict times for practice and race days.
- Use respite periods during the racing schedule of an event.
- Limit of the number and type of events.

Receiver noise controls

In extreme situations and as a last resort, council could consider attaching development consent conditions requiring the proponent to implement noise controls at receiver locations such as:

- noise insulation for nearby houses
- where noise impacts are totally unacceptable, and the facility continues to operate, the proponent offering to acquire nearby property.

Legal advice should be sought if these types of condition are proposed.

Operational noise management plan

In addition to implementing many of the noise mitigation strategies mentioned above, council decided to ask the motor racing organisation to develop an ongoing noise management plan for events at the proposed facility. This noise management plan was included as a development consent condition, providing clear requirements for noise from the site and enabling council to regulate the operation of the facility. The noise management plan identified the number of events that would be allowed to occur at the facility, the noise monitoring program and the operator's complaint management system.

The event schedule (Table 3.1) for the motor racing facility was based on achieving a balance between how loud different racing events were likely to be and how often they occur. In this way council felt there was some control over the amount of noise nearby residents would be exposed to.

Using this approach, council decided that the maximum number of events that would be permitted in any 12-month period would be 50 with noise of background plus 5 dB. Where some events were likely to be noisier than this, then the number of events would reduce according to a ratio shown in Figure 3.4. The graph allows for an event multiplication factor to be assigned where noise from the event exceeds background plus 5 dB(A). For example, an event that exceeded the background by 8 dB(A) would count as two events, as the multiplication factor from Figure 3.4 is 2. The determination of an equivalent number of events from the graph was a way of capping the total amount of noise that adjacent residents would be exposed to over a year.

Differences between impacts from new versus existing facilities

The community is generally more sensitive to a new source of noise (e.g. from a new sporting facility at a greenfield site) than from existing facilities at the same noise level. This means that the same noise impact on the community from a new facility compared with an existing facility would occur only if the activity levels at the new facility were lower. In this case the proposal is for a new development. Therefore the number of events allowed for this new facility may be less than council might have approved for an existing facility of comparable size and proximity to residences.

The noise assessment report provided details of the expected noise levels from each type of racing event and how much the background noise level was likely to be exceeded. The noise impacts of drag racing in particular appeared to contribute a disproportionate amount to the 50 equivalent events allowed. Council suggested that the event schedule for the coming year be amended to include one drag racing event each year instead of the two proposed. This meant that the whole event schedule would not exceed the maximum of 50 equivalent events over the year. The type and number of events were included in the noise management plan.

The assessment noted that most racing events were held between 9 am and 5 pm, and up to ten late-night events up to 10 pm would be held each year. These operating times were also included in the proponent's noise management plan.

Council decided that a condition of development consent would be:

that the type, timing and number of events would be as specified in the facility's operational noise management plan approved as part of the application, and that these could be varied only following agreement by council.

This condition provided certainty to the operator and the local community while allowing some flexibility.

For existing motor sport facilities, where council is the ARA, council could regulate the activity under the POEO Act using a Noise Control Notice or a Prevention Notice to limit times of operation, noise levels and the way the activity is carried out.

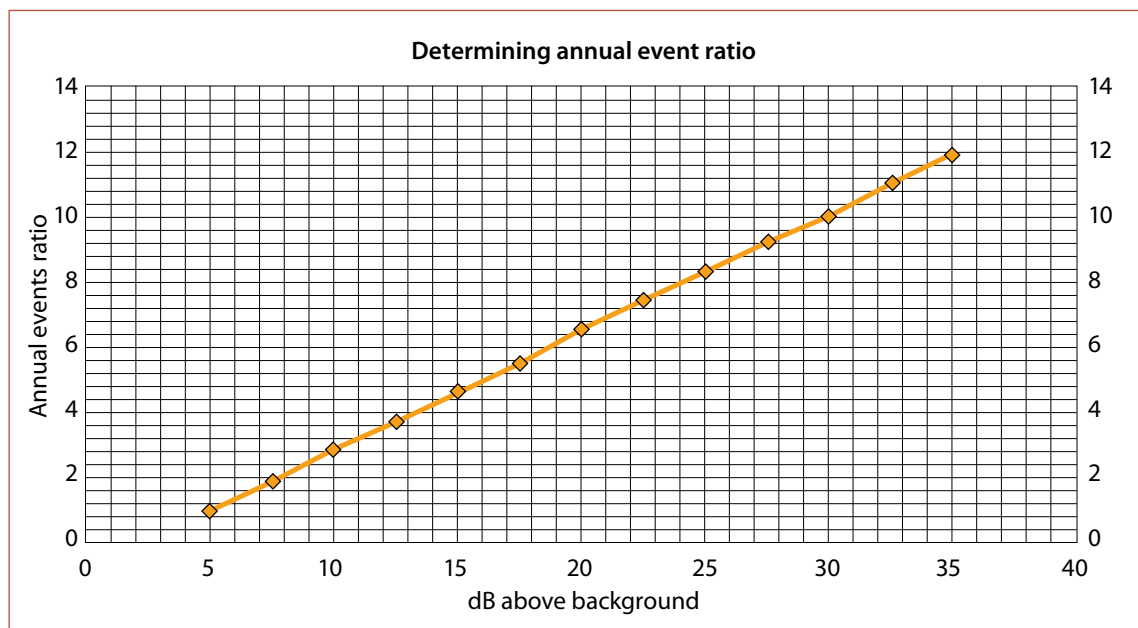
A similar approach, balancing noise level against noise exposure, can be taken for other event-based activities such as target shooting ranges and lawful sporting events at specific sites.

Table 3.1: Motor sport event schedule

Event description	Exceeds background by up to	Proposed no. of events x event multiplication ratio (from graph)	Equivalent no. of events	Amended equivalent events	Permitted no. of events
Super tourers	20 dB	3 x 6	18	18	3
Drag racing	30 dB	2 x 10	20	10	1
Vintage series	10 dB	3 x 3	9	9	3
250/500 cc motorcycles	18 dB	2 x 6	12	12	2
Proposed number of events				49	9
Total equivalent events allowed				50	

Note: The background noise level in this example is assessed in accordance with the *NSW Industrial Noise Policy* and the emergence above background noise should be assessed using an $L_{Aeq}(15min)$.

Figure 3.4: Graph for determining event multiplication ratio from noise level



Case study 3: Noise from garbage collection

Council received a complaint from residents about noise from garbage collections at the local supermarket in the early hours of the morning, usually about 2.30 am. Noise from the rubbish collection included squealing brakes, reversing alarm, hydraulic arms to lift the large rubbish bins, the compactor, and the impact of the empty bin hitting the ground.

The council officer investigating the complaint decided to contact the supermarket and find out which company collects the rubbish. It was established that the contractor was not collecting the rubbish on behalf of council. The officer also asked the supermarket manager why collections are scheduled for 2.30 am. The supermarket manager explained that the supermarket is open until midnight so rubbish collection needs to occur when there is little traffic to ensure the safety of customers and other motorists.

The manager told the council officer that the rubbish contractor was Ray's Rubbish Removals. The manager agreed to discuss the possibility of either earlier or later rubbish collections with the rubbish contractors.

The council officer also contacted Ray of Ray's Rubbish Removals and explained that a number of residents had made complaints about the noise of the collections. He asked whether collections could occur before 11 pm or after 6 am. Ray said he would see what he could do, but explained that the route was pre-arranged.

The council officer has a number of options for resolving this problem:

- Negotiating a change to the rubbish collection with both the supermarket manager and the rubbish contractor.

The council officer has asked the residents what times they would consider acceptable for rubbish collections at the supermarket. They indicated that collections before 10.00 pm or after 7.00 am would be more acceptable, especially if the truck were a bit quieter.

- Discussing options for better management of the rubbish collection services with the rubbish contractor and supermarket manager.

Improved management practices could include:

- relocating where the collection occurs
- building noise barriers for the collection area
- using up-to-date equipment that uses 'quieter' technology such as low-noise bin lifters
- maintaining rubbish trucks and braking materials to minimise or eliminate noise such as squeaky brakes
- educating drivers and collectors to be careful and to implement quiet work practices
- setting more appropriate times for the rubbish collection.

- Serving a Noise Control Notice or a Prevention Notice on the occupier of the premises (supermarket operator) or person carrying on the activity (Ray's Rubbish Removals). To issue a Prevention Notice the council officer would need to be satisfied that the garbage collection was being carried on in an environmentally unsatisfactory manner; that is, without taking such practicable means as may be necessary to prevent, control or minimise the emission of noise.
 - A Noise Control Notice would prohibit noise emissions from the rubbish collection activity when above a specified limit (when measured at a specified point) at certain times. This would require noise measurements to be taken when the rubbish was being collected.
 - A Prevention Notice would require certain action to be taken to ensure that the rubbish collection activity was carried out in an environmentally satisfactory manner. The Prevention Notice could restrict the operating hours for the rubbish collection at the site or could require relocation of collection areas.

- Discussing options for new contract specifications for garbage collection with the supermarket manager to avoid potential future noise problems.
 - The Noise Control Regulation requires mobile garbage compactors to be labelled, showing the maximum noise level of the compactor. This is intended to provide the purchaser with the choice of buying quieter rubbish trucks or incorporating one or more of the improved management practices listed above.

In this instance, discussions with the supermarket manager and rubbish collector led to an agreement to conduct collections outside the period of 10.00 pm to 7.00 am, and to consider whether the collection site could be changed. The rubbish collector agreed to talk to the drivers about keeping the noise to a minimum. The council officer advised the supermarket manager that he would prepare a Prevention Notice to formalise the new operating times and that he would notify the complainants of the outcome. They agreed that the situation would be reviewed in six months, or less if more complaints were received in the interim.

What if...

The garbage collection is by council's own contractor?

Noise caused by the normal domestic garbage collection service that council provides through the use of a contractor can be managed by council through the conditions written in to the garbage collection contract. Council can control noise in this way by requiring contractors to use best practice in collecting garbage with adherence to specific collection times. Complaints about noisy garbage collection should lead council to check that contract conditions are being observed.



Noise from garbage collection can often be reduced through better work practices.
Photo: Camden City Council

Case Study 4: Power tools – mediation backed up by legislation

The situation

Betty has a neighbour, Damon, who has incessantly used power tools in his house and garage for the last ten years. She asked council to regulate Damon's use of his noisy power tools but council is satisfied that the activities do not constitute a business and therefore do not require consent. Their use had been determined to be akin to a hobby and minor home renovations.

However, council in examining the case further determined that some of the works to the house did require consent. A DA was lodged by Damon. At this point Betty requested that council place unusual restrictions on the hours of construction, including a 6-month limit on the length of time the works could take to finish. In the consent council only placed the usual construction hour requirements, and no sunset clause on when the works must be completed.

Betty was concerned that Damon would now use the DA to justify another ten years of noisy works. She was also concerned that he would undertake works associated with the DA during normal construction hours, and then continue work up to the restricted hours in the regulation under the auspices of another project not requiring consent, that is, minor home renovation or hobby related works.



Noisy power tools need to be used so as not to annoy neighbours. Photo: EPA

The options for resolution

An authorised officer could make a careful and considered judgement about whether the power tool activities results in the generation of offensive noise in which case the provisions in the POEO Act could be used, for example, a prevention notice or noise control notice. The authorised officer would need to consider Damon's legitimate rights to renovate in accordance with the consent. A reasonable amount of time, consistent with standard building practice may need to be afforded before the noise would be considered offensive by a reasonable person. There are a couple of possible options that could be used to facilitate such an outcome:

- The council could use the POEO tools to remedy the situation based on a 'reasonable person' scenario. In these circumstances, Damon would be afforded reasonable time to execute the consented building works. After this time a POEO tool could be used to limit the time that power tools could be used on the premises. The 'reasonable time' would need to be negotiated, however council would be well positioned to gauge what is reasonable in the context of residential building works.
- Betty could determine whether she has third party appeal rights on the DA. If so she could appeal to the Land and Environment Court, a merits based forum, to seek to have a sunset clause inserted in the consent. Expert planning advice would be needed.
- Betty could seek a Noise Abatement Order from a local court. The court would likely take into consideration Damon's legitimate right to renovate, however the court would consider the reasonableness of the duration of time taken.

The outcome

With these options on the table council organised a mediation session between Damon and Betty. Through mediation, it was pointed out to Damon, that while he had legitimate rights to carry on the activity, Betty also had legitimate rights to enjoy a reasonable level of amenity, and that a reasonable compromise was needed. Damon recognised that there was a limit to what could be considered as reasonable. The mediation also made Damon aware that Betty had some recourse if his action was seen as unreasonable.

The agreement that was reached through mediation was that:

- the use of power tools would be restricted to an assigned period of 60 minutes in the morning and again in the afternoon
- Damon would let Betty know with reasonable notice when he needed to do noisier work such as the removal of a concrete slab
- quieter tools would be used such as an electric screwdriver instead of a hammer
- the project would be completed within 3 months
- prefabrication works would be done off site
- Damon would consult with Betty once a week on progress and respond to any reasonable concerns she may have.

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Relevant websites

Department of Planning and Infrastructure

Making LEPs: maps and Guideline Register

[www.planning.nsw.gov.au/LocalEnvironmentalPlans/MakingLEPsMapsandGuidelines/
tabid/252/language/en-AU/Default.aspx](http://www.planning.nsw.gov.au/LocalEnvironmentalPlans/MakingLEPsMapsandGuidelines/tabid/252/language/en-AU/Default.aspx)

Register of Development Assessment Guidelines

www.planning.nsw.gov.au/register-of-development-assessment-guidelines

Tomago Road Industrial Area (Redlake Enterprises) – State significant site

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=2186

Southern Distribution Hub

<http://site.sdh.net.au/>

Legislation

State Environmental Planning Policy (Infrastructure) 2007

www.legislation.nsw.gov.au/viewtop/inforce/epi+641+2007+cd+0+N

Noise Guide for Local Government

Part 4 Regulating noise impacts



Part 1 Framework for noise control

Part 2 Noise assessment

Part 3 Noise management principles

Part 4 Regulating noise impacts

Part 5 Appendixes

Part 6 Glossary, Further reading and Index

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Part 4 Regulating noise impacts

The key regulatory tools for managing local environmental noise impacts are provided by the ***Protection of the Environment Operations Act 1997*** (POEO Act) and the **POEO (Noise Control) Regulation 2008**. A range of notices, directions and orders in relation to noise can be issued under the POEO Act. The regulation describes offences and outlines penalties for those offences.

Other legislation that can be used to manage specific noisy situations includes the:

- ***Environmental Planning and Assessment Act 1979 (and Regulation 2000)***, which provides for orders for breach of development consent or development consent conditions with a Penalty Notice option
- ***Companion Animals Act 1998***, which provides for Nuisance Dog Orders (ss. 21 & 21A) and Nuisance Cat Orders (ss. 31 & 31A) requiring the owner to prevent nuisance behaviour for six months
- ***Liquor Act 2007***, which provides for noise control of licensed premises
- ***Local Government Act 1993 (s. 124) Order No 18***, which requires an occupier of a premises to keep animals, including birds, in an appropriate manner specified in the order
- ***Local Government Act 1993 (s. 125)***, which enables a council to abate a public nuisance, or order a person responsible for a public nuisance to abate it
- ***Strata Schemes Management Act 1996***, which provides for various notices, orders for breaches of strata by-laws, and disputes between neighbours in strata title schemes. (See Part 1.4.2)

This Guide focuses on the use of powers under the POEO legislation. The Division of Local Government, Department of Premier and Cabinet may give advice on the appropriate use of other powers.

The decision regarding which of these instruments to use will depend on the circumstances of each noise problem and on the judgement of the officer. It may be helpful for council officers to discuss the statutory options available for addressing noise with a senior manager or council's legal officer.

4.1 Deciding on a course of action

There are many factors to consider when deciding on the best course of action in response to a specific noise problem.

Issuing a Penalty Notice tends to provide more streamlined enforcement procedures for many common noise problems where a fine may provide an adequate deterrent. For example, the Noise Control Regulation requires that a motor vehicle not be used in any place, other than a road, in a manner that results in offensive noise (cl 13). If the use of trail bikes on private land was emitting offensive noise and a council officer decided to enforce compliance with the regulation, then a Penalty Notice could be issued immediately on a single site visit by an enforcement officer.

Which notice or direction to use?

Things to consider when choosing which notice or direction to use:

- Is council the ARA, and is the investigating officer an authorised officer or an enforcement officer?
- If a Penalty Notice is to be issued by an officer, is that officer an enforcement officer who has powers to issue Penalty Notices for that offence?
- Will the fine from a Penalty Notice prevent the noise from continuing?
- Can the problem be easily remedied?
For example, reducing the volume on a stereo, or stopping the use of trail bikes.
- Is work required to reduce noise?
For example, insulation of a noisy pool pump.
- Does council have the expertise and equipment to take noise measurements?
- Do noise measurements need to be taken or can the officer easily assess the noise as being offensive?
- Is it a complex noise problem? For example, are there several different noise sources on a site?
- Is it possible to set an achievable noise level that should be met?
- Is it more appropriate to require best management practices to be adopted to minimise noise?
- How will council determine compliance with any notice served?
- Does the ARA have enough evidence to act on and to defend any appeal of a notice in court?

If an officer decided to issue a Noise Abatement Direction under the POEO Act, then at least two assessments of the noise are normally needed. The first is to assess whether offensive noise is or was being made. A subsequent assessment would be required to determine whether the direction was being complied with. A Penalty Notice could be issued if offensive noise continued to be made within 28 days in breach of the direction.

There may be situations where the regulation has been applied, but where the problem has escalated or is ongoing. For example, if the trail bikes continued to be used on the private property, despite warnings and Penalty Notices, it may be appropriate for an officer to consider the other regulatory tools provided by the POEO Act. A Prevention Notice or a Noise Control Notice could be served on the trail bike rider or the occupier of the land requiring certain action to be taken or setting a noise limit that must not be exceeded.

4.1.1 When notices and directions take effect

The POEO Act provides that Prevention Notices, Noise Control Notices and Noise Abatement Directions can take effect immediately. The reasonableness of when a Noise Control Notice and Prevention Notice takes effect should be considered to ensure that the process meets the requirements of natural justice.

Prior to amendments made to the POEO Act in 2005, a Noise Control Notice and Prevention Notice did not take effect during the appeal period. Therefore issuing of a Noise Abatement Direction in combination with the notice was considered useful to cover the appeal period in situations where a noisemaker continued to make offensive noise during that period.

4.1.2 Animal noise

As there are a range of possible enforcement options available to control noise from animals, it is recommended that individual councils develop and adopt internal procedural guidelines for dealing with noise complaints relating to animals. This allows all complaints relating to a particular animal noise to be treated consistently within local communities.

Councils should also ensure that they have an appropriate standard of evidence to prove a case in court, if required. For example, a council may ask the complainant to keep a diary noting when a dog is barking or council staff may visit a property and collect evidence such as statements from neighbours and/or the dog's owner.

When assessing the available options it is important to remember that each enforcement action has a different cost implication for both council and the person affected.

When choosing to issue an order under the *Companion Animals Act 1998* or *Local Government Act 1993*, it will be necessary to first give notice to the owner of the animal that is causing noise impacts and request that they take action to mitigate the noise within a particular time period specified by legislation. The notice should also outline council's intention to give the order on a specified date, the terms of the proposed order and the owner's right to make representations to the council as to why the order should not be given. It is recommended that the specific provisions in the relevant Acts be referred to for detail prior to issuing any orders.

Regulatory options for dealing with animal noise

- The *Companion Animals Act 1998* provides for the service of orders to control nuisance dogs and cats (ss. 21 & 31). The Act assists by defining the characteristics of noise from the animal that would be regarded as a nuisance, including that it unreasonably interferes with a person's 'peace, comfort or convenience'.
- The POEO Act allows for the use of Noise Control Notices and Prevention Notices to control noise from animals.

Note: the definition of 'activity' under the POEO Act includes the keeping of an animal. Clause 103 of the POEO (General) Regulation 2009 provides a reduced appeal period of seven days for Noise Control Notices relating to the keeping of an animal.

While councils have powers under ss. 21 & 31 of the *Companion Animals Act* and limited powers under s. 124 Order 18 of the *Local Government Act* to control nuisances from animal noise, councils should consider utilising their powers under the POEO Act to control animal noise problems as the POEO Act may be more suited to addressing a range of animal noise problems.

Using a Prevention Notice to manage animal noise

The ARA may issue a Prevention Notice where the ARA 'reasonably suspects' offensive noise has occurred or is occurring. When collecting evidence the council may, for example, use the steps outlined in the case study presented below.

A Prevention Notice needs to specify what actions are required to ensure that the activity is carried out in an environmentally satisfactory manner. The brochure, *Dealing with Barking Dogs* (EPA 2012a), includes some examples of action that may be required. For example, the owner must take action such as, but not limited to, the following:

- provide regular food and water, sufficient space and freedom, adequate shelter and appropriate exercise
- cover any direct line of sight between the area used by the dog and other areas that are not on the property and that are used by children and other animals
- provide noise insulation to the kennel
- take the dog to a recognised animal trainer to deal with barking issues
- have the animal checked by a vet to see if it is sick.

If suitable measures to control the noise are not apparent, the Prevention Notice can require the owner to prepare and carry out of a plan of action to control, prevent or minimise offensive noise. The Prevention Notice needs to state the date by when any action required is to be implemented or completed.

An officer may be confident that the owner is capable of developing and implementing an appropriate action plan and it is unnecessary for the officer to issue a notice requiring specific actions. On the other hand, the officer may be very experienced and may decide that since the owner has a limited understanding of the issue it would be very difficult to enforce requirements that are not specific. In this case, the officer may consider that the most efficient and effective approach would be to issue a notice requiring specific actions. Alternatively, an officer may not know exactly what the issue is but may consider that providing guidance on what to do would assist the owner, as the owner has a limited understanding of the issues. In this case, the officer could include a covering letter with guidance and references to other material such as the Barking Dogs brochure (EPA 2012a) as examples on how control the noise.

Case Study 1: Noise from a repeatedly barking dog

Council had received several calls from residents complaining about a barking dog kept at a residence on Kent Road. Angus, the council officer involved, had asked each of the two complainants to keep a brief diary for the next two weeks of the times and duration when they were annoyed by the noise.

One of the complainants, Mrs Green, told Angus that the dog only tended to bark while the owner was at work during the day. Mrs Green said that the dog owner had been told about the dog barking when they were absent but didn't accept that it was a real problem.

After the two-week diary period Angus phoned Mrs Green to confirm whether the dog's barking was still a problem. Mrs Green confirmed this, saying that the dog barked every day, sometimes continuously for up to half an hour at a time and often several times a day. Angus arranged to visit her house the next day in the hope of witnessing the dog barking and to see the noise diary that Mrs Green had kept. Angus did likewise for the second complainant.

The next day when Angus arrived at Mrs Green's residence he clearly heard a dog barking before entering the premises. On entering Mrs Green's house he noted that the noise was clearly audible in the main living area and several other rooms of the house. Angus entered the backyard of the complainant's house, where the barking was loudest, and clearly established the neighbouring property as where the noise was coming from. Angus collected Mrs Green's diary, which reflected the barking episodes she had described on the phone. The second complainant's diary showed a similar record of barking episodes which corresponded with Mrs Green's diary except for gaps where either of the complainants had been absent from their property.

Angus had established that the animal noise was a problem and was satisfied that the dog was regularly barking for extended periods when the owner was away from the premises.

Angus went to the front door of the Smyth residence, where the dog lived, and confirmed that no one was currently home. When back at the office he was able to leave an answering machine message asking Mrs Smyth to contact him. Mrs Smyth called Angus two days later, and he advised her that he had received complaints about her dog barking during the day when she was absent and that he had verified that the dog was barking on the day he investigated the complaints. He explained that the barking was clearly causing a nuisance and that it needed to cease. He also explained that as a dog owner she had an obligation to prevent her animal causing a nuisance.

Mrs Smyth asked how she was supposed to stop the dog barking. Angus replied that she would need to investigate the options, including animal behaviour training, and that a veterinarian should be able to provide some information. He advised Mrs Smyth that the *Companion Animals Act 1998* empowered council to issue a Nuisance Dog Order on the owner of a dog, requiring the owner to prevent the behaviour that was causing the nuisance, which in this case was the continual barking of the dog. He explained that Orders under s. 21 of the Act are in force for six months and that failure to comply with an Order could result in a fine of up to \$880 for a first offence and up to \$1650 for subsequent offences. Angus explained that before council could issue the Nuisance Dog Order, the Act required that council must first give notice to the dog owner of council's intention to issue the order. The 'notice of intention' to give the order gives the owner 7 days to object to the proposed order.

He was careful to explain that the order would be to stop the habitual nuisance barking and would not be breached by the occasional bark. Mrs Smyth agreed to look into her options. Angus confirmed that he would be issuing the notice of intent.

That evening Mrs Smyth searched the internet and found some possible reasons, including boredom and lack of exercise, why her dog might bark when she was away. Mrs Smyth had been very busy with work lately and resolved that she would make sure that she walked the dog every morning, which was something she had recently neglected to do. She also decided that she would buy him some toys to play with in the backyard and try leaving a bone for him to chew throughout the day.

Mrs Smyth implemented these changes promptly, and during the week she asked her neighbours whether her dog had been barking as much. Mrs Green was happy to say that there had been noticeably less barking.

Angus followed up the progress made with Mrs Smyth in the following week. He also spoke to Mrs Green and the other complainant. He considered whether to go ahead with issuing the Order under the *Companion Animals Act*. As Angus believed the animal's barking still met the definition of nuisance dog under s. 21 of the Act, and the fact that Mrs Smyth did not object to the order, he decided that issuing the order was still the best course of action, even though it may not need to be enforced.

Note: The Division of Local Government, Department of Premier and Cabinet website (www.dlg.nsw.gov.au) provides further information on the provisions of the *Companion Animals Act* and advice on issuing orders under the Act.

What if ...

What if Angus thought about issuing a Prevention Notice, which would have allowed him to specify actions to be carried out? For example, if the dog were barking at passing pedestrians or traffic, a condition could specify that the owner investigate ways of blocking the dog's line of sight from the backyard to the street. In the end, Angus decided that in this case he could make such suggestions verbally if necessary, and that an Order under the *Companion Animals Act* was preferable because it was specifically designed for the situation.

Managing barking dog complaints – Ballina Council's approach

Like for most councils, barking dogs have always been the most commonly complained noise issue in Ballina Shire. However, due to council implementing a proactive mediation process, complaints about barking dogs have fallen from 137 in 2005 to 26 in 2008. The reduction in barking dog complaints explains the overall decrease in noise complaints shown in the Table 4.1.

Table 4.1: Ballina Council annual complaint numbers

Complaint	2005	2006	2007	2008
Total noise complaints	218	192	107	113
Noisy dog complaints	137	No data	No data	26
Total ¹	325	285	177	261
Noise as a percentage of total complaints	67%	67%	60%	43%

¹ Total complaints includes noise, air and water pollution.

The process that council has introduced involves distribution of a barking dog information booklet to all complainants. This booklet asks complainants to complete a barking dog information sheet (which details the incidents of barking), and then to give it to the neighbour who owns the dog, along with the information sheets, *Information for dog owner* and *Barking prevention and ways to stop nuisance barking* (Ballina Shire Council 2006). The information sheets indicate the steps to be followed by the complainant but encourages the complainant to discuss the matter with the dog owner before any other action is contemplated. Council sees that the information in the booklet can form the basis of a dialogue between neighbours. Only if these step fail does council suggest that council could then become involved.

The steps to follow are:

- completion of the 'Barking Dog Diary' and information sheets
- forwarding to council the diary and completed information sheets.

Council's letter to complainants includes the following proviso:

If you and other residents affected desire that an order be made (and enforced) under the Companion Animals Act 1998 you and the other residents will need to be prepared to assist the council in the following ways:

- keep accurate records of when the persistent barking incidents occur when called upon to do so (a barking dog diary)
- provide other supporting evidence and records as may be appropriate
- provide affidavits and, if necessary, be prepared to act as witness in a court of law should that become necessary.

If requesting further action be taken, council will require written confirmation that you are prepared to provide all of the above assistance. It will also need written advice from other affected residents that they also are prepared to assist, inclusive of being a witness for the council in court.

In council's correspondence to a single complainant (where council did not have independent evidence and other neighbours were not prepared to support the complainant) council's solicitor advised:

... taking action under the Companion Animals Act 1998, the standard of proof for a nuisance dog order is the criminal standard of 'beyond reasonable doubt'. Having assessed the evidence available, it is our considered opinion that council would be unable to meet the standard of proof, given that there are no further independent witnesses and the fact that the other close neighbour has not complained to council.

The barking dog information booklet is on Ballina Council's website at www.ballina.nsw.gov.au/cmst/ballina004/view_doc.asp?id=606&cat=225

4.2 The Protection of the Environment Operations Act 1997

Table 4.2 summarises enforcement options available under the POEO Act. This may help in deciding which instrument is most appropriate given the specific circumstances of the noise problem. The following subsections detail each relevant enforcement option available under the POEO Act.

These are:

- 4.2.1 Noise Control Notices (POEO Act ss. 263–267B)
- 4.2.2 Noise Abatement Directions (POEO Act ss. 275–279)
- 4.2.3 Noise Abatement Orders (POEO Act ss. 268–274)
- 4.2.4 Prevention Notices (POEO Act ss. 95–100)
- 4.2.5 Compliance Cost Notices (POEO Act s. 104(3) and 104(4))
- 4.2.6 Noise pollution from operating plant and dealing with materials (POEO Act ss. 139–140)

Notes:

1. *Maintaining a Public Register* — Part 9.5 of the POEO Act requires each council, as a regulatory authority, to maintain a public register with details of instruments the council issues under the POEO Act including each Noise Control Notice, Prevention Notice and Compliance Cost Notice.
2. Notices, Directions and Orders under the POEO Act and sections 130 – 140 of the POEO Act relate to the ‘occupier’ of the premise causing the noise. The POEO Act Dictionary notes that ‘occupier of premises means the person who has the management or control of the premises’. Where the premise is tenanted, the occupier of the premises may be the tenant or the owner of the premises.

4.2.1 Noise Control Notices

A Noise Control Notice is used to prohibit an activity or the use of equipment from emitting noise above a specified noise level (POEO Act ss. 263–267B).

Scope

A Noise Control Notice prohibits noise from an activity or a piece of equipment from being emitted above a specified level when measured at a specified point. A Noise Control Notice can be applied to a wide range of premises, including industrial, commercial and residential sites.

The notice must specify the:

- acceptable noise level
- measurement location(s)
- days and times when noise levels apply
- activity or article that is to be controlled.

Failure to provide an appropriate description of the noise source or measurement location may make the notice difficult to enforce. If the notice does not specify the hours during which the noise limit applies, then the noise limit applies to the whole 24-hour period (POEO Act s. 264).

Limitations

A Noise Control Notice cannot require or specify works, for example, the preparation of an acoustic report on attenuation. In such instances a Prevention Notice is more appropriate.

Using a Noise Control Notice

A Noise Control Notice may be useful when a problem requires work to reduce noise, and where an acceptable noise level can be specified. A Noise Control Notice can also be used before an event occurs by setting an acceptable noise level in advance of when an activity will occur (e.g. a motor sport event or an outdoor concert). A Noise Control Notice remains in force until the ARA revokes it.



Measuring noise at a construction site to prepare a Noise Control Notice. Photo EPA

Specifying a noise level

The noise limit prescribed on a Noise Control Notice, may be based on the concept of intrusive noise (refer to Part 2.2.1. The measuring point selected needs to be representative of the area to be protected. Part 2 provides advice on how to measure noise.

A Noise Control Notice must specify:

1. a noise limit that the activity or equipment must not exceed. When deciding what noise limit to set, it is important that the limit be realistic and achievable. Different noise limits may be set for different periods, for example you might set a lower noise limit at night. Don't forget to attach an appropriate noise descriptor and measurement period to the set noise limit (e.g. L_{Aeq} 15 min). It is better to set an actual noise limit rather than prescribe a level above the background noise level. In the latter case, variations in the background noise level can cause difficulty in proving non-compliance.
2. the location where the specified noise limit(s) must be measured. This is usually at the nearest residential boundary, or if the boundary is a long way from a dwelling, such as in rural areas, at 30 metres from the residence. At night, noise can be assessed at 1 metre from a bedroom window to assess the potential for sleep disturbance. However, it is important to ensure that the measurement location is accessible to whoever receives the notice so they or the issuing officer can check compliance. Where access to check compliance is a problem, a more accessible location to measure compliance can be specified, and the noise level can be adjusted accordingly.
3. the times and/or days when the noise limit(s) applies. If none are specified then the noise limit applies at all times.
4. the noisy activity or article that must be controlled.

A Noise Control Notice must be issued in writing (POEO Act s. 264). A template for a Noise Control Notice is available in the *Guide to Notices* at www.epa.nsw.gov.au/resources/licensing/09387noticesguide.pdf

Table 4.2: Summary of statutory instruments for controlling noise under the POEO Act

For use by councils						
Notice or instrument	Precondition	When to use	Example	Appeal period & time in effect	Maximum penalty for prosecution	Penalty Notice fine
Noise Control Notice (POEO Act s. 264)	Need to measure noise and establish an acceptable noise level for the article or activity.	Used to specify noise level and measurement point in a formal way.	Noise levels from the pump must not exceed 45 dB(A) Leq 15 min at any time between 7 am and 10 pm on any day when measured at the northern boundary of 45 Smith St.	Notice can take effect immediately or on a later date as specified in the notice. Remains in force until revoked or varied by the ARA. A person served with a notice may, within 21 days of being served (or 7 days for noise from animals), appeal to the Land and Environment Court. The lodging of an appeal will not delay the commencement of the notice unless the Land and Environment Court directs otherwise.	Failure to comply with notice: Corporations \$60,000, and for each day offence continues \$6,000 Individuals \$30,000, and for each day offence continues \$600 (POEO Act s. 265)	Failure to comply with notice: Corporation \$400 Individual \$200
Prevention Notices (POEO Act s. 96)	Activity is being carried out in an environmentally unsatisfactory manner as defined by s. 95.	Action specified in the notice must be undertaken. (This notice can also address other pollution or waste problems.)	Prepare, by a certain date, an action plan to reduce noise from the site and submit it to the ARA.	Notice can take effect immediately or on a later date as specified in the notice. Remains in force until revoked or varied by the ARA. A person served with a notice may, within 21 days of being served, appeal to the Land and Environment Court. The lodging of an appeal will not delay the commencement of the notice unless the Land and Environment Court directs otherwise.	Failure to comply with notice: Corporation \$1,000,000, and for each day offence continues \$120,000 Individual \$250,000, and for each day offence continues \$60,000 (POEO Act s. 97)	Failure to comply with notice: Corporation \$1500 Individual \$750 Failure to pay admin. fee: Corporation \$1000 Individual \$500
Compliance Cost Notice (POEO Act ss. 104 & 267B)	Council incurs costs in ensuring compliance with a Prevention Notice or Noise Control Notice.	Provides for recovery of compliance costs, including monitoring.	Pay \$100, being reasonable costs incurred by council in taking listed steps to monitor compliance with a Prevention Notice.	Costs must be paid by due date in notice.	Legal action to recover amount owing.	N/A

For use by council officers and Police officers

Penalty Notice (POEO Act s. 224)	An offence against the POEO Act or the Noise Control Regulation for which POEO General Regulation says council officers and Police can issue Penalty Notices.	In some cases can be used to fine offender on the spot. In some cases can be used after offender fails to heed a warning.	Equipment used contrary to Noise Abatement Direction.	Penalty must be paid within 28 days of being served unless notice revoked or offender elects to go to court and is prosecuted.	Various	Various
Noise Abatement Direction (POEO Act s. 276)	Offensive noise is occurring or has occurred within the last seven days.	Quick response to temporary offensive noise.	Cease making offensive noise from stereo system.	Remains in force for up to 28 days. Can be revoked. No appeal	30 penalty units ¹ (POEO Act s. 277).	Corporation \$400 Individual \$200

For use by individuals

Noise Abatement Order (POEO Act s. 268)	An occupier of premises is affected by offensive noise.	Allows residents to seek intervention by Local Court (magistrate) without reference to Police or council.	Magistrate satisfied (on balance of probabilities) that offensive noise is being emitted. Order issued to person making the noise directing that offensive noise must not be emitted.	In force immediately or at the time specified in the Order. Lasts until revoked by the Local Court. Option of appeal to Land and Environment Court within 21 days of order being made. The lodging of an appeal will not delay the commencement of the notice unless the Land and Environment Court directs otherwise.	30 penalty units ¹ (POEO Act s. 269).	No provision for Penalty Notice.
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1. Section 17 of the *Crimes (Sentencing Procedure) Act 1999* provides that a penalty unit is \$110.

Power to issue a Noise Control Notice

An ARA can issue a notice to:

- the occupier of the premises concerned, or
- the person carrying on the activity, or operating the article, or
- the person proposing to carry on the activity or operate the article (POEO Act s. 264).

Councils can issue Noise Control Notices for activities for which they are the ARA under the POEO Act. RMS can issue Noise Control Notices in relation to vessels in navigable waters and premises used in conjunction with vessels and adjacent to, or partly or wholly over, navigable waters (POEO Act s. 263).

Police **do not** have the power to issue Noise Control Notices.

Appeals and revocation

A Noise Control Notice can be appealed to the Land and Environment Court within 21 days of being served (POEO Act s. 290). Where the notice relates to the keeping of an animal the appeal period is within seven days of the notice being served (cl 103, POEO General Regulation).

A Noise Control Notice can take effect immediately or on a later date as the notice may specify. The lodging of an appeal will not delay the commencement of the notice unless the Land and Environment Court directs otherwise. If the Court directs a delay, the notice will take effect only after the delay date, or when the Court confirms the notice, or if the appeal is withdrawn (POEO Act s. 267).

Offence

It is an offence to contravene a Noise Control Notice. An offence occurs if the activity or article emits noise above the noise limit specified in the notice during the relevant times or days. However, this does not apply where the noise cannot be detected outside the premises without the aid of an instrument (POEO Act s. 265). This means that any noise above the specified level must also be audible.

The ARA may require the person concerned to pay for all or any reasonable costs and expenses it incurred in monitoring and ensuring compliance with the notice (see section below).

Penalties

A breach of a Noise Control Notice can be prosecuted in the Land and Environment Court with a maximum penalty of \$60,000 for a corporation and \$30,000 for an individual. Daily penalties also apply for each day the offence continues. A maximum penalty of \$22,000 can be issued in the Local Court for breach of a notice.

Alternatively, an enforcement officer can issue a Penalty Notice for a breach of a Noise Control Notice. This provides for fines of \$200 for an individual and \$400 for a corporation, which can be issued 'on the spot' where this is practicable (POEO General Regulation). Under s. 694 of the Local Government Act, councils receive the bulk of any fines imposed by the court or by a Penalty Notice.

Administrative fee for a Noise Control Notice

Cost recovery options for a Noise Control Notice include an administrative fee for serving the notice and a separate Compliance Cost Notice for monitoring or ensuring compliance with the notice.

The mandatory administrative fee of \$466 is intended to cover the costs of preparing and giving a Noise Control Notice (POEO Act s. 267A). The fee must be paid within 30 days of receiving the notice. Where the Noise Control Notice is appealed, payment of the fee is suspended until the court has decided the appeal. The administration fee is prescribed by cl 99 of the POEO General Regulation.

Appropriate regulatory authorities have discretionary power to waive the administration fee or to extend the period for payment (POEO Act s. 267A).

Power to issue a Compliance Cost Notice

A Compliance Cost Notice can be served to recover the costs incurred by the ARA for monitoring and ensuring compliance with a Noise Control Notice (POEO Act s. 267B). This may include such things as travel to the site to do follow-up inspections and any measurements an officer may take to ensure that the conditions of the notice are being complied with. It is issued by the ARA to the person who was issued with the Noise Control Notice.

The notice does not include the cost of preparing and issuing a Noise Control Notice, which is covered by the administrative fee described in the previous section.

The Compliance Cost Notice should specify a time for payment. The notice should also indicate that if the payment is not received by the specified date then the ARA may take steps to recover the unpaid amount. The ARA may recover any unpaid amounts specified in the notice in a court. There is no right of appeal under the POEO Act.

Case study 2: Using a Noise Control Notice

Noise from a commercial premises affecting residents

Wylawong Council received a complaint from a resident about noise from the exhaust fan at the Happy Tucker Takeaway. The takeaway operates from 11 am until 1 am, which is consistent with the development consent for the premises. The neighbour has told council that it is the noise of the exhaust fan operating at night that is the main problem.

Helen, the council Environmental Health Officer (EHO), knew that council was the ARA for the premises, even though there had never been any previous problems with the Happy Tucker Takeaway. She visited the site during the day and could see that the exhaust system was very old and sounded pretty loud. The ducting was loose-fitting and rattled, while the exhaust fan had a distinctive whine and was also very noisy. She decided that she needed to measure the noise from the exhaust system. She thought a Noise Control Notice would probably be the most appropriate instrument to use in this situation, as there is only one noise source. There was certainly work that could be done to reduce noise, and it was reasonable to set an acceptable noise limit that needed to be met.

Helen measured the noise from the takeaway shop's exhaust system during the day, during her initial visit and also late at night, just after midnight, as the complainant had identified night time operation as a particular problem. Helen also took background noise measurements ($L_{A90, 15 \text{ min}}$) in the morning just before the exhaust fan was turned on and late at night just after the fan was turned off.

Helen applied an intrusive noise criteria (background plus 5 dB(A) — see subsection 2.2.1 Intrusive noise). She compared the intrusive noise criteria with her readings of the exhaust system operating. Helen's results are recorded in Table 4.3.

Clearly, noise from the exhaust system was intrusive during the night and marginal during the day. The whine from the fan could also have justified a tonal adjustment to the measured noise levels (see correction factors in Appendix 1), but Helen decided that if the exhaust system was properly repaired the whine would also be fixed. Helen decided that she would include a note regarding tonality in the notice.

Table 4.3: Noise measurement results — Happy Tucker Takeaway exhaust system

	Background noise level (without exhaust system)	Noise limit on notice (B/g +5 dB(A))	Noise from exhaust system	Reduction required
Day (11.00 am–10.00 pm)	47 dB(A) L _{A90} 15 min	52 dB(A) L _{Aeq} 15 min	55 dB(A) L _{Aeq} 15 min	3 dB
Night (10.00 pm–1.00 am)	41 dB(A) L _{A90} 15 min	46 dB(A) L _{Aeq} 15 min	54 dB(A) L _{Aeq} 15 min	8 dB

The Noise Control Notice she prepared required that:

- noise from the exhaust system at the premises, including ducting and fan, must not exceed the following noise limits when measured at a point on the rear boundary with 15 Currajong Street and 2 metres from the northern boundary:
 - during daytime (7.00 am – 10.00 pm) 52 dB(A) L_{Aeq} 15 min
 - during night time (10.00 pm – 7.00 am) 46 dB(A) L_{Aeq} 15 min

Note: When measuring the noise level for compliance purposes, corrections may need to be added to the measured noise level if the noise contains dominant tonal, low-frequency, impulsive or intermittent components as defined in the *NSW Industrial Noise Policy* (EPA 2000).

Helen advised the complainant of her actions and indicated that the notice would take effect in 14 days. This would give the proprietor sufficient time to reduce the noise from the exhaust system. Helen also advised the complainant that the notice had a 21-day appeal period, but the lodging of an appeal would not delay the commencement of the notice unless the Land and Environment Court directed otherwise.

Helen was contacted by the proprietors shortly after receiving the notice and advised that a contractor would be looking at the system. Helen advised the proprietor that before executing any building works they should consult with council's planning department to check whether development consent would be required.

An administration fee was charged for preparing and issuing the notice.

What if ...

If Helen had decided to use a Prevention Notice instead of a Noise Control Notice she would not have needed to include noise limits (and so could have avoided taking measurements). She could have instead required the owner/operator to engage a consultant and/or specified that the owner/operator investigate options for noise reduction on the basis of what could be achieved using feasible and reasonable mitigation measures. A second part to a Prevention Notice would then have specified that these measures be implemented by a specified time with monitoring to assess whether the measures performed as predicted. Monitoring results or a report about the improvement could also be requested.

After the work was completed, Helen conducted an inspection of the takeaway shop and noted a significant noise reduction at the boundary assessment location. Noise measurements indicated that the noise limit was not exceeded. The complainant also acknowledged a significant noise reduction. Helen then noted the notice as complied with.

4.2.2 Noise Abatement Directions

Noise Abatement Directions can be issued if offensive noise:

- is being emitted, or
- has been emitted at any time within the past seven days from any premises.

The direction lasts for up to 28 days (POEO Act ss. 275–279).

Scope

Noise Abatement Directions are useful for quickly dealing with temporary noise problems such as loud music, where the noise can reasonably be reduced or stopped. A direction is an official instruction that offensive noise must cease. A direction can be issued within seven days of the offensive noise occurring and lasts for up to 28 days.

Using a Noise Abatement Direction

A Noise Abatement Direction can be issued if it appears to an authorised person that offensive noise is being made or has been made in the past seven days (POEO Act s. 276). An 'authorised person' is an 'authorised officer' (i.e. a person appointed by an ARA under s. 187 of the POEO Act) or a Police officer.

Offensive noise is defined in the POEO Act. In deciding whether a particular noise is offensive the authorised person would need to apply the definition of offensive noise from the POEO Act and consider what a reasonable person would find offensive. Determining offensive noise is discussed in detail in Part 2 of this Guide.

The authorised person need not have witnessed the offensive noise before issuing a Noise Abatement Direction. For the direction to be issued, it is sufficient for it to appear to the authorised person that offensive noise occurred in the past seven days. Where an authorised person has not heard the noise, it is preferable to ask witnesses to make a signed statement about the noise and its effect on them.

A template for a Noise Abatement Direction is included as Appendix 2.

Power to issue a Noise Abatement Direction

An authorised person can issue a Noise Abatement Direction to:

- the occupier of the premises concerned, or
- the person making or contributing to the making of the offensive noise.

Section 275 of the POEO Act enables:

- EPA authorised officers to issue a Noise Abatement Direction in 'any case'
- Council authorised officers and Police officers to issue a Noise Abatement Direction in 'any case' other than those detailed in the restrictions noted below
- RMS authorised officers to issue a Noise Abatement Direction in relation to vessels on navigable waters other than as restricted below.

Restrictions

Section 278 of the POEO Act states that a Noise Abatement Direction, other than one given by an EPA authorised officer, may not be directed to the state, a person acting on behalf of the state, a state public authority, or a person acting in the capacity of a member, officer or employee of that authority. It also has no force if it affects:

- any activity carried on, by or for the state or a state public authority
- any activity or work that requires or is subject to an EPA licence (see Schedule 1 of the POEO Act).

Serving a Noise Abatement Direction

A Noise Abatement Direction can be issued verbally or in writing to the person the authorised person believes to be the occupier of the premises from which the offensive noise originates, or to any person the officer believes is making or contributing to the noise, or both. Where further action may be required it is recommended that a written direction be provided so there is clear evidence of its details. This is helpful for both the regulator and the person receiving the direction.

A Noise Abatement Direction should specify the source or type of offensive noise, for example, 'cease using concrete saw or any other power tools'.

Appeals and revocation

There is no right of appeal against a Noise Abatement Direction under the POEO Act.

A direction may be revoked by the person who gave the direction or by another authorised person (POEO Act s. 279).

Offence

It is an offence to breach a Noise Abatement Direction. This happens if the offensive noise specified in the direction is made again within 28 days of the direction being given (or within a shorter time period if so specified in the notice).

Penalties

Penalty Notices can be issued for failing to comply with a Noise Abatement Direction, with fines of \$200 for an individual and \$400 for a corporation.

The maximum penalty the Land and Environment Court may impose for not complying with a Noise Abatement Direction is 30 penalty units (at the time of publication \$3300 (\$110 per penalty unit as set by the *Crimes (Sentencing Procedure) Act 1999* s. 17)).

Powers of authorised officers for serving or enforcing Noise Abatement Directions

Authorised officers appointed by ARAs such as councils have powers for serving and enforcing Noise Abatement Directions. These include the power to:

- enter non-residential premises without a warrant (POEO Act s. 196)
- enter residential premises with a warrant (POEO Act s. 197)
- require certain information (name and address) (POEO Act s. 204)
- seize equipment making offensive noise in breach of a Noise Abatement Direction (POEO Act s. 198(2)(h)).

Powers of Police for serving or enforcing Noise Abatement Directions

Police officers have special powers for serving and enforcing Noise Abatement Directions. These include the power to:

- enter premises with a warrant (POEO Act s. 280)
- require certain information (name and address) (POEO Act s. 281)
- seize equipment making offensive noise in breach of a Noise Abatement Direction (POEO Act s. 282).

Warrant to enter premises – authorised officers (POEO Act ss. 196-7)

An authorised officer can enter non-residential premises without a warrant (s. 196) or residential premises with a warrant (s. 197) at any time when offensive noise has been occurring, is occurring, or is likely to occur. Entry can relate to a period prior to issuing a Noise Abatement Direction or when a breach of a Noise Abatement Direction has occurred.

An authorised officer under the POEO Act may apply to an authorised officer within the meaning of the *Law Enforcement (Powers and Responsibilities) Act 2002* for the issue of a search warrant if they reasonably believe the Act or regulations have been or are being contravened (s. 199).

An authorised officer does not need to be denied entry before seeking a warrant to enter.

Warrant to enter premises – Police (POEO Act s. 280)

A Police officer can enter premises (with a warrant) to give a Noise Abatement Direction or to investigate whether a direction has been contravened (POEO Act s. 280 (1)).

A magistrate can issue a warrant following a complaint by a Police officer (received either directly or indirectly, see POEO Act s. 280 (2) & (3)) if the Police officer:

- has been denied entry to a particular premises
- believes that offensive noise is being or has been emitted from the premises in the past seven days, and
- issues a direction immediately on entering the premises or calls for an investigation to be carried out to see whether a direction has been contravened.

The POEO General Regulation (cl 102 and Schedule 7) provides the prescribed forms for the magistrate and the Police officer to record details of the case and the information that must be provided to the occupier of the premises where the warrant is being executed.

Authorised officer's powers after entry (POEO Act s. 204(2))

If a person is breaching a Noise Abatement Direction or is issued with a Noise Abatement Direction, an authorised officer can require the person to provide their name and address and to provide proof of that name and address.

It is an offence for a person not to provide their name and address or to give false information with a maximum penalty of \$250,000 for an individual and a further maximum penalty of \$60,000 for each day the offence occurs (s. 211). Failure to provide proof of name and address is not an offence (s. 204(2)(a)).

Police powers after entry by warrant (POEO Act s. 281)

If a person is causing or contributing to offensive noise or has done so within the last seven days then a Police officer can require a person to provide:

- their name and address, or
- the name and address of the occupier of the premises if that person is not the occupier.

The person must first have been warned that they are obliged to provide this information. It is an offence not to provide this information or to give false information, with a maximum penalty of 30 penalty units (POEO Act s. 281(3)).

Authorised officer's power to seize equipment (POEO Act ss. 198(2)(h) and 198(3))

An authorised officer may seize anything that the authorised officer has reasonable grounds for believing is connected with a breach of a Noise Abatement Direction. This includes items causing the breach and items that will afford evidence of the offence.

Police power to seize equipment (POEO Act s. 282)

A Police officer can seize or secure any equipment that is making offensive noise if a Noise Abatement Direction is in force and a person is contravening the direction. The person must be warned that the continued use of the equipment may lead to it being seized. If equipment is seized a receipt needs to be issued to the person. Equipment must be returned or released within 28 days. Other Police powers are not affected (POEO Act s. 283).

Case study 3: Using a Noise Abatement Direction

A noisy stereo

On one Friday afternoon council received several calls from residents of Park Street complaining about loud music coming from another house in their street. Steve, the council's Environment and Health Officer, rang Ms Miller, one of the complainants, and asked her to describe how loud the music was either inside or outside her house. Ms Miller responded that the music was extremely loud everywhere and she couldn't even hear her favourite daytime TV program. Steve then went to investigate and could hear the loud music as he turned into the street. Steve initially visited Ms Miller's house to evaluate the noise there. Steve considered the definition of offensive noise in the POEO Act (see the list of offensive noise considerations in subsection 2.1.4 of this Guide). He decided that the music was definitely offensive noise as it was dominating the whole neighbourhood, and was very likely to be interfering unreasonably with the comfort or repose of people in several houses in Park Street.

Steve then visited the premises where the music was coming from. The music was so loud there that the resident, Elton, did not hear Steve's knock at the door or hear him call out. After eventually gaining Elton's attention Steve decided to issue a Noise Abatement Direction and explained to Elton that to comply he needed to keep the volume turned down so that it was not loud or annoying to the neighbours. He could check this by having a volume setting that did not dominate over other noise sources when heard at the neighbour's boundary and that this condition would last for 28 days.

Elton then turned the volume of the sound system down. No sooner had Steve returned to the office than more complaints came in from Park Street. Steve visited again, performed an assessment of the noise and found that the sound system was being played so loudly that it was again offensive and in breach of the Noise Abatement Direction that had been given earlier that day.

Steve decided to issue a Penalty Notice to Elton as the occupier of the premises for the offence of '*contravening a Noise Abatement Direction*', with an on-the-spot fine of \$200. He also warned Elton that if he persisted in playing his sound system so loudly while the direction was in place, he could be issued with another Penalty Notice or be prosecuted. Steve also explained to Elton that under s. 198 of the POEO Act, he could seize Elton's sound system if he continued to make offensive noise. (Police also have these powers under s. 282 of the POEO Act).

Steve later advised the complainants Ms Miller and Mr Jones about the action he had taken. Ms Miller said that she could still hear the music, although only faintly when it was turned down, and was concerned that even at this reduced level it might interfere with her sleep at night if it continued like that. Steve told her that after midnight on any Friday, Saturday or day before a public holiday cl 51 of the Noise Control Regulation required that all amplified music must not be audible inside a habitable room in her house. On any other day it must not be audible after 10 pm. This additional control was designed to protect against sleep disturbance by preserving a quiet time at night.

What if ...

What if council had night ranger patrols, and Steve responded to the initial complaint after midnight? In this case Steve had the option of issuing a warning under the Noise Control Regulation 'Time limits on the use of certain articles', cl 51, 'Musical instruments and sound equipment', instead of a Noise Abatement Direction. The main difference in using the regulation is that the noise test of audibility is much stricter than the offensive noise test but easier to perform, as the question simply is 'can the music be heard or not in a habitable room?' However, this test relates to a location inside the neighbour's house. Normally a complainant would allow access inside their house, as it is their interest for the test to be properly performed. However, failing this Steve could have made a judgement by standing outside the complainant's house, observe the noise level and estimate whether the noise would be audible inside the house on the basis that the loudness would drop by about 10 decibels inside).

Before leaving the office that evening and being mindful that council did not have an after hours complaints service, Steve decided the situation was serious enough and the potential for continued noise problems great enough to notify the Police of the situation.

Steve spoke to Constable McGarrett of the local Police to notify him of a potential noise problem. Steve gave Constable McGarrett a summary of his actions during the day and said there was a strong possibility that they may receive further complaints from Park Street that evening. Steve stressed that he considered the noise at the time to be offensive and Elton's response to date poor. Constable McGarrett thanked Steve for the notification and advised the duty officers of the situation.

As per Steve's prediction, the Police responded to a complaint at 12:05 am at Elton's residence. On the basis of his earlier conversation with Steve, Constable McGarrett decided to issue another on-the-spot fine for \$200 for an additional breach of the council Noise Abatement Direction and told Elton that, on the basis of his discussions with council earlier that afternoon, if the Police received another complaint he would be taken to court and prosecuted for breaching the direction, and further he would seriously consider seizing the sound system. Elton decided he had pushed his luck far enough and the Police received no further complaints from Park Street.

4.2.3 Noise Abatement Orders

Individuals can seek a Noise Abatement Order independent of any regulatory authority such as a council or the Police.

Noise Abatement Orders can only be made by a Local Court.

The magistrate generally issues the order based on the 'balance of probabilities' (POEO Act ss. 268–274).

Scope

Any occupier of premises who believes their occupation of the premises is being affected by offensive noise can seek a Noise Abatement Order without involving a regulatory authority such as council or an enforcement authority such as the Police. This is done by filing an Application Notice which costs \$70 to the Local Court seeking a Noise Abatement Order. The Court's Registrar has to approve the Application Notice to start the legal process. The Court may issue a Noise Abatement Order requiring offensive noise to cease if it is satisfied that the noise was offensive.

Using a Noise Abatement Order

Where council or the Police have decided that no further action is justified for a particular matter, the resident can be advised about the option of seeking a Noise Abatement Order from a Local Court.

The burden of proof required for an order to be issued, which is a civil matter, is less than that required for criminal enforcement action by a regulatory authority (i.e. the magistrate may make a ruling on 'the balance of probabilities' based on the evidence presented, rather than having to be convinced beyond reasonable doubt).

Obtaining a Noise Abatement Order

Any person wanting to seek a Noise Abatement Order should make an appointment to discuss their proposed course of action with the registry staff at the Local Court. The following steps are involved in issuing a Noise Abatement Order:

1. The occupier of affected premises should call the registry staff at the local court and discuss the proposed course of action. The registry staff may suggest what evidence the Court may require.
2. The occupier of the premises should then file an application notice with the court registry.
3. The court registrar then assesses the application notice and, if approved, the Court will serve a Court Attendance Notice requiring the defendant to attend court.
4. The magistrate may issue an order if satisfied, on the balance of probabilities, that offensive noise either exists or is likely to recur.

As issuing an order involves court time and possibly the involvement of legal representation, the magistrate will often encourage parties to undertake mediation to prevent this time-consuming and potentially expensive process. This being the case, parties should be encouraged to approach the local Community Justice Centre or seek other mediation opportunities before completing the Application Notice.

It is not necessary to obtain legal advice when seeking an order, although this may be advisable depending on the circumstances. An order takes effect either immediately or at a time specified in the order.

An order may be revoked or varied by a local court.

Appeal

A person against whom a Noise Abatement Order has been made may appeal to the Land and Environment Court within 21 days of the order being made (POEO Act s. 290). The lodging of an appeal will not delay the commencement of the notice unless the Land and Environment Court directs otherwise. If the court directs a delay, the notice will take effect only after the delay date, or when the court confirms the notice, or if the appeal is withdrawn (POEO Act ss. 267 & 290).

Restrictions

Under s. 270 of the POEO Act, a Noise Abatement Order may not be directed to the state, a person acting on behalf of the state, a state public authority or a person in the capacity of a member, officer or employee of the authority. It also has no force if it affects an activity carried on, by or for the state or a state public authority, or an activity that requires or is subject to an EPA licence.

Offence

A person who contravenes the terms of a Noise Abatement Order is guilty of an offence (POEO Act s. 269).

The person who applied for the order can seek to have the person given the order prosecuted for contravening the order. Section 218 of the POEO Act identifies who may initiate a prosecution for a breach of a Noise Abatement Order.

Where an order has been breached, the breach will have to be established according to a criminal standard of proof (i.e. beyond reasonable doubt). This is more onerous than the standard of proof required to obtain an order.

Penalties

The maximum penalty for not complying with a Noise Abatement Order is 30 penalty units (at the time of publication \$3300 (\$110 per unit set by s. 17 of the *Crimes (Sentencing Procedure) Act 1999*)). There is no provision for a Penalty Notice to be issued for a breach of an order.

Case study 4: Using a Noise Abatement Order

Maria has a neighbour called Eric, who is a member of a rock band. Eric practises the guitar at home on most days and sometimes at night until midnight. She tried to negotiate with him to restrict his playing to certain hours and to play in a room that was not facing her house, all to no avail. Council also provided some mediation without result. Both council and the Police at separate times visited Maria to determine whether the noise was offensive. Both authorities concluded that the noise was not offensive at the time of their visit and did not formally warn Eric.

Maria felt that for her the noise was indeed offensive and required further action. Council advised Maria that although they were not taking any further action she could, as an individual, take the matter further by seeking a Noise Abatement Order from her local court (POEO ss. 268–274). These Orders are served on the person making the offensive noise, requiring that the offensive noise be abated or that the offensive noise be prevented from recurring.

Maria called her local court to discuss the process of obtaining a Noise Abatement Order. The court registrar advised her on what was needed to proceed with an Application Notice for a Noise Abatement Order, which was:

- a full description of the alleged noise problem, giving details about the type of noise, its loudness, especially in relation to other noise normally heard, dates, times of day, duration of the noise, whether the noise had annoying characteristics and the number of incidents during the week
- any action that Maria had already taken to try and resolve the problem
- name, address and contact details (if known) of the alleged noise maker
- statements from witnesses supporting Maria's account of the noise.

These requirements should be discussed with the court registry staff before making a formal application for a Noise Abatement Order.

Adequate evidence may include signed statements from two witnesses corroborating Maria's account (witnesses need not declare that they found the noise offensive too, only confirm that the noise had been emitted at the time stated by Maria.)

Although the burden of proof will be the same in all local courts, different courts may vary as to the nature and type of evidence that the magistrate may request, to assess whether an order should be made.

During the meeting the court registry staff advised Maria of the implications of filing the Application Notice as well as the time required and potential legal costs of proceeding. The legal costs may include her legal representation, the defendant's legal representation and nominal court costs.

What if ... (1)

What if Maria had approached her neighbour about seeking a mediated solution at their local Community Justice Centre (CJC)? CJs offer a free, local mediation service with a 90% success rate in resolving disputes where both parties are willing to negotiate. Court registrars often require this course of action before considering an application to the local court. CJs avoid the time-consuming and potentially expensive legal process. However, attendance at the CJC is voluntary, and both parties must agree to attend the mediation session. It would be futile to require a person to attend mediation if they were unwilling to negotiate a solution to the problem. Local CJs are listed at www.cjc.nsw.gov.au.

Eric did not believe he was causing a noise problem and told Maria he was unwilling to attend a CJC session. Maria decided to pursue the Noise Abatement Order option.

Maria had been noting the details of the offensive noise in her diary and collected the requested evidence and neighbours' statements. She then called the Local Court and made an appointment with the court registrar. The registrar advised Maria that sufficient evidence had been provided to enable the court to assess the matter. Maria completed the Application Notice and submitted it to the court along with the fee of \$70.

What if ... (2)

What if Maria had been unable to convince her neighbours to provide statements? Many neighbours are unwilling to become involved in disputes for fear of antagonising other neighbours or damaging established relationships. Also, Eric may have neighbours who state that the noise is acceptable.

The magistrate has to determine that on the evidence presented it is more likely than not that offensive noise occurred; that is, on the balance of probabilities.

Eric was served with a Court Attendance Notice in relation to the offensive noise complaint, and contacted his lawyer. At the hearing of Maria's application, Eric's lawyer sought to establish that the noise was not offensive by questioning Maria on her interpretation of offensive noise and argued that his client had played his guitar for over three years without complaint until Maria had recently moved into the area. The magistrate determined that sufficient evidence had been provided to establish that on the balance of probabilities (a civil standard of proof applying to the granting of a Noise Abatement Order) Maria was being adversely affected and that the noise was offensive, having regard to the definition provided in the dictionary of the POEO Act. The magistrate ordered Eric to immediately prevent any recurrence of offensive noise from his playing of the guitar. After the hearing Eric considered appealing but was advised that an appeal could be heard only by the Land and Environment Court. Considering the high court costs that may result from an appeal, Eric decided simply to ignore the Order.

The Sheriff of the local court served the Order on Eric the next day.

The loud music continued, and Maria continued to be adversely affected. She rang the local court about getting the court to enforce the Order and was advised that she would need to gather evidence so that the court could consider whether the Order had been breached and appropriate action for any breach of the Order. The offence of breaching a Noise Abatement Order is a criminal offence. This means that the proof must be beyond reasonable doubt (and meet a higher standard than the civil standard of balance of probability), so it could be more difficult for Maria to satisfy the Court that an offence has occurred than when she initially applied for the Order.

The court advised Maria that she should obtain statutory declarations from witnesses to the activity, and that the witnesses may need to go to court to furnish their evidence under oath if necessary, as part of establishing her case beyond reasonable doubt. Maria approached her neighbours and received two statutory declarations that the noise had been emitted from Eric's residence at the time stated by her. In providing evidence to satisfy a criminal standard Maria's neighbours may be required to give evidence in court as witnesses.

Subsequently the court sent Eric another Court Attendance Notice to appear to answer the charge of breaching the Noise Abatement Order, which carries a maximum fine of \$3300.

At the hearing Maria was required to give evidence as a witness. Maria's neighbours attended the hearing but were not called to the witness box. Eric's lawyer was unable to convince the court that Maria's evidence and the two neighbours' statutory declarations were inaccurate. In supporting his case Eric provided a statutory declaration that he believed he kept the music volume at a reasonable level, and moved his speakers so that they faced away from Maria's house. However, the court was satisfied beyond reasonable doubt that the Order had been breached. The magistrate fined Eric \$1000, required him to seek professional advice about minimising the noise that was created when he played his guitar, and warned Eric that he did not want to see him taking up valuable court time again.

Now Maria occasionally hears Eric's guitar from the front of her driveway and she believes her time and effort in pursuing the Noise Abatement Order has been worth the reduction in noise in her neighbourhood.

What if ... (3)

What if the magistrate was not satisfied beyond reasonable doubt that the noise was offensive and Maria was unsuccessful? In this case the magistrate could award costs to Eric, making Maria liable for up to several thousand dollars. An award of costs generally includes the legal fees incurred by Eric, and certain other expenses related to the matter. This would usually be in addition to Maria's own costs (legal and otherwise) that had been incurred. Both parties have the option of retaining legal representation, and it is often the case that the defendant will be represented. Other costs may include engaging a specialist noise consultant and the cost of collecting evidence if this is done by the consultant. The time required to collect evidence and statements and to attend court and the possibility of having to pay another party's legal costs are among a number of things that should be considered before commencing legal action. Additionally, the level of proof required to prove a breach of an order is the criminal level of proof.

What if ... (4)

What if Eric continued to be in breach of the Noise Abatement Order by continuing to play his guitar in the same manner as before? The Order continues unless revoked by the court. Maria can collect evidence as before and Eric can be required to appear before the court as before. If found guilty he may be fined the maximum amount imposed by the local court. In addition, as Eric has breached a court order he may be in contempt of court, in which case he is subject to severe penalties.

4.2.4 Prevention Notices

Prevention Notices are used to control activities that are conducted in an 'environmentally unsatisfactory manner'.

Actions need to be specified in the Prevention Notice (POEO Act ss. 95–100).

Scope

A Prevention Notice can be used to control activities that are conducted in an 'environmentally unsatisfactory manner' (as defined in s. 95 of the POEO Act) and should specify the action to be taken to remedy the problem.

Section 96(3) of the POEO Act provides a list of examples of actions that a Prevention Notice can require. This includes requiring an operator to develop an action plan and to supply progress reports on the action required by the Prevention Notice (POEO Act s. 96(5)).

A Prevention Notice can encourage an operator to apply best management practice to an activity. A notice is likely to be appropriate where:

- there is a complex activity with many noise sources, and changes to operational practices are needed
- it may be difficult or unreasonable to specify an acceptable noise level that must be met
- there are a number of environmental issues requiring action, e.g. noise, air, water or waste problems. A single Prevention Notice can be used to manage all these problems for a particular site or activity.

The Prevention Notice is designed to set out actions that are needed for an activity to operate in an environmentally satisfactory manner. It is oriented towards finding solutions that would control the noise and cannot be used to simply ban an activity unless this is the only environmentally satisfactory solution.

Using a Prevention Notice

Before preparing the Prevention Notice you must establish that the activity is being carried out in an environmentally unsatisfactory manner. Section 95 of the POEO Act defines this term. Section 95(c) and (d) contains the most relevant parts of the definition in relation to noise, and states that an activity is being carried out in an 'environmentally unsatisfactory manner' if:

- it is not carried on by such practicable means as may be necessary to prevent, control or minimise pollution, the emission of any noise or the generation of waste, or
- it is not carried on in accordance with good environmental practice.

The term 'practicable means', as used here, is not defined by the POEO Act, so it is given its natural meaning. The Macquarie Dictionary defines practicable as '*capable of being put into practice, done or effected especially with the available means or with reason or prudence; feasible.*' If there is action that can be taken to prevent, control or minimise the emission of noise, then a Prevention Notice may be issued.

The definition of 'pollution' in the POEO Act dictionary includes 'noise pollution' and the dictionary says noise pollution means the 'emission of offensive noise'. Prevention Notices are generally issued because of the emission of offensive noise. If the 'emission of any noise' is used as the trigger for issuing a Prevention Notice, the noise should be the subject of a particular policy, e.g. the *NSW Industrial Noise Policy* (EPA 2000). An example where this may be appropriate would be where the Industrial Noise Policy indicates the noise level should not exceed the background noise level by more than 5 dB.

A Prevention Notice needs to specify what actions are required to control the noise, for example:

1. The actions the operator should take to ensure that the activity is carried out in an environmentally satisfactory manner. Section 96(3) of the POEO Act lists some of the things that can be required in a Prevention Notice.
2. If suitable measures to control the noise are not apparent, the Prevention Notice can require that an action plan (noise management plan) be developed by the operator as a first step. The operator usually best understands the noise source and may be able to think of innovative solutions with your encouragement.

An action plan could specify the details that council expects the operator to address. For example, the Prevention Notice may require that:

- an action plan be prepared by a suitably qualified and experienced person
- that all potential noise sources be identified
- the subject noise and background noise be measured or monitored
- control measures capable of managing the noise be identified and assessed, such as relocating or enclosing equipment or changing operating times
- recommendations are made to manage the noise as part of the plan.

There could also be a requirement that the plan be submitted to council for approval before being implemented. If a two-stage approach was being followed then a further notice could be issued to implement the approved measures or this requirement could be built into the original notice. Management options that are developed to reduce the noise need to be feasible and reasonable.

3. The date(s) when the action required in the Prevention Notice must be completed. If an action plan has been requested then you need to specify a date(s) for the plan to be submitted and implemented.

Where the Prevention Notice is issued to the occupier, but the occupier is not the person carrying on the activity, the occupier must take all available steps to cause the action to be undertaken (POEO Act s. 96(4)).

A template for a Prevention Notice is included in the *Guide to Notices* at www.epa.nsw.gov.au/resources/licensing/09387noticesguide.pdf (DEC 2009).

Power to issue a Prevention Notice

Only an ARA can issue a Prevention Notice. Police **do not** have the power to issue Prevention Notices. A notice can be issued to:

- the occupier of the premises concerned, and/or
- the person carrying on the activity (POEO Act s. 96(2)).

The Prevention Notice must be issued in writing.

Appeals

A person given the Prevention Notice may appeal to the Land and Environment Court within 21 days of being served with the Prevention Notice (POEO Act s. 289).

A Prevention Notice operates from the day the notice is given or from a later date as the notice specifies. The lodging of an appeal will not delay the commencement of the notice unless the Land and Environment Court directs otherwise. If the court directs a delay, the notice will take effect only after the delay date, or when the court confirms the notice, or if the appeal is withdrawn (POEO Act ss. 99 & 289).

Offence

A person who fails to comply with the Prevention Notice is guilty of an offence under s. 97 of the POEO Act.

The ARA may require the person concerned to pay for all or any reasonable costs and expenses it incurred in monitoring and ensuring compliance with the notice. See subsection 4.2.5 of this Guide.

If a person has not complied with the Prevention Notice, the ARA itself (or its employees, agents or contractors) can take the action that the Prevention Notice requires (POEO Act s. 98). The ARA may then require the person concerned to pay for all or any reasonable costs and expenses it incurred in taking that action (POEO Act s. 104(4)).

These cost recovery mechanisms are in addition to any prosecution that may be undertaken.

Penalties

A Penalty Notice can be issued for failure to comply with a Prevention Notice with fines of \$750 for an individual and \$1500 for a corporation.

A breach of a Prevention Notice can be prosecuted in the Land and Environment Court, with maximum fines being \$1,000,000 for a corporation or \$250,000 for an individual. There are also daily penalties if the offence continues.

Administrative fee for a Prevention Notice

Cost recovery options for Prevention Notices include an administration fee for serving the notice and a separate Compliance Cost Notice for monitoring or ensuring compliance with the notice.

The mandatory administrative fee of \$466 is intended to cover the costs of preparing and giving a Prevention Notice (POEO Act s. 100). The fee must be paid within 30 days of receiving the notice. Where the Prevention Notice is appealed, payment of the fee is suspended until the court has decided the appeal. The administration fee is prescribed by cl. 99 of the POEO General Regulation.

Appropriate regulatory authorities have discretionary power to waive the administration fee or extend the period for payment (POEO Act s. 100). Examples of circumstances in which appropriate regulatory authorities might consider waiving the fee include:

- demonstrated cases of financial hardship
- where the Prevention Notice has been issued to a charitable organisation
- where a second follow-up notice is issued.

4.2.5 Compliance Cost Notices

A Compliance Cost Notice allows an appropriate regulatory authority to recover the costs of monitoring or ensuring compliance with a Prevention Notice or a Noise Control Notice.

It is a separate notice which can be served after a Prevention Notice or Noise Control Notice has been given (POEO Act s. 104(3) and 104(4)).

Scope

A Compliance Cost Notice can be served to recover the costs incurred by the ARA for monitoring or ensuring compliance with a Prevention Notice (POEO Act s. 104 (3)) or a Noise Control Notice (POEO Act s. 267B). It is issued to the person who was issued with the notice.

The notice does not include the cost of preparing and issuing a Prevention Notice, which is covered by the administration fee described in the previous section.

Power to issue a Compliance Cost Notice

The ARA that has issued a Prevention Notice or Noise Control Notice to a person may issue a Compliance Cost Notice. A Compliance Cost Notice must be issued in writing.

Using a Compliance Cost Notice

A Compliance Cost Notice is used to recover the costs associated with monitoring and follow-up action taken as a result of issuing a Prevention Notice or Noise Control Notice. This may include such things as travel to the site to do follow-up inspections, time spent on inspection to ensure that conditions of the notice are being complied with, and measurements an officer may take to ensure that the conditions of the notice are being complied with.

Officers need to keep accurate records of the time spent in ensuring compliance with the Prevention Notice or Noise Control Notice. The ARA will need to determine an hourly fee charge for the purpose of issuing Compliance Cost Notices.

A template for a Compliance Cost Notice is included in the *Guide to Notices* at www.epa.nsw.gov.au/resources/licensing/09387noticesguide.pdf (DEC 2009).

Appeals

There is no right to appeal a Compliance Cost Notice under the POEO Act, but the notice must be reasonable and follow natural justice principles. If these principles are not followed a prosecution for non-compliance may be unsuccessful if the notice is not complied with.

Payment method

Compliance Cost Notices should specify a time for payment. The notice should also indicate that if the payment is not received by the specified date then the ARA may take steps to recover the unpaid amount.

Failure to comply

The ARA may recover any unpaid amounts specified in the notice in a court.

Registering Compliance Cost Notices

Compliance Cost Notices may be registered with the Registrar-General, creating a charge over any land owned by the person who is the subject of the notice (POEO Act s. 106). This charge will cease to have effect, either (POEO Act s. 107):

- on payment to the ARA or public authority of the amount concerned, or
- on the sale or other disposition of the property with the written consent of the authority, or
- on the sale of the land to a purchaser in good faith who, at the time of the sale, has no notice of the charge.

Compliance Cost Notices can be registered with the Registrar-General if attempts to recover the costs have not been successful.

Administrative fee for registering Compliance Cost Notices

The ARA may require the person concerned to pay for all or any reasonable costs and expenses it incurred in the lodgement or registration of the notice and any resulting charge, including the costs of discharging the charge. The ARA may also take steps to recover any unpaid amounts specified in the notice in court (POEO Act s. 107(8)).

Case study 5: Using a Prevention Notice and Compliance Cost Notice

Joe's Cabinetmaking Shop has been operating at the end of a residential street for over ten years. The area is a mixed-use zone with houses on the opposite side to Joe's Cabinetmaking Shop. Joe's business has grown progressively, and much of the work is now carried out in the open in what was once a parking area.

Council received a noise complaint from two of the nearest residents. They had a number of issues that were concerning them. The timber storage area had a circular saw which operated on and off throughout the day. Other power tools were also clearly heard in the neighbouring houses. Joe's dust extraction system was also contributing to complaints, as it had not been well maintained, and rattled away, creating noise that intruded on the surrounding neighbourhood. Joe also listens to the radio while working, as it helps him concentrate. At the time of the complaint Joe had recently received a few big orders and had extended his operating hours. He was now working Monday to Saturday, until 10.00 pm most nights, having started at 7.00 am.

Before visiting the premises, Claudia (the council's EHO) checked council files and found that Joe's development consent was quite old and did not contain any conditions regarding hours of operation or noise limits. Claudia then visited the site to investigate the neighbours' noise complaints. She noted the noise from the dust extraction system, circular saw and the various power tools. All were clearly audible in the neighbours' properties. She recorded these observations and described the nature of the noise and the locations of the various items of equipment in her notebook. Claudia also decided to take noise measurements at the boundary of the affected premises. The background noise level in the area at 10.30 am was $L_{A90, 15 \text{ minute}}$ 37 dB(A). This meant that the intrusive noise criteria from the *NSW Industrial Noise Policy* (EPA 2000) would be $L_{Aeq, 15 \text{ minute}}$ 42 dB(A).

Claudia then took several noise measurements during periods when the activities of Joe's Cabinetmaking Shop were clearly audible and dominating the acoustic environment. Claudia recorded the following measurements and noted the activities in Joe's premises that were audible: $L_{Aeq, 15 \text{ min}}$ 52, 54 and 58 dB(A).

Claudia visited Joe's Cabinetmaking Shop and told Joe that council had received a complaint about noise from his factory, and that on the basis of her observations and initial noise measurements the noise was unreasonable. Joe was not pleased. She asked him about some of his work practices, such as work being done in the old parking area, use of the circular saw in the open and his operating hours. Joe insisted it was his right to carry on his business whatever way he saw fit. Claudia advised that she would be in touch again to discuss what Joe would need to do to improve the situation.

From previous experience with a similar operation, Claudia formed the opinion that Joe's activities were not being carried on by such practicable means as may be necessary to prevent, control or minimise the emission of noise. That is, the activities at Joe's workshop were being carried out in an 'environmentally unsatisfactory manner' within the meaning of the POEO Act.

Claudia decided to serve a Prevention Notice on the company to ensure Joe addressed the noise problem. The Prevention Notice was effective immediately and required Joe to prepare an action plan to prevent, minimise or control noise from the activities at the workshop and to submit it to council within four weeks. The Prevention Notice specified that the written action plan should:

- be prepared by a suitably qualified acoustic consultant
- identify possible mitigation measures, including changes to the operating time, location and use of equipment, and the cost effectiveness of installing noise insulation for equipment and recommend appropriate measures
- be completed within four weeks from the date the notice was given.

Claudia considered a Prevention Notice most appropriate in this situation, as there were many noise sources and the noise problem was mostly due to the poor management of the noise impacts. An administration fee was charged for preparing and issuing the notice.

Claudia advised the complainants of her action and let them know that the notice required the proprietor to prepare an action plan to prevent, control and minimise noise and submit the plan to council in 28 days. Claudia revisited Joe's premises a week after the Prevention Notice was given and inquired about his progress. Joe advised that he had not yet taken any steps to comply with the notice, as he had been busy. Claudia advised Joe that non-compliance with the notice was an offence and that he could be fined if the requirements of the notice were not met by the date specified.

Joe subsequently submitted an action plan that addressed the noise problem through both operational and engineering measures. Claudia then signed off the notice. She then issued a second Prevention Notice requiring the implementation of the action plan recommendations within a three-month timeline she negotiated with Joe.

Claudia subsequently spent considerable time checking compliance with the Prevention Notice in regard to implementation of the action plan, as Joe was slow to respond. She discussed the possibility of serving a Compliance Cost Notice with her manager, as she had kept good records of monitoring and compliance activities. This would require Joe to pay the reasonable costs incurred by council in ensuring that he complied with the notice. Following implementation of the recommendations of the action plan, the impact of the operations of Joe's business was significantly reduced, as Joe was now taking practicable means to control, prevent and minimise the emission of noise.

The complainants were advised of the result of council action. The complainants also acknowledged a significant noise reduction. Claudia then noted that the notice had been complied with.

What if ...

A Noise Control Notice could have been used, but it would have been onerous to specify limits for each of the various activities undertaken and then to determine what mix of sources was likely to make up a total noise level at each receiver location. Compliance for complex sources may be difficult or time consuming to establish compared with establishing compliance for specified activities and noise control measures, which can be easily demonstrated.

4.2.6 Noise pollution from operating plant and handling materials

(POEO Act ss. 139–140)

There are two general provisions for noise from premises in ss. 139 and 140 of the POEO Act. These relate to the operation of plant and handling of materials, respectively.

Operation of plant causing noise (POEO Act s. 139)

In situations where council is the ARA, an authorised council officer can prosecute or issue a Penalty Notice to the occupier of premises where the council officer considers that a noise problem from the premises is being caused by the operation of plant that is poorly maintained or not operated correctly. In other words, the occupier has failed:

- to maintain the plant in an efficient condition, or
- to operate the plant in a proper and efficient manner.

An example is the operation of worn conveyor belts causing noise as the loose belt is drawn through the drivers.

Dealing with materials causing noise (POEO Act s. 140)

In situations where council is the ARA, a council officer, who is authorised by the council to do so, can prosecute or issue a Penalty Notice to the occupier of a premises where the council officer considers that noise is occurring because materials are not being dealt with in a proper or efficient manner by the occupant. For the purposes of this section of the Act:

- 'deal with' means process, handle, move, store or dispose of
- 'materials' include raw materials, materials in the process of manufacture, manufactured materials, by-products, or waste materials.

An example is the practice of throwing or dumping empty glass bottles into steel drums or containers, thereby making noise.

No warning is required to be given before issuing a Penalty Notice or proceeding with a prosecution where ss. 139 or 140 of the POEO Act is breached.

4.3 The POEO (Noise Control) Regulation 2008

The Noise Control Regulation streamlines the handling of common neighbourhood noise problems by providing more specific controls than the general powers provided under the POEO Act. The provisions of the regulation are aimed at residential activities and equipment, rather than those on commercial or industrial premises. Noise resulting from residential construction is not intended to be covered by the regulation as noise from the construction of a dwelling is dealt with through specific conditions of consent given under planning legislation. The regulation has three main parts relevant to noisy items. These are:

- **Part 2**, which provides for control of the noise from individual motor vehicles operating on public roads and road-related areas as well as off-road, including on private property, and noise from motor vehicle accessories such as alarms. Police officers and council, EPA and Sydney Harbour Foreshore Authority enforcement/authorised officers have powers in relation to particular provisions.
- **Part 3**, which deals with noise from marine vessels such as powerboats, personal water craft and sailing vessels. This part applies mainly to RMS and Port Corporations enforcement officers and the Water Police, but council enforcement/authorised officers also have powers in relation to some provisions.
- **Part 4**, which deals with common neighbourhood noise problems such as the times of use of air conditioners, heat pump water heaters, swimming pool pumps, power tools, building intruder alarms and loud music. This part mainly applies to council enforcement/authorised officers and Police officers, but EPA enforcement/authorised officers also have powers in relation to some provisions.

Details of offences which can be dealt with by issuing a Penalty Notice are listed in Schedule 3 of the regulation. The POEO General Regulation lists the fine and the class of officer that can be authorised to issue a Penalty Notice for a particular offence.

Table 4.4 below summarises the offences under the Noise Control Regulation for which councils and other agencies can issue Penalty Notices. In all cases, council enforcement officers can issue a Penalty Notice where an offence occurs in relation to activities for which council is the ARA and which occur in or in relation to a council's local government area.

The regulation applies different methods of control to different neighbourhood noise problems. These controls are:

- preventing the use of certain articles where they can be heard during noise-sensitive periods (e.g. night time)
- placing limits on how long an article can emit noise (e.g. alarms)
- prohibiting the use of certain articles where they emit offensive noise (e.g. off-road trail bikes).

Table 4.4: Offences for which Penalty Notices can be issued by councils and other agencies under the Noise Control Regulation

Issue	Offence short title	Regulation clause	Warning required	Enforcement agency	Penalty Notice fine
Motor vehicle causing offensive noise, other than on a road or road-related area	Cause a motor vehicle to emit offensive noise – other than on a road	CI 13	No	Council Police EPA	Individual \$200 Corporation \$400
Motor vehicle on residential premises causing unnecessary noise during the night or early morning	Cause or permit motor vehicle noise on residential premises	CI 14(1)	Yes	Council Police EPA	Individual \$200 Corporation \$400
Motor vehicle refrigeration unit can be heard within a residence during the night or early morning	Cause or permit repeated refrigeration unit noise after warning	CI 15(1)	Yes	Council Police EPA	Individual \$200 Corporation \$400
Motor vehicle sound system emitting offensive noise	Cause offensive noise from motor vehicle sound system	CI 16	No	Council Police EPA	Individual \$150 Corporation \$300
Motor vehicle alarm used while vehicle engine is running or ignition is on	Cause or permit use of motor vehicle intruder alarm with panic/override switch	CI 23	No	Council Police EPA	Individual \$200 Corporation \$400
Motor vehicle alarm, sounding continuously or intermittently, exceeding permitted time limit	Cause or permit the use of noisy vehicle alarm for up to 4 hours	CI 24(1)	No	Council Police Sydney Harbour Foreshore Authority EPA	Individual \$200 Corporation \$400
	Cause or permit the use of noisy vehicle alarm for more than 4 hours and up to 8 hours				Individual \$400 Corporation \$800
	Cause or permit the use of noisy vehicle alarm for more than 8 hours				Individual \$600 Individual \$1200

Issue	Offence short title	Regulation clause	Warning required	Enforcement agency	Penalty Notice fine
Marine vessel siren sounding for purposes other than navigation	Cause or permit siren/whistle/hooter/fog horn/bell to be sounded	CI 29	No	Council Police Port Corporations RMS	Individual \$200 Corporation \$400
Marine vessel, including powered and sailing craft, emitting offensive noise	Cause or permit vessel to emit offensive noise on navigable waters	CI 30	No	Council Police Port Corporations RMS	Individual \$300 Corporation \$600
Marine vessel sound system emitting offensive noise	Cause or permit use of musical instruments/sound system on vessel to emit offensive noise	CI 33	No	Council Police Port Corporations RMS	Individual \$300 Corporation \$600
Power tools used on residential premises can be heard at neighbouring residence during the night or early morning (includes powered garden tools, electric power tools, pneumatic power tools, chainsaws, circular saws and gas or air compressors)	Cause or permit a power tool to emit noise unlawfully	CI 50(1)	Yes	Council Police	Individual \$200 Corporation \$400
Swimming pool and spa pumps used on residential premises can be heard at neighbouring residence during the night or early morning	Cause or permit pool pump to emit noise unlawfully		Yes	Council Police	
Musical instruments & electrically amplified sound equipment used on residential premises can be heard at neighbouring residence during the night or early morning (includes, for example, radios, televisions, home entertainment systems, CD & DVD players and PA systems)	Cause or permit musical instrument or amplified sound equipment to be used unlawfully	CI 51(1)	Yes	Council Police	Individual \$200 Corporation \$400

Issue	Offence short title	Regulation clause	Warning required	Enforcement agency	Penalty Notice fine
Air conditioner or heat pump water heater used on residential premises can be heard at neighbouring residence during the night or early morning	Cause or permit an air conditioner or heat pump water heater to be used unlawfully	CI 52(1)	Yes	Council Police	Individual \$200 Corporation \$400
Building intruder alarm, sounding continuously or intermittently, exceeding permitted time limit	Cause or permit use of noisy intruder alarm (for up to 4 hours)	CI 53(1)	No	Council Police EPA	Individual \$200 Corporation \$400
	Cause or permit use of noisy intruder alarm (for 4 to 8 hours)				Individual \$400 Corporation \$800
	Cause or permit use of noisy intruder alarm (for more than 8 hours)				Individual \$600 Corporation \$1200

The following discussion of the regulation groups the noise sources into four areas:

- **miscellaneous articles** (e.g. power tools, amplified music, air conditioners)
- **alarms** (e.g. burglar and car alarms)
- **motor vehicle related** (e.g. trail bikes off-road, vehicle sound systems, truck-mounted refrigeration units)
- **vessels** (e.g. recreational vessels such as sailing boats and power boats).

4.3.1 Miscellaneous articles

- Power tools and swimming pool pumps
- Musical instruments and sound systems
- Air conditioners and heat pump water heaters

The Noise Control Regulation identifies times when certain items must not be used in residential premises when they can be heard inside a habitable room of another residence (whether windows and doors are open or not) after a warning has been given. Habitable room means any room other than a garage, storage area, bathroom, laundry, toilet or pantry. Items with restricted times of use include:

- power tools (e.g. powered garden tools, electric power tools, pneumatic power tools, chainsaws and compressors) and swimming or spa pool pumps (cl 50)
- musical instruments and electrically amplified sound equipment (cl 51)
- air conditioners and heat pump water heaters (cl 52).

These provisions provide a means of determining whether noise from one of the listed items of equipment, which is heard in a neighbouring dwelling, may warrant action based on the time of day that the noise is being emitted.

These provisions do not exclude other courses of action if ‘offensive noise’ is emitted within the permitted times of use. For example, a Noise Abatement Direction or Prevention Notice could be issued if an officer considered that, for example, a musical instrument or leaf blower was causing offensive noise, regardless of the time of day.

Table 4.5 lists the restricted times of use for each item.

Table 4.5: Restricted times of use for miscellaneous articles

Type of noise	Times during which restrictions apply
Power tools and swimming/spa pool pumps (cl 50)	Before 8.00 am or after 8.00 pm on Sundays and public holidays Before 7.00 am or after 8.00 pm on any other day
Musical instruments and electrically-amplified sound equipment (POEO (cl 51)	Before 8.00 am or after midnight on any Friday, Saturday or day immediately before a public holiday Before 8.00 am or after 10.00 pm on any other day
Air conditioners and heat pump water heaters (cl 52)	Before 8.00 am or after 10.00 pm on weekends or public holidays Before 7.00 am or after 10.00 pm on any other day



Care needs to be taken so leaf blowers don't cause 'offensive noise'. Photo: EPA

What constitutes an offence?

Simply operating an item during restricted hours set out in the regulation is not immediately an offence. A warning needs to be given and contravened before an offence against the 'time of use' provisions of the regulation is committed.

Only a council enforcement/authorised officer (or Police officer) can issue the warning. This is to ensure that warnings are issued correctly. A warning can be given verbally or in writing. The warning needs to be given within seven days of the noise occurring. If the item is operated outside hours permitted by the regulation within 28 days of the warning, and the noise can be heard inside a habitable room in another residence, then an offence has been committed.

A warning must be clear and be understood by the person receiving it. Ideally, it should be confirmed in writing. The person receiving the warning should:

- understand that the warning has a legal basis. This could be achieved by referring to the relevant clause in the regulation or by giving the person a copy of the clause
- appreciate what they are required to do. This means understanding that they must not cause or permit the particular noise to be emitted within 28 days of the warning being issued
- understand that they will commit an offence if they do not comply.

Contravention of a time of use provision

A contravention of a 'time of use' provision occurs where noise from these items can be heard within a habitable room of any residential premises during restricted hours (regardless of whether any door or window to that room is open).

If an offence has been committed, a council enforcement officer (or Police officer) can issue a Penalty Notice, or council can commence court proceedings, provided there is adequate evidence to support the case. Evidence that may help support enforcement action could include a signed statement from one or more witnesses, identifying the source (if known) and nature of the noise, when and where it was heard, an indication of its volume and its effects on them.

If necessary, a Noise Abatement Direction could be used to control offensive noise, regardless of hours of use, as this provision of the POEO Act applies at all times.

Case study 6: Noise Control Regulation — Time of use provisions

A swimming pool pump operated until 11.00 pm on most nights during the summer. A neighbour disturbed by the noise had previously asked the pool pump owner (who was also the occupier of the premises) to stop the noise. When that didn't stop the noise the resident complained to council.

Dave, an authorised officer, visited the site during the day and established that the pump could clearly be heard in the complainant's home. He reasoned that if it was clearly audible during the day then it certainly would be audible during the restricted times as set out in cl 50 of the Noise Control Regulation. He then gave a warning under the regulation to the owner of the pool pump, as he was satisfied from statements from the complainant that the pump had been audible within a bedroom during restricted hours within the last seven days. He also asked the complainant to make a written record of the date and time when any further occurrences of the noise took place.

Despite the warning given to the owner of the pool pump, council received more complaints from the neighbour. A council ranger visited the neighbour's premises after 10 pm that evening and, from within the complainant's bedroom, heard the pump operating. On the basis of the evidence of the ranger, Dave was satisfied that the warning had been breached and served a Penalty Notice on the owner of the pool pump.

The complainant was told what had been done about the problem, and was advised to contact council if the problem persisted.

If a ranger had been unable to attend the premises:

- Dave would have asked the complainant to make a signed statement that the pump was audible inside a habitable room in his home during restricted hours (specifying the dates and times when he heard the pump) and how it was affecting him. The record of times kept by the complainant of when the noise was heard would have helped in making the statement.
- Dave could also have considered whether he had enough evidence to issue a Penalty Notice. To do so, he would have had to assess whether the evidence provided by the complainant was credible and reliable, and whether there was enough evidence to prove that the offence had been committed should the pool pump owner elect to have the matter heard in court. Dave would also need to consider whether the complainant would be willing to give evidence as a witness in court.

4.3.2 Alarms

- Motor vehicle intruder alarms
- Building intruder alarms

The Noise Control Regulation limits the duration for which a building or car intruder alarm may sound. Time limits for alarms manufactured before or after certain dates are presented in Table 4.6.

No warning is required for an offence to occur.

Table 4.6: Restricted duration of noise from alarms

Type of noise	Restrictions on the duration of the noise emitted
Motor vehicle intruder alarm (cl 24)	<ul style="list-style-type: none">• more than 90 seconds if the vehicle was manufactured before 1 September 1997• more than 45 seconds if the vehicle was manufactured on or after 1 September 1997
Building intruder alarm (cl 53)	<p>Sound is audible in a habitable room of a residential premises and sounds for:</p> <ul style="list-style-type: none">• more than 10 minutes if the alarm was installed before 1 December 1997• more than 5 minutes if the alarm was installed after 1 December 1997

The regulation provides that where an alarm sounds intermittently, it is taken to sound continuously for the purpose of measuring the duration for which it has sounded. For example, a car alarm that sounds for 70 seconds, stops for 60 seconds and sounds again for 70 seconds is taken to have sounded for more than the permitted 90 seconds. This approach applies for both building and car alarms.

What constitutes an offence?

In the case of a building alarm, an offence is committed by an occupier of the premises who causes or permits an alarm to sound for longer than the specified time limit *and* it is audible inside a habitable room of a dwelling.

In the case of a vehicle alarm, an offence occurs if a person causes or permits an alarm to sound for longer than the specified time limit. However, for vehicles manufactured before 1 March 2009 it is not an offence if the alarm sounds for longer than the specified time limit if the vehicle has been involved in an accident, or has damaged windows or been broken into.

Although the regulation provides different time limits for alarms manufactured (vehicles) or installed (buildings) before and after September and December 1997 respectively, this can often be difficult to determine. If in doubt, the alarm can be assumed to belong to the older category and the greater of the two time periods can be applied for a building or vehicle alarm sounding. If the matter goes to court, however, it will not be sufficient to assume that the alarm was manufactured before September 1997 (vehicles) or installed before December 1997 (buildings) — evidence will need to be given to establish when the alarm was manufactured or installed. For vehicles, the date of manufacture of the vehicle is recorded on the vehicle's compliance plate, which is located in the engine compartment.

Options for dealing with noisy alarms

When an alarm is sounding for longer than permitted and is causing a disturbance, a council officer has several options, including:

- contacting the owner or occupier of the building or vehicle and asking them to stop the alarm
- issuing a Penalty Notice where an offence has occurred (enforcement officer only).

In certain circumstances (described below), council authorised officers can also enter premises (including vehicles) where an alarm is sounding and disable the alarm (POEO Act, Part 7.4).

Contacting the owner or occupier

The owner of a property may be traced through council's rates database and other information available to council. Councils may also consider developing a register of building alarms (both monitoring and standalone), with contact details for owners and occupiers in the event that an alarm is activated. This may facilitate disabling an alarm with the help of the person responsible for the property. Real estate agents may also hold spare keys or alarm codes for premises they administer.

The security company that monitors an alarm (as may be displayed on a window sticker) may also provide information about contacting the owner or be able to disable the alarm.

Issuing a Penalty Notice for sounding alarms

Council and EPA enforcement officers and Police officers may issue penalty notices for motor vehicle intruder alarms and building intruder alarms. Sydney Harbour Foreshore Authority enforcement officers may also issue penalty notices for motor vehicle intruder alarms. The Noise Control Regulation provides tiered penalty levels so that a higher penalty is incurred for alarms that sound for longer periods. Where an alarm sounds for more than 4 hours the penalty level is doubled. Where the alarm rings for longer than 8 hours the penalty level is trebled.

A Penalty Notice can be posted or delivered personally to the offender, as provided by s. 224 of the POEO Act. In the case of a building alarm sounding where there is no person available to immediately serve a Penalty Notice to, then posting the notice is appropriate.

Summarising the powers to enter premises by authorised officers and the Police

Authorised officers may enter non residential premises without a warrant where offensive noise has been, is being or is likely to be caused (POEO Act s. 196). In the case of residential premises, authorised officers may enter the land but need to either have the permission of the occupier or hold a warrant in order to enter the dwelling (POEO Act s. 197).

Police need a warrant to enter ANY premises if denied entry to those premises (POEO Act s. 280)

Entering premises

A council officer may believe that the severity of the impact from a sounding alarm is such that taking action to disable the alarm is necessary. This may be the case when an alarm is making offensive noise for a long period (e.g. several hours or days) and where the owner or occupier cannot be contacted.

All other options for contacting the owner or occupier and dealing with a noisy alarm should be evaluated before you decide that entering the premises is necessary to disable the alarm and prevent the offensive noise from being emitted.

Council policy for noise from alarms

It is recommended that councils develop and adopt internal procedural guidelines for dealing with noise complaints relating to alarms. Having a formal procedure in place will allow council officers to know with confidence that they are acting in accordance with council policy when taking action such as seeking a warrant to enter residential premises. Any policy could also be designed to ensure appropriate liaison occurs between the local Police and council on issues related to alarms.

Under Part 7.4 of the POEO Act, a council authorised officer can exercise a power of entry for the purposes set out in s. 184, which provides that the power of entry may be exercised for purposes including:

1. determining whether there has been compliance with or a contravention of the POEO Act or regulations, or a notice or requirement issued or made under that Act (e.g. the offence of causing or permitting the use of a noisy vehicle alarm under cl 24 of the Noise Control Regulation or a noisy building intruder alarm under cl 53 of the Noise Control Regulation)
2. obtaining information or records for purposes connected with the administration of this Act
3. administering the Act and protecting the environment generally.

Council authorised officers can exercise the power of entry only where council is the ARA. Council enforcement officers (i.e. officers with the power to issue Penalty Notices under the POEO Act) can exercise this power of entry if it is being exercised in respect of the officer's functions as an enforcement officer. (See POEO Act ss. 188(3) & 189A.)

An authorised officer can enter premises (other than residential premises) at any time where the officer reasonably suspects that noise pollution has been, is being or is likely to be caused (POEO Act s. 196(1)(b)).

Premises in the POEO Act is defined to include buildings, land and vehicles. Noise pollution means the emission of offensive noise, that is, the noise made by an alarm must fall within the POEO Act's definition of 'offensive noise' for the entry to be authorised under s. 196(1)(b). If the noise is not offensive noise, then the authorised officer or the enforcement officer could enter the premises at a 'reasonable time' relying on s. 196(1)(c). Alternatively, the authorised officer or enforcement officer could enter the premises under s. 196(1)(a) if the officer reasonably suspects that any industrial, agricultural or commercial activities are being carried on at the premises, at any time that those activities are being carried out there.

Authorised officers **do not** have the power to enter premises used only for **residential purposes** (apart from crossing residential land to gain access to another dwelling) unless they have the occupier's permission or a search warrant to enter the premises (s. 197).

The provisions of the *Law Enforcement (Powers and Responsibilities) Act 2002* that apply to warrants issued under s. 199 of the POEO Act do not require the premises to be occupied when the warrant is executed. However, the Act does require that an 'occupier's notice' be served on the occupier as soon as practicable after the warrant is executed if there is no-one at the premises who appears to be 18 years or over and to be the occupier.

The magistrate who authorises the warrant must also issue the occupier's notice, which must contain a summary of the nature of the warrant and the powers conferred by the warrant.

An occupier's notice must specify:

- the name of the person who applied for the warrant
- the name of the authorised justice who issued the warrant
- the date and the time when the warrant was issued
- the address or other description of the premises that is the subject of the warrant.

More details are provided in s. 67 of the *Law Enforcement (Powers and Responsibilities) Act 2002*.

Authorised officers and enforcement officers can use reasonable force to enter premises and can engage the assistance of Police officers and other people capable of helping with exercising functions under the POEO Act.

Section 198A of the POEO Act provides a specific power for authorised officers to switch off or otherwise disable a building intruder alarm or motor vehicle intruder alarm that is sounding in breach of the POEO Act or regulations. However in exercising this power, authorised officers must first determine that they have a lawful right to enter the premises.

Police powers of entry for alarms

Police do not have the power to enter premises for the purpose of disabling an alarm (POEO Act, Part 7.4).

Police officers have the power to enter premises (with a warrant) only to serve a Noise Abatement Direction or to investigate whether the direction has been breached (POEO Act s. 280). However, Police could seize or secure a sounding alarm under s. 282 of the POEO Act, but only if the alarm is being used to contravene a Noise Abatement Direction and the person in charge of the alarm has been warned that its continued use may lead to its seizure (POEO Act ss. 275–279). See subsection 4.2.2 of this Guide.

Liability for damages

Council could be liable to pay compensation for any damage caused by the authorised officer or enforcement officer in exercising a power of entry, unless the occupier obstructed or hindered the officer in the exercise of that power (POEO Act s. 202).

It is also possible that compensation may be payable for any damage caused by the officer in exercising other powers while at the premises (e.g. in relation to switching off or seizing the alarm). Council should obtain its own legal advice if it is concerned that damage may be caused by its actions.

Before using a power to seize or switch off an alarm, councils and council officers should consider issues such as:

- the continued security of any premises that have been legally and forcibly entered. Consider arranging for a locksmith to assist in entering the premises and securing it on leaving (e.g. installing new locks)
- technical difficulties that may be encountered in disarming sophisticated alarm or security systems. Arranging for an alarm specialist to attend may be beneficial for quickly disabling and avoiding damage to the alarm system
- damage that may occur to the occupier's or owner's property as a result of disarming the alarm (e.g. if the power is switched off or the alarm system is damaged)
- the question of whether compensation will be payable to the occupier or owner for any damage caused by the actions of a council officer.



Trail bike noise can be annoying, especially when operating along fire trails near dwellings.
Photo: EPA

4.3.3 Motor vehicle noise

Noise Control Regulation provisions enforced by council and Police related to the way vehicles are operated include:

- vehicles operating in places other than roads and road-related areas, e.g. trail bikes (cl 13)
- use of motor vehicles on residential premises (cl 14)
- refrigeration units fitted to motor vehicles (cl 15)
- motor vehicle sound systems (cl 16 and 17).

These provisions manage vehicle noise in two ways, discussed in detail below:

- restricted times for vehicles on residential premises and for refrigeration units fitted to vehicles (Table 4.7)
- offensive noise provisions for vehicles used off-road and for vehicle sound systems.

The EPA and the Police administer other provisions within the regulation that relate to vehicle engine noise and the maximum prescribed noise levels permitted from vehicle exhausts. The Police can also issue on-the-spot fines for breaches of the NSW Road Rules 2008 (applied under the *Road Transport (Safety and Traffic Management) Act 1999*).

- Rule 291 – makes it an offence to start or drive a vehicle in a way that makes unnecessary noise (three licence demerit points also apply to this offence).
- Rule 291-1 – requires that the engine of a stationary vehicle be turned off to prevent noise, other than for stoppages in traffic or examinations due to engine malfunction.
- Rule 224 – requires that the horn is not used unless it is necessary to warn other road users or animals of the vehicle's approach, or if it is being used as an anti theft device.

Motor vehicles on residential premises

A vehicle must not be operated on residential premises so that it can be heard in a habitable room of another residential premises within the restricted times, apart from when the vehicle is entering or leaving the premises. An offence will be committed where the required warning has been issued and a person causes or permits the vehicle to be used in such a manner within 28 days of the warning. An example of where this clause would apply is where a vehicle at a residential premises is being revved or the engine is left running for an extended period. As a guide, an extended period might be longer than 5 to 10 minutes.

Table 4.7: Restricted times of use for vehicles

Type of noise:
Motor vehicle used on residential premises (except when entering or leaving) (cl 14) Refrigeration unit fitted to a motor vehicle (cl 15)
Times for which restrictions apply:
Before 8.00 am or after 8.00 pm on any Saturday, Sunday or public holiday
Before 7.00 am or after 8.00 pm on any other day
The operation of a vehicle on residential premises should not cause offensive noise to a neighbour at any time of day.

Refrigeration units on motor vehicles

Clause 15 of the Noise Control Regulation is intended to apply to vehicles fitted with refrigeration units used to keep freight cold. An example might be frozen food delivery trucks parked with their refrigeration units left running for extended periods.

Conditions under which restricted times of use apply, including the provision of warnings, the definition of 'habitable room' and the noise test applied are the same as described in subsection 4.3.1 of this Guide.

Vehicles operating in places other than roads or road-related areas

'Places other than roads or road-related areas' means places other than an area open to the public, or used by the public, which was developed for, or has as one of its main uses, the driving or riding of motor vehicles.

The *Road Transport (General) Act 2005* defines 'road-related area' as:

- (a) *an area that divides a road, or*
- (b) *a footpath or nature strip adjacent to a road, or*
- (b) *an area that is open to the public and is designated for use by cyclists or animals, or*
- (c) *an area that is not a road and that is open to or used by the public for driving, riding or parking vehicles, or*
- (d) *a shoulder of a road, or*
- (e) *any other area that is open to or used by the public and that has been declared to be an area under section 15 to be an area to which specific provisions of this Act or its regulations apply.*

Examples of vehicles being used in places other than roads or road-related areas where cl 13 of the Noise Control Regulation applies, include the use of trail bikes, four-wheel-drive vehicles and dune buggies operating in places such as private or public land, fire trails, bushland and recreation areas.

The regulation makes it an offence for vehicles operating in off-road locations to cause offensive noise. This could include noise affecting neighbours, people enjoying passive recreation on adjoining parks, or pedestrians.

Sound systems in motor vehicles

Offensive noise can result from motor vehicle sound systems operated at high volume. Often the music played in motor vehicle sound systems may have most of its energy in the lower frequencies. Such noise can travel further and is less attenuated by building facades.

Clause 16 of the Noise Control Regulation makes it an offence for 'a person to cause or permit the sound system of a motor vehicle to be used in such a manner that it emits offensive noise'.

Clause 17 makes it an offence for a person to drive or use a motor vehicle on a road or road-related area if the sound system of the motor vehicle emits offensive noise. Under this clause:

- only the driver of the vehicle can be guilty of an offence, and 2 demerit points will be recorded against the licence of a driver who is fined
- as the vehicle must be pulled over to issue a fine, only Police officers and EPA authorised officers can enforce this clause
- the motor vehicle must be driven or used on a road or road-related area, whereas cl 16 does not contain any limitations regarding the location where the motor vehicle is being used.

No general noise limits apply to situations covered by offensive noise requirements. Part 2 provides details on how to assess whether noise is offensive.

Penalties

Where an offence has occurred under cl 13 or 16 of the Noise Control Regulation, both the driver and the owner of the vehicle are taken to be guilty of the offence (see cl 20). This means that if a council enforcement officer wishes to issue a Penalty Notice, then it can be posted to the owner of the vehicle. The owner will not be liable if the owner was not in the vehicle at the time and provides a written statement nominating the driver at the time of the offence.

Equity in penalties

Clause 20 of the Noise Control Regulation allows the owner of a vehicle issued with a Penalty Notice for offensive noise under cl 13 or 16 to nominate the driver as the offender when the owner was not in the vehicle at the time of the offence. This means that the person

responsible for causing the offensive noise would be responsible for paying any fine. The Penalty Notice issued to the owner must be withdrawn and new one must be issued to the driver.

A similar system applies in relation to noise from vessels (see cl 31), littering from motor vehicles (see POEO Act s. 146), and for speeding and parking offences under the road transport legislation.

4.3.4 Noise from vessels

Section 6 of the POEO Act and clauses 84 and 86 of the POEO General Regulation 2009 result in the following ARA arrangements for vessels:

- The EPA is the ARA for any vessels covered by an environment protection licence for a port facility, and any vessel related to activities carried out by the state or a public authority. (Note some licences cover the vessel and some do not.)
- The Marine Parks Authority is the ARA for any vessel in a marine park other than those for which the EPA is the ARA.
- RMS is the ARA for all vessels outside of designated ports within three nautical miles of the coast and for non-pilotage vessels within designated ports, other than those for which the EPA and Marine Parks Authority are the ARA.
- Councils are the ARA for pilotage vessels within their local government areas within designated ports other than those for which the EPA and Marine Parks Authority are the ARA.

Notes:

1. Designated ports include Sydney Harbour, Botany Bay, Newcastle Port, Port Kembla, Yamba and Eden.
2. Non-pilotage vessels include, for example, any vessel outside of designated ports and recreational vessels, vessels less than 30 metres, sea planes and vessels over 30 metres exempt from the pilotage requirements (such as large harbour cruise vessels that do not leave the harbour) within designated ports.

In the POEO Act, 'vessel' is defined as 'any vessel used in navigation' and includes motor boats, sailing vessels, barges and float planes while on the water. It does not include model boats. 'Navigable waters' is defined as 'all waters that are from time to time capable of navigation and are open to or used by the public for navigation, whether on payment of a fee or otherwise, but does not include flood waters that have temporarily flowed over the established bank of a watercourse'.

The Water Traffic Regulations administered by RMS provides for exclusion zones for 'personal water craft' (which includes jet skis) in certain areas including Sydney Harbour.

Section 263 of the POEO Act makes RMS the ARA for the purposes of issuing Noise Control Notices in relation to any vessel.

The ARA may issue a Prevention Notice and RMS, Police, councils, Marine Parks Authority and EPA may issue Noise Abatement Directions in relation to vessels. Under section 206 of the POEO Act, RMS, Police Marine Parks Authority and EPA also have powers to stop test and inspect vessels. Refer to Vessels in Table 1.3.

Under clauses 28 and 34 of the Noise Control Regulation, RMS, Police, Marine Parks Authority, council and EPA may issue a Defective Vessel Notice where a vessel has no, appropriate, or defective, noise control equipment. Refer to Vessels in Table 1.3.

Aquatic events – council involvement

For racing vessels, the generally accepted maximum noise level for engines is 95 dB at 30 metres. For a significant international or national event, RMS may make it a condition of an aquatic licence that a particular race or meeting may exceed the maximum noise levels, but only if the relevant local council or councils have provided the race organiser with their written approval for this to occur.

Offences

RMS, Port Corporations, council and Police officers can issue an on-the-spot fine under the Noise Control Regulation for the following:

- offensive noise from any vessel (cl 30)
- vessel siren/horn used for purposes other than navigation (cl 29)
- vessel sound system emitting offensive noise (cl 33).

In applying the offensive noise test for vessels (see Part 2) the location of the vessel in relation to other vessels and land-based residences needs to be considered. A situation may occur where a high level of noise is being emitted from a vessel but it may not be offensive because the vessel is remote from any receivers.

RMS, Port Corporations and Police officers can also issue on-the-spot fines under the Noise Control Regulation for the following:

- vessel noise control equipment is not properly maintained (cl 32)
- using a vessel that is subject to a defective vessel notice (cl 34)
- removing/obscuring a defective vessel label or knowingly using a vessel with the defective vessel notice removed/obscured (cl 35).

The EPA may initiate court proceedings in any case related to a vessel, or the Marine Parks Authority where it is the ARA. Where councils or RMS are the ARA, section 218 of the POEO Act provides that RMS, but not councils, may initiate court proceedings for a noise pollution offence related to a vessel.

4.3.5 Traffic noise

Through road transport legislation, councils can impose vehicle weight restrictions and speed limits on certain roads, which can affect the level of noise generated by traffic on local roads. The design and location of traffic management structures (roundabouts, speed humps, chicanes etc.) can also affect traffic noise generation (sometimes adversely at the location where the devices are installed). Consideration of noise impacts should be made when planning traffic management measures, particularly in residential streets.

Councils may wish to refer to the *NSW Road Noise Policy* (DECCW 2011) to assist in their assessment of road traffic noise impacts. (RMS is preparing a series of practice notes to provide guidance on implementing the Road Noise Policy that will incrementally supersede the Environmental Noise Management Manual.)

4.4 Dealing with warnings and offences

For the following clauses in the Noise Control Regulation, a properly given warning needs to be issued to the noise maker before an offence can occur. It is an offence if the noise occurs within 28 days following the issue of a warning. These clauses are:

- 14–Use of motor vehicle on residential premises
- 15–Use of refrigeration units fitted to motor vehicles
- 50–Power tools and equipment
- 51–Musical instruments and sound equipment
- 52–Air conditioners and heat pump water heaters.

Similarly, a Noise Abatement Direction issued under the POEO Act s. 276 is a warning in the same way.

It is in the interests of the Police and council to foster a good relationship in relation to noise matters (see 3.4.4 Memorandum of Understanding). Therefore, cooperation between Police and council regarding Noise Abatement Directions and warnings under the Noise Control Regulation is encouraged as an effective approach to managing noise issues. Under the POEO General Regulation, the EPA, councils, Sydney Harbour Foreshore Authority, RMS, Sydney Ports Corporation and the Police have powers to issue Penalty Notices for the offences committed under the clauses listed above. Where a Noise Abatement Direction is given by one agency then another agency may be able to issue a Penalty Notice relating to that Direction. Case Study 3 (subsection 4.2.2) describes a situation where this happens. **This is not a recommended routine course of action as it is more effective for council or Police to follow up their own Directions.** However, it is good practice for council officers to inform local Police about Noise Abatement Directions that council has issued, especially where it is likely that the problem will re-occur at night when council staff are off duty.

Offences under the POEO Act and Noise Control Regulation can be prosecuted in a court. Alternatively, Penalty Notices can be issued. **The choice of taking either prosecution or Penalty Notice proceedings is available for all offences that are enforced by councils.**

Prosecutions for offences against the POEO Act and the Noise Control Regulation are criminal offences and must be proved beyond reasonable doubt. Sections 217, 218, 219, and 221 of the POEO Act identify who may institute criminal proceedings and for which offences.

Maximum fines for a prosecution of an offence against the POEO Act or regulations are generally listed with the relevant section or clause.

The *EPA Prosecution Guidelines* (EPA 2012b) provide guidance on deciding when to prosecute or issue a Penalty Notice when an offence has been committed. The guide may be accessed at: www.epa.nsw.gov.au/legislation/prosguid.htm Some of the things to consider when deciding whether to prosecute or issue a Penalty Notice for a breach of the POEO Act or regulations are listed in Table 4.8.

Once a particular occurrence of an offence has been dealt with by issuing a Penalty Notice, it is not possible to proceed with a prosecution of the same occurrence of the offence. However, where a Penalty Notice has been issued and it becomes apparent that the offence is too serious to be dealt with by Penalty Notice, the notice can be withdrawn within 28 days of being served (even if the penalty required by the notice has been paid) and a prosecution can proceed (see POEO Act s. 228).

Although councils and other ARAs may institute court proceedings for contravention of a Noise Abatement Direction or a warning related to a clause of the Noise Control Regulation, the Police may only institute court proceedings for contravention of a Noise Abatement Direction.

Table 4.8: When to prosecute or issue a Penalty Notice

Prosecution	Penalty Notice
Serious breach of the Act or regulations.	Minor breach of the Act or regulations. The facts are obvious.
Problem is a continuing situation where previous enforcement action has been unsuccessful.	Problem is a one-off situation and can be remedied easily. Up to two Penalty Notices may be reasonable for the same type of offence.
Education and other enforcement actions have failed to change behaviour. More important to address the serious breach. Want to deter similar offences – successful prosecution may help change others' behaviour.	A Penalty Notice is likely to be a viable deterrent. Opportunity to educate the noisemaker given that Penalty Notice is immediate.
Larger penalty more suitable for the nature of the offence.	Smaller fine is suitable for the nature of the offence.

4.5 Dealing with offences committed by minors

Issuing Penalty Notices to people under 18 (minors) can be complex. In many cases it will be more appropriate to issue a warning, because special procedures apply when interviewing, issuing Penalty Notices or taking court action against children.

Where it is deemed appropriate to issue a Penalty Notice to a young person, seek legal advice.

- For children less than 10 years of age, it is not possible to issue a Penalty Notice, as they are presumed incapable of being guilty of an offence. In addition, the *Fines Act 1996* specifically excludes children under 10 years old from being fined.
- Children aged 10 to 14 years can be issued with a Penalty Notice. However, if the matter was referred to the court for consideration then the prosecutor (e.g. council) would need to show that the child knew that what they were doing was wrong. The matter would be heard in the Children's Court and lower penalties would apply.
- Young people aged 15 to 17 years old can be issued with a Penalty Notice. If the Penalty Notice is referred to court it would be heard in the Children's Court and lower penalties would apply.

4.6 References

DECC 2009, *Guide to Notices*, Department of Environment and Climate Change NSW, Sydney, www.epa.nsw.gov.au/licensing/guidetotonotices.htm

DECCW 2011, *NSW Road Noise Policy*, NSW Department of Environment, Climate Change and Water, Sydney, www.epa.nsw.gov.au/noise/traffic.htm

EPA 2000, *NSW Industrial Noise Policy*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/noise/industrial.html

EPA 2012a, *Dealing with Barking Dogs*, Environment Protection Authority, Sydney, www.epa.nsw.gov.au/noise/barkingdogs.htm

EPA, 2012b, *EPA Prosecution Guidelines*, Environment Protection Authority, NSW, Sydney, www.epa.nsw.gov.au/legislation/prosguid.htm

Noise Guide for Local Government

Part 5 Appendixes



- Part 1 Framework for noise control
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Part 5 Appendixes

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Appendix 1 Technical notes

1. What is sound and noise?
2. How do we measure noise?
3. What does 'A' weighting mean?
4. How do you add noise levels?
5. How do you subtract noise levels?
6. What is distance attenuation?
7. Method of measuring the source when direct measurement at the receiver is impractical
8. Converting sound power levels to sound pressure levels
9. What is tonality?

Note: See Glossary for an explanation of terms.

1. What is sound and noise?

Sound is the mechanical vibration of a gaseous, liquid or elastic medium through which energy is transferred away from the source by progressive sound waves. With respect to hearing, it is simply fluctuations in air pressure detected by the ear. Noise is simply unwanted sound.

2. How do we measure sound?

Sound is measured with a sound level meter, which consists of a microphone, an amplifier, electronic processing circuitry and a digital or analogue display. The microphone is like the ear in that it can detect fluctuations in air pressure (sound). Air or **sound pressure** is measured in pascals (Pa), but we express **sound pressure level** (SPL) in decibels (dB), which is a logarithmic scale used to compress the range of audible sound pressure. The relationship between sound pressure and SPL is outlined below:

$$\text{SPL (dB)} = 20 \cdot \log(\mu\text{Pa}/\mu\text{Pa}_{\text{ref}})$$

where:

μPa = the actual sound pressure
in micropascals

$\mu\text{Pa}_{\text{ref}}$ = the reference sound pressure
of 20 micropascals

3. What does 'A'-weighting mean?

Noise consists of various frequency components often referred to as octaves. When we use a single number to describe an SPL, each frequency is combined (logarithmically) to obtain a single number. When we say that an SPL is 'A'-weighted, i.e. dB(A), we have applied a correction factor to each octave frequency. When these frequencies are then combined we say that the overall level is 'A'-weighted. The 'A' frequency weighting scale is extensively used to approximate human dose-response relationships to given SPLs; i.e. the A-weighting scale is designed to simulate the response of the human ear. It is less effective for noise dominated by low-frequency content or for very loud sources of noise. All electronic sound level meters display A-weighted SPLs.

4. How do you add noise levels?

Sound pressure levels are expressed in decibels, which is a logarithmic scale. Therefore we cannot simply arithmetically add noise levels. For example, 35 dB plus 35 dB does not equal 70 dB.

To add two or more noise levels, if the difference between the highest and next highest noise level is:

0–1 dB then add **3 dB** to the higher level to give the total noise level

2–3 dB then add **2 dB** to the higher level to give the total noise level

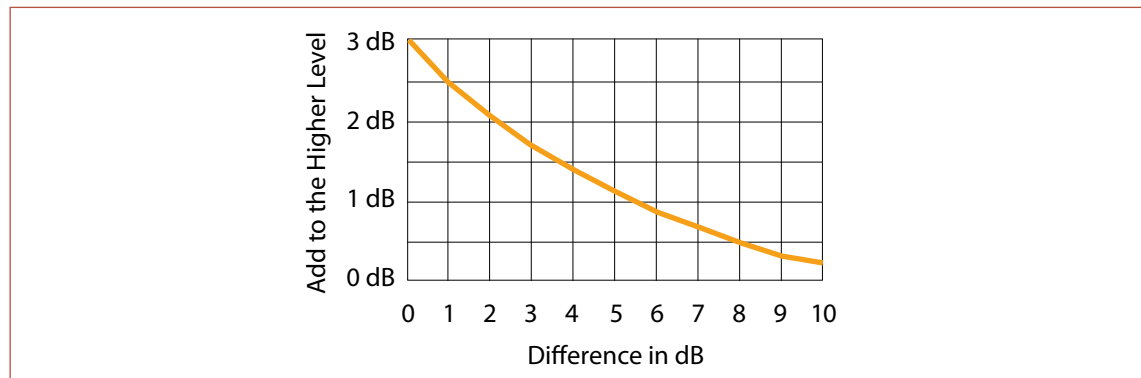
4–9 dB then add **1 dB** to the higher level to give the total noise level

10 dB and over, then the noise level is **unchanged** (i.e. the higher level is the total level)

So, 35 dB plus 35 dB equals 38 dB.

Alternatively, values can be read from the graph in Figure A1.1.

Figure A1.1: Adding noise levels



5. How do you subtract noise levels?

If the noise level (L_{Aeq}) with the source off is not significantly lower (i.e., 10 dB or more) than with the source on (because other noise has similar levels to the subject noise in the area of measurement), a way of finding out what the subject noise level is, without directly measuring it, is described in Table A1.1. As a rule of thumb any difference between noise levels from the subject source and noise levels from irrelevant sources of 8 dB or more means that the irrelevant noise is not affecting measurements of the subject source.

Table A1.1: Estimating the subject noise level with the source off

Difference between source noise on and source noise off (dB)	Actual noise of the source
1	Measured level – 7 dB
2	Measured level – 4 dB
3	Measured level – 3 dB
4 to 5	Measured level – 2 dB
6 to 9	Measured level – 1 dB
10 or more	Measured level

Note: Take care in the measurement procedure; the SPL with the source on is very close to the SPL with the source off. This is because a slight variation in the measurements can lead to a large difference in the calculated actual level of the source.

6. What is distance attenuation?

Distance attenuation is the reduction of SPL as a function of distance. As a general rule the SPL will decrease by 6 dB with a doubling of distance from a point source in the free field.

The following relationship can be used to quantify distance attenuation:

$SPL_x = SPL_y - 20 \log(d_x/d_y)$ for a **point** source (e.g. an air conditioning unit)

$SPL_x = SPL_y - 10 \log(d_x/d_y)$ for a **line** source (e.g. heavy traffic along a road)

where:

SPL_x = SPL at distance x from the source in metres (predicted)

SPL_y = SPL at distance y from the source in metres (measured)

d_x = distance in metres to location x from the source

d_y = distance in metres to location y from the source

7. Methods of measuring the source when direct measurement at the receiver is impractical

Method 1 — Measure near the source where it dominates and extrapolate back to the desired measuring location:

- Take care not to measure too close to the source in the 'near field' (where the dimensions of the source are significant compared with the measuring distance to it). As a general rule, being at least one-third the length of the longest dimension of the source away will be outside the near field.
- Consider barriers and ground type when extrapolating back, as these may further attenuate the extrapolated noise level.
- This method works best when terrain between source and receiver is flat and clear, because effects of topography on attenuation are much reduced.
- When extrapolating, check that the equation used is consistent with whether the source is a point or line source (e.g. a fan would be a point source, whereas a regularly trafficked roadway or conveyor system would be a line source).

Method 2 — Obtain the sound power of the source and apply a prediction model:

- Useful where terrain (including barriers) is complicated but can be modelled.
- Requires access to a model and expertise in applying it (suited for large developmental projects where acoustic expertise is available).

8. Converting sound power levels to sound pressure levels

A noise source radiates power which is measured as the sound power level. It is a characteristic of the source alone and is independent of distance. It is used to rate and compare different noise sources. The sound pressure level of the source is the level of sound caused by the source but at a distance from it. The level of sound pressure is therefore distance dependent.

A formula for converting sound power levels to sound pressure levels is:

$$SPL = SWL - 20 \log_{10} r - 8,$$

where

SPL is sound pressure level in dB(A),

SWL is sound power level in dB(A),

"r" is the distance from the source to the measuring point.

This formula assumes no increased attenuation due to barriers, air absorption or ground effects and no directivity effects from the source. If the source is not directional towards the receiver, the formula is likely to provide a conservative estimation of sound pressure level, that is, the actual value may be less than this.

9. What is tonality?

Tonal noise has a prominent frequency and is characterised by a definite pitch. These characteristics can make the noise more annoying than its noise level alone would suggest. Examples would be a vehicle horn, a whining noise from a leaf blower or an electrical transformer, which may emit a tone at a specific frequency such as 50 Hz., that is, 50 cycles per second. The *Interim Construction Noise Guideline* (DECC 2009) and the *NSW Industrial Noise Policy* (EPA 2000) suggest that an extra 5 dB can be added to the noise level to account for the increased annoyance of tonal noise. When measuring noise levels, noise tones can be defined quantitatively. This is described in Part 4 of the *NSW Industrial Noise Policy* (EPA 2000).

References

DECC 2009, *Interim Construction Noise Guideline*, Department of Environment and Climate Change NSW, Sydney

EPA 2000, *NSW Industrial Noise Policy*, Environment Protection Authority, Sydney

Appendix 2 Templates for notices

Templates that can be used for preparing notices are in the *Guide to notices* on the EPA website at www.epa.nsw.gov.au/resources/licensing/09387noticesguide.pdf as follows:

- Appendix 2 – Prevention Notices
- Appendix 3a – Compliance Cost Notices (s.104)
- Appendix 3b – Compliance Cost Notices (s. 267B)
- Appendix 5 – Noise Control Notices

Noise Abatement Direction (example only)

The actual text of a Noise Abatement Direction needs to be individually worded to meet each regulatory authority's own requirements and circumstances. Regulatory authorities should seek their own legal advice on the appropriate wording. **Written directions are not required — Noise Abatement Directions can be issued either verbally or in writing.**

[Insert regulatory authority's name or letterhead]

Noise Abatement Direction Section 276 Protection of the Environment Operations Act 1997

To: *[Insert: name of person or company to whom notice is being addressed]*

- ACN if notice is being addressed to a company
- ARBN if relevant
- if trading under a registered business name, 'trading as <business name>'
- full address for addressee of direction.]

Date: *[insert date direction issued.]*

Background

[Set out relevant background information that demonstrates why the direction needs to be issued.]

Noise Abatement Direction

[Insert authorised person's name], an authorised person of *[insert regulatory authority's name]*, directs *[name of person or company to whom the direction is being addressed]* to cease causing the emission of offensive noise, or making or contributing to the making of the offensive noise being emitted, from the premises at *[insert address of premises]* ('the premises') by *[specify source, e.g. pneumatic drill]* or any other source which is contributing to the offensive noise being emitted from the premises.

For the meaning of 'offensive noise', see the information at the end of this direction.

This direction does not prevent the emission of noise that is not offensive noise.

This direction is issued under section 276 of the *Protection of the Environment Operations Act 1997*.

Expiry

This direction remains in force until *[insert expiry date and time. Note that maximum period is 28 days from the date of issue]*.

Offence

It is an offence against section 277 of the *Protection of the Environment Operations Act 1997* to fail to comply promptly with this direction and to continue to fail to comply with this direction while it is in force, unless you have a reasonable excuse.

Signed: *[insert name of authorised officer]*, authorised officer of *[insert name of regulatory authority]*.

Information about this direction

Meaning of ‘offensive noise’:

‘Offensive noise’ is defined in the *Protection of the Environment Operations Act 1997* as meaning noise:

- (a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:
 - (i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or
 - (ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or
- (b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.

Penalty for contravening this direction

The maximum penalty that a court may impose on a person (including a corporation) for contravening this direction is \$3300.

Noise Warning (example only)

The actual text of the Noise Warning needs to be individually worded to meet each regulatory authority’s own requirements and circumstances. Regulatory authorities should seek their own legal advice on the appropriate wording. **Written warnings are not required — noise warning can be issued verbally or in writing.**

Noise Warning

Protection of the Environment Operations (Noise Control) Regulation 2008

Name: *[Insert full name of person or company to whom the warning is addressed.]*

Of: *[Insert full address of person or company to whom warning is being issued.]*

Date of issue: *[Insert the date on which the warning is being issued.]*

Place of issue: *[Insert the address of the location where the warning is issued.]*

Issued by: *[Insert full name of person and title, and council issuing the warning.]*

This warning is given for the purposes of the Protection of the Environment Operations (Noise Control) Regulation 2008.

Clause 14 — Use of motor vehicles on residential premises*

Clause 15 — Use of refrigeration units fitted to motor vehicles*

Clause 50 — Power tools and equipment*

Clause 51 — Musical instruments and sound equipment*

Clause 52 — Air conditioners and heat pump water heaters*

*(*Strike out clauses not applicable.)*

A person must not cause or permit *[Insert text of clause 14(1), 15(1), 50 (1), 51(1), 52(1), as applicable, excluding the maximum penalty information.]*

[Where the alleged contravention is against clause 14, add in the words ‘This requirement does not apply to noise emitted from the motor vehicle while it is entering or leaving the premises.’]

It is an offence against clause *[insert clause number]* of the Protection of the Environment Operations (Noise Control) Regulation 2008 if you cause or permit the *[insert type of equipment, e.g. swimming pool pump]* to be used in that manner within 28 days after this warning was given to you.

The maximum penalty that a court may impose on a corporation for committing this offence is \$11,000.

The maximum penalty that a court may impose on an individual for committing this offence is \$5500.

Appendix 3 Installation of air conditioners, heat pump water heaters, pool/spa pumps and rain water tank pumps — preventing noise impacts on neighbouring properties

1. Introduction

Residential air conditioning units and heat pump water heaters are a common source of neighbourhood noise complaints. These complaints can undermine goodwill in the community and absorb a significant level of the local council's resources as many of these complaints are complex and difficult to resolve. Appropriate equipment should be purchased and installed correctly so that noise issues do not arise in the first place.

The level of the noise impact of this equipment is influenced by the amount of noise produced by the equipment, the distance from the equipment to any affected neighbours, the height and composition of any barriers, such as a boundary fence, and the proximity of any surfaces that will reflect sound.

For proposed residential dwellings, it is important that these factors be considered at the building design stage so the potential for noise impact is addressed. For existing dwellings, it is also important to consider these factors so equipment with an appropriate noise level is purchased and located where it will not impact on neighbours.

Under the State Environment Planning Policy (Exempt and Complying Development Codes), councils may not require development approval for the installation of this equipment if it meets certain requirements specified within the Code.

This Code was under review at the time of publication so councils should check the current requirements.

2. Sound power level and sound pressure level

A sound source radiates a certain amount of power into the surrounding air, called the sound power level. Sound power levels relate to the level of sound at the source. Sound power levels may be specified as 'L_w', 'L_{WA}' or 'SWL'.

The sound power gives rise to sound pressure waves in the air. The logarithmic magnitude of these waves is referred to as the sound pressure level. The sound pressure level may be measured at different distances from the source and may be specified as 'L_p' or 'SPL'. In this document, when referring to the sound pressure level at the boundary, the sound pressure level is also referred to as the noise level. Noise is unwanted sound.

Sound is measured in decibels (dB). An A weighted sound level, dB(A), approximates the human ear's response to sound as the human ear is less sensitive to lower frequencies. An increase of 10 dB is perceived as twice as loud and therefore an increase of 20 dB is four times as loud.

3. Establishing the appropriate noise level at the receiver

Council can prescribe the sound pressure level (noise level) that should not be exceeded when measured at the neighbouring residence. The following requirements should be considered.



Air conditioner outdoor unit placed so as not to annoy neighbours. Photo: EPA

3.1 Air conditioners, heat pump water heaters and pool/spa pumps

The Noise Control Regulation has provisions related to the use of air conditioners, heat pump water heaters and pool and spa pumps. A penalty notice may be issued, after a warning has been given, for this equipment where it is installed on residential premises and it can be heard in any habitable room of a neighbouring residence. This includes when any window or door is open. A habitable room means any room other than a garage, storage area, bathroom, laundry, toilet or pantry.

Air conditioners and heat pump water heaters

These provisions apply for the times before 8.00 am and after 10.00 pm on weekends or public holidays or before 7.00 am and after 10.00 pm on any other day. (cl 52)

Pool and spa pumps

These provisions apply for the times before 8.00 am and after 8.00 pm on weekends or public holidays or before 7.00 am and after 8.00 pm on any other day. (cl 50)

For the times not covered by the regulation, the *Protection of the Environment Operations Act 1997* provides a number of regulatory tools, including Noise Control and Prevention Notices, which may be applied if the noise level from any of this equipment is deemed to be offensive.

Night-time noise levels

As a guide, the Fairair noise calculator (AIRAH 2006) referred to in subsection 7.1 below indicates that for air conditioners a maximum sound pressure level (noise level) of 35 dB(A) immediately on the neighbour's side of the boundary should be sufficient to enable night-time use. This is considered to be equally applicable to heat pump water heaters and pool and spas pumps.

However, because the regulation requires that the equipment not be heard in neighbouring habitable rooms at night, there may be circumstances (such as where a window for a neighbouring room is very close to the boundary and/or where night-time background noise levels are very low) that a level lower than 35 dB(A) at the boundary may be required if the equipment is to be used at night. If, for example, a neighbour's bedroom window is less than 2 metres from the boundary it may be prudent to install equipment with a sound power level around 5 dB(A) less than what the calculator indicates so that the noise level at the boundary is around 30 dB(A).

Daytime noise levels

If the equipment cannot be heard at night, it is unlikely that it would be considered to be causing offensive noise during the day. If the equipment is not used at night but advice is required for an acceptable level during the day, council can provide guidance on what it considers to be a suitable level. The following views are relevant:

- the Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) *Air Conditioning Residential Best Practice Guideline* (AIRAH 2003) referred to in subsection 6.2 below indicates that 5 dB(A) above background is appropriate.
- the Fairair calculator suggests 45 dB(A) for air conditioners at the boundary. Using this level should ensure that no issues arise as most urban and suburban areas have background levels above 40 dB(A) during the day and achieving a level of 45 dB(A) means the noise level of the equipment will be within 5 dB(A) of the background level. However, if sensitive areas on the neighbour's side of the boundary are less than 2 metres from the boundary it may be prudent to install equipment with a sound power level of 40 dB(A) at the boundary.

These levels are considered to be equally applicable to air conditioners, heat pump water heaters and pool and spas pumps. Guidance on how to measure the background noise level is provided in Part 2.3 of this guide.

3.2 Rainwater tank pumps

Rainwater tank pumps are not covered by the Noise Control Regulation, however the POEO Act provides a number of regulatory tools, including Noise Control and Prevention Notices, which councils may use if the noise level from a rainwater tank pump is deemed to be offensive at any time. As noted above, councils may require a development consent for a rainwater tank if the pump is not housed in a soundproof enclosure.

3.3 Summary of noise levels

The default noise levels in Table A3.1 below should be used unless:

- the local council has a formal written policy that stipulates different levels are applied by the council, or
- a sound level meter is used to establish the background levels and determine appropriate levels to prevent the equipment being heard at night (or causing offensive noise at night for rainwater tank pumps) and exceeding more than 5 dB(A) above the background during the day.

Table A3.1: EPA guide for default noise levels for noisy domestic equipment

Equipment	Times		Acceptable noise level immediately on neighbours side of boundary	
			If sensitive areas on the neighbour's side of the boundary are greater than 2 metres from the boundary	If sensitive areas on the neighbour's side of the boundary are less than 2 metres from the boundary
Air conditioners and heat pump water heaters	Night-time	Before 8 am or after 10 pm Sat, Sun or public holidays	35	30
		Before 7 am or after 10 pm on any other day	35	30
	Daytime		45	40
Pool and spa pumps	Night-time	Before 8 am or after 8 pm Sat, Sun or public holidays	35	30
		Before 7 am or after 8 pm on any other day	35	30
	Daytime		45	40
Rainwater tank pumps	Night-time 10 pm to 7 am		40	35
	Daytime 7 am to 10 pm		45	40

4. Establishing where to measure on the boundary

The most sensitive areas in the neighbouring premises need to be identified and measurements based around the point on the boundary closest to these areas.

Air conditioners, heat pump water heaters and pool and spa pumps should not be audible in bedrooms, lounge rooms, kitchens etc in neighbouring residences during the night, even if windows or doors are open. Therefore, if this equipment is to be used during the night, it may be prudent to assess the noise level on the boundary at the point closest to any windows of these rooms. To prevent complaints about noisy rainwater tank pumps, it may also be prudent to use the same point for these devices.

When determining daytime noise levels, sensitive areas may include, for example, home offices and outside recreational areas such as decks, balconies, verandas etc.

5. Establishing the sound power level of the equipment

The sound power level may be noted on a label on the equipment or noted in the technical specifications for the equipment. If a sound pressure level is provided rather than the sound power level, it should state at what distance (e.g. 78 dB(A) at 1.5 m or 55 dB(A) at 7.5 m). If a sound pressure level has been provided, this may be converted to the sound power level (see Table A3.2). (The levels in the table are based on the following formula: sound power level = sound pressure level + $20\log_{10}$ x distance + 8dB.)

If neither the sound power level nor the sound pressure level is available, care should be exercised when purchasing the equipment.

6. Establishing the sound pressure level (noise level) at the boundary for existing equipment

6.1 If there are no barriers or reflective surfaces

Sound attenuates with distance by 6 dB for doubling of distance when in the free field (i.e. with no obstacles between the equipment and the receiver and no reflective surfaces around the equipment). If the sound power level of the equipment is known, the sound pressure level (noise level) at varying distances from the equipment can be estimated using Table A3.3. (The levels in the table are based on the following formula: sound pressure level (noise level) = sound power level – $20\text{Log}_{10} \times \text{distance}$ – 8dB.)

The table does not take account of barriers or reflective surfaces and indicates the sound pressure level (noise level) at the boundary, not on the neighbour's side of the boundary behind any fence that may be along the boundary.

Table A3.3 may also be used to estimate the level of noise reduction that may occur between the neighbour's side of the boundary and the residence on that side of the boundary.

6.2 Using the AIRAH Guideline to take into account barriers and reflective surfaces

The Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) has published an *Air Conditioning Residential Best Practice Guideline* on its website which includes a method for use when an existing air conditioner needs to be located or relocated so that it does not impact on neighbouring residences. Based on the sound power level of the unit, it estimates the distance from the boundary that the unit needs to be located in order for it to maintain a 5 dB(A) level above background noise on the neighbour's side of the boundary fence. This takes into account barriers such as any fence along the boundary and reflective surfaces around the equipment. Although the method is designed for air conditioners, it may also be applied to heat pump water heaters, pool/spa pumps and rainwater tank pumps and can be accessed at: www.airah.org.au/Content/NavigationMenu/Resources/BestPracticeGuides/default.htm

See also Appendix 4 *Air conditioner noise*.

7. Establishing the sound power level for new equipment

7.1 Using Fairair online calculator

The Fairair online calculator available at www.fairair.com.au/ can be used to estimate the maximum sound power level that equipment may have in order not to impact on neighbouring residences. Although the calculator is designed for air conditioners, it may also be applied to heat pump water heaters, pool/spa pumps and rainwater tank pumps. The calculator takes into account the distance to the boundary, the nature of any fence that may be along the boundary and any reflective surfaces around the equipment.

The calculator provides the sound power level the equipment needs to achieve a maximum level of 35 dB(A) on the neighbour's side of the boundary fence. In most circumstances this should ensure that neighbours will not be affected. However, to ensure the equipment cannot be heard in habitable rooms in neighbouring residences at night, there may be circumstances (such as where a window for a neighbouring room is very close to the boundary and/or where night-time background noise levels are very low) that a level lower than 35 dB(A) at the boundary may be required. If, for example, a neighbour's window is less than 2 metres from the boundary it may be prudent to purchase equipment with a sound power level around 5 dB(A) less than what the calculator indicates.

The guidance material related to air conditioner installation does not provide calculations for units located less than 1 m from the boundary because at these distances the formula used to calculate the level of noise attenuation resulting from the distance is less reliable. This is primarily because the proximity of reflective surfaces may result in an underestimation of the noise levels at the receiver. Using the standard formula noted in sections 5 and 6, the sound pressure level at 1.0 m from the equipment is about 8 dB less, and at 0.5 m from the equipment is about 2 dB less than the sound power level of the equipment.

Therefore, if the equipment is sited around:

- 0.5 m from the boundary but a distance of 1.0 m is applied to the Fairair online calculator, equipment with a sound power level of at least 6 dB less than that recommended by the calculator should be installed
- 0.75 m from the boundary but a distance of 1.0 m is applied to the Fairair online calculator, equipment with a sound power level of at least 2.5 dB less than that recommended by the calculator should be installed.

7.2 Using the AIRAH Guideline

The *Air Conditioning Residential Best Practice Guideline* (AIRAH 2003) includes a method for use when a new air conditioner is being installed in a particular location. It estimates the maximum sound power level the equipment may have in order not to impact on neighbouring residences. Although the method is designed for air conditioners, it may also be applied to heat pump water heaters, pool/spa pumps and rainwater tank pumps.

The guideline provides the sound power level the equipment needs to achieve a maximum level of 5 dB(A) above background on the neighbour's side of the boundary fence. This requires that the background level is established requiring the use of a sound level meter 5 dB(A) above the background may not be a sufficiently low level to enable the unit to be used at night. (See sections 3.1 and 7.1 above)

8. Reducing the noise level

Repositioning the equipment will help to reduce the noise that is affecting the neighbours. Installing more effective barriers, such as a higher or more solid fence or garden wall, or a properly designed acoustic enclosure around the equipment itself, should also assist to reduce noise levels. Installing equipment with a lower sound power level should be considered. For existing equipment, or new equipment where noise calculations have been undertaken but neighbours are still affected, a combination of these measures may be necessary.

8.1 Increasing the distance

A reduction of 6 dB(A) may be achieved for each doubling of distance between the proposed installation site and the point on the boundary adjacent to any sensitive areas in the neighbouring property.

For advice on the use of barriers and enclosures refer to:

- The EPA Victoria installation guideline *Cool air – quietly and efficiently: A guide to buying and operating an air conditioner* (EPA Publication 1176 (2007))
www.epa.vic.gov.au/noise/noise_publications.asp
- the *Air Conditioning Residential Best Practice Guideline* (AIRAH 2003)
www.airah.org.au/Content/NavigationMenu/Resources/BestPracticeGuides/default.htm
- Appendix 5 of this Guide

Note: Installing acoustic enclosures may require specialist advice to ensure the enclosure effectively reduces noise and does not affect the performance of the equipment.

9. Noise labelling of air conditioners

Clause 45 of the Noise Control Regulation requires all new domestic refrigerated air conditioners sold in NSW that have been manufactured after 1 March 1986 and have a cooling capacity of 12 kilowatts or less, to have a noise label displaying the unit's sound power level. Units with a tonal component are meant to have 5 dB(A) added to this sound power level. These requirements can be enforced for any domestic refrigerated air conditioner manufactured in or imported directly into NSW and councils are able to prosecute any person who sells a new air conditioner that does not meet these requirements.

Notes:

1. These requirements do not apply to evaporative air conditioners.
2. At the time of writing, the EPA is leading a Standing Council on Environment and Water project, which is working towards an Australia wide noise labelling scheme for domestic air conditioners.

10. Other Information

Useful background material is available in the Bruel & Kjaer Environmental Noise Booklet (Brüel & Kjær 2001) at: www.bksv.com/doc/EnvironmentalNoiseBooklet_English.pdf

11. Suggested approach when purchasing and installing new equipment

Step 1

Establish if the equipment is going to be used at night – or only during the day.

Step 2

Determine the noise level to be achieved immediately on the neighbour's side of the boundary by using the default levels in Table A3.1, unless:

- council has a formal written policy that stipulates different levels are applied by council, or
- a sound level meter is used to establish the background levels and determine appropriate levels to prevent the equipment being heard at night (or causing offensive noise at night for rainwater tank pumps) and exceeding more than 5 dB(A) above the background during the day.

Step 3

The simplest way to determine the sound power level the new equipment should not exceed is to use the Fairair online calculator. (www.fairair.com.au/)

Step 4

Because the calculator is based on achieving 35 dB(A) during the night or 45 dB(A) during the day, make any adjustment necessary to ensure the equipment would not cause a noise nuisance. For example, if the neighbour's bedroom window or home office window is within 2 metres of the boundary, purchase equipment with a sound power level 5 dB(A) less than what the calculator indicates.

Step 5

If equipment with a sound power level low enough to meet the necessary sound power level is not available, determine if:

- moving the proposed installation site further away from the sensitive point on the boundary fence and/or improving the barrier (e.g. making it higher and/or more solid) and/or installing an acoustic enclosure around the equipment (that won't affect its operation) will enable the required sound pressure at the boundary to be met, and/or

- if the equipment is to be operated at night, consider operating a time switch so that the equipment only operates during the day. (**Note:** this may affect the efficiency of the equipment).

12. Examples for a heat pump water heater (HPWH)

Note: Examples one to three use the AIRAH on-line calculator.

Example one:

- It is proposed that the HPWH will operate during the night.
- The distance from the proposed site of the HPWH to the point on the boundary fence adjacent to neighbour's bedroom window is 1.5 metres.
- The neighbour's bedroom window is estimated to be less than 1 metre from the boundary.
- There is a fence which only just blocks the line of sight between the HPWH and the window and the fence has gaps in it.
- It is proposed that the HPWH is to be located against the wall of the house, but there are no other walls nearby, so the number of reflective surfaces is 1.
- Using a distance of 1.5 metres, a barrier factor of 'a fence that only just blocks the line of sight and has gaps in it' and 1 reflective surface, the online calculator determines that the HPWH will need to have a maximum sound power level of no more than 44 dB(A).
- Because the neighbour's bedroom window is very close to the boundary, to ensure no noise issues arise, a HPWH with a sound power level 5 dB(A) less than that determined by the calculator should be purchased – i.e. 39 dB(A).
- The specifications for the HPWH recommended by the supplier note that it has a sound pressure level of 48 dB(A) at 1 m.
- Using the conversion method used in Tables A3.2 and A3.3, it is determined that the HPWH has a sound power level of 56 dB(A) i.e. $48 \text{ dB(A)} + 8 \text{ dB(A)} = 56 \text{ dB(A)}$.
- The HPWH has a maximum sound power level greater than 39 dB(A) and therefore should not be installed as proposed.
- Moving the proposed installation site further away from the point on the boundary fence adjacent to the neighbour's bedroom window, sourcing a quieter model, improving the barrier at the boundary (e.g. making it higher and/or more solid) and installing an acoustic enclosure around the HPWH should all be considered.
- Consideration may also be given to installing a time switch so the HPWH only operates during the day. (**Note:** this may affect the efficiency of the HPWH.)

Example two:

- It is proposed that the HPWH will operate during the night.
- The distance from the proposed site of the HPWH to the point on the boundary fence adjacent to neighbour's bedroom window is 4 metres.
- The neighbour's bedroom window is estimated to be about 1 metre from the boundary.
- There is a typical paling fence which completely blocks the line of sight between the HPWH and the window.
- It is proposed that the HPWH will be located against the wall of the house, but there are no other walls nearby, so the number of reflective surfaces is 1.
- Using a distance of 4 metres, a barrier factor of a typical paling fence and 1 reflective surface, the online calculator determines that the HPWH will need to have a maximum sound power level of no more than 58 dB(A).

- Because the neighbour's bedroom window is close to the boundary, to ensure no noise issues arise, a HPWH with a sound power level 5 dB(A) less than that determined by the calculator should be purchased – i.e. 53 dB(A).
- The specifications for the HPWH recommended by the supplier note that it has a sound pressure level of 44 dB(A) at 1 m.
- Using the conversion in Tables A3.2 and A3.3, it is determined that the HPWH has a sound power level of 52 dB(A) i.e. $44 \text{ dB(A)} + 8 \text{ dB(A)} = 52 \text{ dB(A)}$.
- The HPWH has a maximum sound power level less than 53 dB(A) and therefore may be installed as proposed.

Example three:

- It is proposed that the HPWH will operate during the night.
- The distance from the proposed site of the HPWH to the point on the boundary fence adjacent to neighbour's bedroom window is 5 metres.
- The neighbour's bedroom window is estimated to be at least 3 metres from the boundary.
- There is a solid brick fence which completely blocks the line of sight between the HPWH and the window.
- It is proposed that the HPWH will be located against the wall of the house, but there are no other walls nearby, so the number of reflective surfaces is 1.
- Using a distance of 5 metres, a barrier factor of a solid brick fence and 1 reflective surface, the online calculator determines that the HPWH will need to have a maximum sound power level of no more than 63 dB(A).
- The specifications for the HPWH recommended by the supplier note that it has a sound power level of 63 dB(A).
- The HPWH has a maximum sound power level that is not greater than that recommended by the on line calculator and therefore may be installed as proposed.

Example four:

Note: This example uses the 'Determining sound pressure level (noise level) at a boundary' as shown in Table A3.3.

- It is proposed that the HPWH will operate during the night.
- The distance from the proposed site of the HPWH to the point on the boundary fence adjacent to neighbour's bedroom window is 10 metres.
- The neighbour's bedroom window is estimated to be at least 3 metres from the boundary.
- There is no fence blocking the line of sight between the HPWH and the window.
- It is proposed that the HPWH will be located away from any walls.
- Using a distance of 10 metres, Table A3.3 indicates that there will be a sound attenuation of 28 dB(A).
- To achieve a sound pressure level of 35 dB(A) immediately on the neighbour's side of the boundary the HPWH will need to have a maximum sound power level of no more than $28 + 35 = 63 \text{ dB(A)}$.
- The specifications for the HPWH available note that it has a sound power level of 63 dB(A).
- The HPWH has a maximum sound power level that is not greater than that determined using Table A3.3 and therefore may be installed as proposed.

The approaches provided are a guide only and where noise calculations have been undertaken but neighbours are still affected, a combination of the measures noted under 'Reducing the noise level' may still be necessary.

If there is uncertainty about using this guidance and/or concern that the noise from a proposed installation will cause a noise issue, consideration should be given to engaging an acoustic consultant for advice.

Table A3.2: Converting sound pressure level to sound power level

Sound pressure level distance (m)	Decibels to be added to the sound pressure level to establish the sound power level of the equipment
0.5	2
1	8
1.5	11.5
2	14
2.5	16
3	17.5
3.5	19
4	20
4.5	21
5	22
5.5	23
6	23.5
6.5	24
7	25
7.5	25.5
8	26
8.5	26.5
9	27
9.5	27.5
10	28
10.5	28.5
11	29
11.5	29
12	29.5
12.5	30
13	30
13.5	30.5
14	31
14.5	31
15	31.5
15.5	32

**Table A3.3: Determining sound pressure level (noise level) at boundary in a free field
(i.e. where there are no reflective surfaces or barriers)**

Distance from equipment to nearest residential boundary (m)	Decibels (dB(A) to be subtracted from sound power level to estimate sound pressure level (noise level) at the boundary
0.5	2
1	8
1.5	11.5
2	14
2.5	16
3	17.5
3.5	19
4	20
4.5	21
5	22
5.5	23
6	23.5
6.5	24
7	25
7.5	25.5
8	26
8.5	26.5
9	27
9.5	27.5
10	28
11	29
12	29.5
13	30
14	31
15	31.5
16	32
17	32.5
18	33
19	33.5
20	34
25	36
30	37.5
35	39
40	40
45	41
50	42
60	43
70	45
80	46
90	47
100	48

References

AIRAH 2003, *Air Conditioning Residential Best Practice Guideline (New South Wales)*, The Australian Institute of Refrigeration, Air Conditioning & Heating, Melbourne
www.airah.org.au/AM/Template.cfm?Section=Best_Practice_Guides&Template=/CM/ContentDisplay.cfm&ContentID=3233

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Brüel & Kjær 2001, *Environmental Noise*, Brüel & Kjær Sound & Vibration Measurement A/S, Denmark www.bksv.com/doc/environmentalnoisebooklet_english.pdf

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[http://epanote2.epa.vic.gov.au/EPA/publications.nsf/2f1c2625731746aa4a256ce90001cbb5/08ec090b640ec2c1ca2574740009536b/\\$FILE/1176.pdf](http://epanote2.epa.vic.gov.au/EPA/publications.nsf/2f1c2625731746aa4a256ce90001cbb5/08ec090b640ec2c1ca2574740009536b/$FILE/1176.pdf)

Appendix 4 Air conditioner noise

This brochure was published by the former Australian Environment Council. It is no longer available but is reproduced here as the information is still relevant.

Air conditioner noise

Buying an air conditioner?

Then protect your investment and buy one that will not intrude noisily on your neighbours.

In Australia there are laws that stop noisy air conditioners from being used where the noise is annoying to neighbours. In fact your air conditioner may need to be inaudible to your neighbours if you wish to use it at night.

The best policy is to buy the quietest air conditioner suited to your heating/cooling needs and have it installed as far as possible from neighbours or in a well shielded location. Most air conditioners in Australia have a label which describes the amount of noise they make. **The smaller the number of dBA on the label the quieter the air conditioner.**

OUTSIDE SOUND POWER LEVEL	60 dBA
<small>(LOWER LEVELS MEAN LOWER OUTSIDE NOISE) THE LEVEL SHOWN ABOVE MAY BE USED TO ESTIMATE WHETHER THE OUTSIDE NOISE FROM THE PROPOSED INSTALLATION OF THIS UNIT WILL BE WITHIN ACCEPTABLE LIMITS CONSULT YOUR SUPPLIER BEFORE INSTALLATION</small>	
<small>(MANUFACTURER)</small>	<small>(MODEL No.)</small>



The number on the air conditioner you buy should not exceed the number you calculate using this guide.

Note that the back page provides a quick estimation for some commonly used air conditioner locations.

It is also recommended that you consult your air conditioner salesperson or installer before you commit yourself.

What to do

Follow steps 1 - 4 carefully or make sure that the person selling or fitting your new air conditioner makes a similar check for you.

- Step 1** The closer your air conditioner is to your neighbour the quieter it will need to be. Follow the procedure in Appendix A and put your answer in Box 1.
- Step 2** If there is a fence or wall between yourself and your neighbour the noise may be reduced. Check this using Appendix B and put your answer in Box 2.
- Step 3** Noise can reflect off walls and make your air conditioner appear louder. Follow the instructions in Appendix C and put your answer in Box 3.
- Step 4** Add the numbers in Box 1 and Box 2 then subtract the number in Box 3.

Box 1		Box 2		Box 3		ANSWER
<input type="text"/>	+	<input type="text"/>	-	<input type="text"/>	→	<input type="text"/> dBA

The number on the label of your air conditioner should not be more than the number in the answer box.

If you already own an air conditioner and the number on it is bigger than that in the answer box, then you may need to consider the feasibility of installing a noise control device specially designed for the air conditioner, locating the air conditioner elsewhere or replacing it.

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Appendix A

Step 1 Measure the **shortest** distance, in metres, between where you want to put your air conditioner and the nearest neighbouring fence line. Mark the distance with an X in column 1, below.

Bear in mind that to reduce noise, air conditioners are best placed in a location which provides the greatest distance between the air conditioner and neighbours. This could, for example, mean mounting your air conditioner facing the back fence or front street.

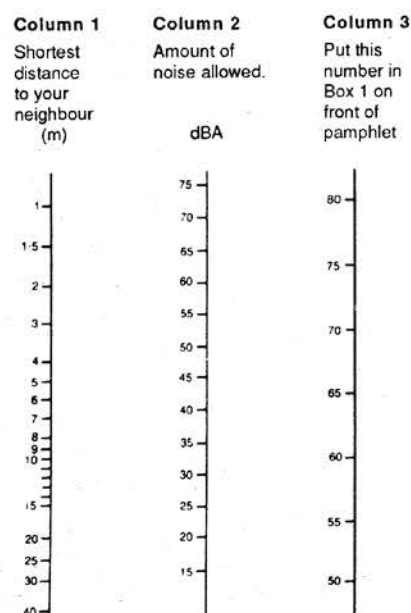
In rural areas you may consider that it is more relevant to measure the distance between your air conditioner and the nearest area used by your neighbour (such as a garden relaxation area).

Step 2 Find out if there are laws regarding noise in your State or local area. Information on who to contact is listed on the back of this pamphlet.

Mark the amount of noise allowed in your area with an X in column 2.

If there is no prescribed maximum amount of noise and you live in a quiet residential area, a mark at 40 dBA or less could be used as a guide. Alternatively you may wish to arrange to have the background noise levels in your area measured.

Step 3 Draw a straight line from the X in column 1 through the X in column 2 to cut through column 3. Write down in Box 1 on the front of this pamphlet the number in column 3 that is on the line you have drawn.



Appendix B

A fence/barrier can reduce the level of air conditioner noise heard in neighbouring premises. To do this a fence/barrier will need to be continuous and solid. It should contain very few gaps, particularly where the fence meets the ground. The fence/barrier must also prevent the air conditioner being seen from noise sensitive locations on neighbouring premises. Noise sensitive locations include windows of bedrooms and living rooms (including those of multistorey dwellings) and outdoor entertaining/relaxing areas.

What to do

Carefully read through the fence/barrier descriptions below starting at point 1. Select a value that corresponds to the fence/barrier description applicable to your situation. Put this value in Box 2 on the front page.

Value for box 2

1. The fence/barrier does not prevent the air conditioner being seen from between the air conditioner and noise sensitive locations on the neighbouring premises. 0
2. The fence/barrier only just blocks "line of sight" and it is made of material having gaps, such as a standard picket fence, a brush fence or a brick fence with fancy iron inserts. 0
3. The fence/barrier only just blocks "line of sight" and is made of solid material. 5
4. Fence/Barrier with Gaps
 e.g. Hedges/bushes/trees
 Ti tree/brush
 Picket fence
 Fence in disrepair with holes or missing planks
 Cyclone fence
 Masonry fence with decorative open inserts. 0
5. The fence/barrier completely blocks "line of sight" of the air conditioner noise sensitive locations.


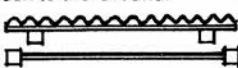
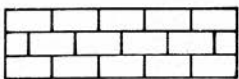
Typical Paling Fence

e.g. Planks overlapped by 25 mm planks, 13 mm thick. Air gaps between palings due to warping etc.

Solid Fence with no Gaps and Flush to the Ground.

e.g. Galvanised iron
 Fibre cement sheeting
 20 mm Pine planking with 35 mm overlap.

Concrete block/
 masonry/brick

6

10

Special notes

1. If you consider that your house would stop noise reaching your neighbours, consult the authority listed on page 4 for an appropriate value.
2. If in doubt about your fence type, select a low value.

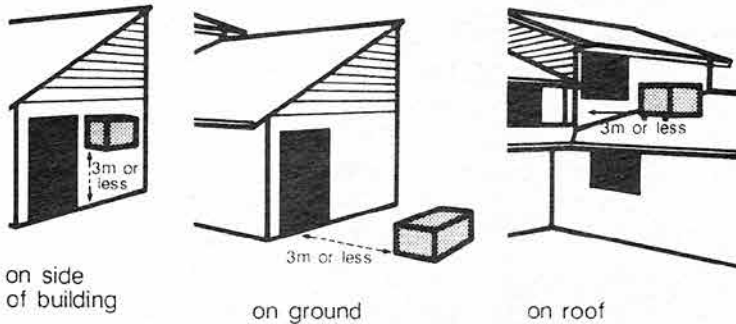
Appendix C

Just as light reflects from mirrored surfaces, sound will reflect from walls, carports, roofs and the like. Find a diagram below which would correspond to the placement of your air conditioner. Put the corresponding value in Box 3 on the front page of this pamphlet and go on to **STEP 4** on the front page.

Value for box 3

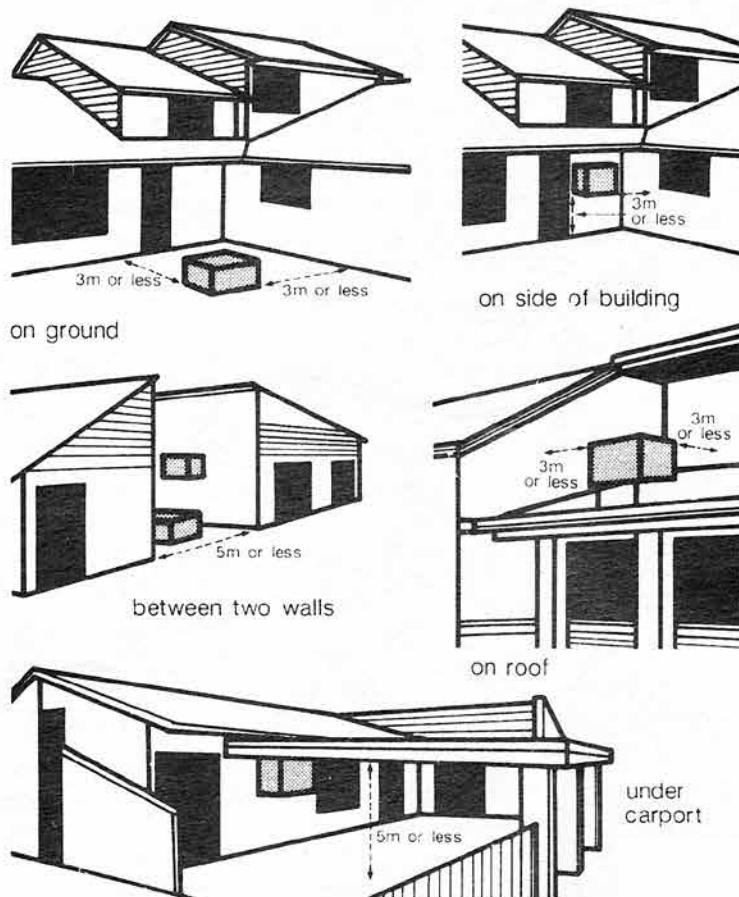
One reflective surface

3



Two reflective surfaces

6



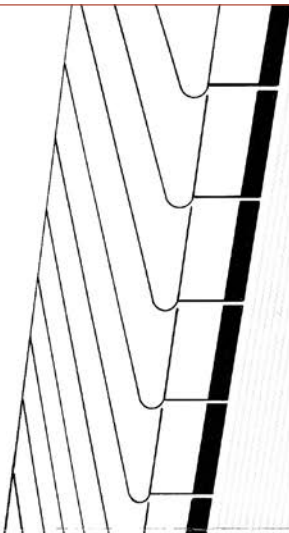
Appendix 5: Noise from swimming and spa pools

This brochure was published by the former Australian Environment Council. It is no longer available but is reproduced here as the information is still relevant.

Before you take the plunge consider . . .

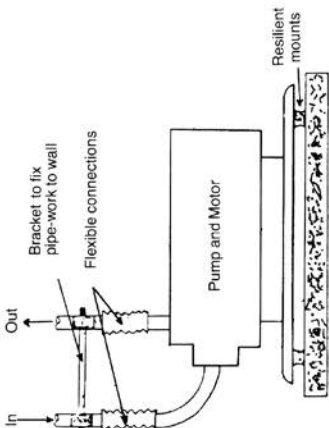
NOISE!

from swimming & spa pools



THE AUSTRALIAN ENVIRONMENT COUNCIL

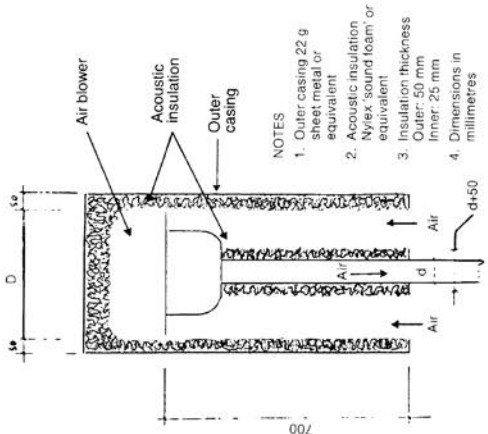
Vibration – problems can be overcome by isolating the equipment using antivibration mounts and flexible connections on the pipework as shown in the following sketch.



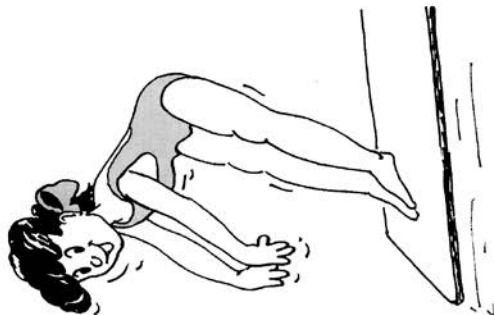
**Example of a
good pump installation**

**State and Territory
Noise Control Authorities**

ACT	Department of the Arts, Sport, the Environment, Tourism and Territories Telephone: (062) 467 2211
NSW	State Pollution Control Commission Telephone: (02) 265 8888
Northern Territory	Conservation Commission of the Northern Territory Telephone: (089) 22 0211
Queensland	Contact your local council
South Australia	Department of Environment and Planning Telephone: (08) 216 7600
Tasmania	Department of the Environment Telephone: (002) 30 2770
Victoria	Environmental Protection Authority Telephone: (03) 628 5111
Western Australia	Environmental Protection Authority Telephone: (09)222 7000



**Acoustic Attenuator
for Spa Blower**



Noise can annoy your neighbour.

A common source of annoyance, particularly during the summer months, is the noise from swimming pool and spa equipment.

Before you buy, your responsibilities.

Respect your neighbours' right to peace and quiet. Consult your Local Council or your State Noise Control Authority about any relevant laws. If you don't, you may find the use of pumps, filters or blowers is restricted and this in turn may spoil your enjoyment.



Before you sign for your pool or spa.

Discuss your concern about noise with your pool salesman and include a statement in the contract which binds your installer to at least satisfy Local, State or Territory Government Laws about noise. This may save you significant costs at a later date.

If there are no laws, ask the installer to ensure that your pump noise is inaudible on nearby residential premises.

Planning your pool or spa.

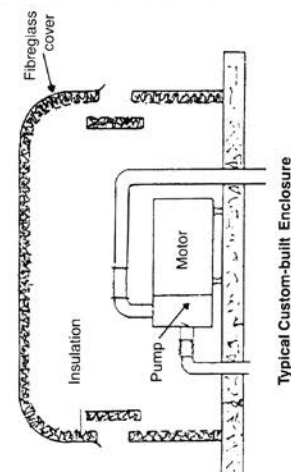
A lot of problems can be avoided by proper planning. Consider the following factors when planning your pool or spa.

- 1 **Distance** – locate the noisy equipment as far as practicable from your neighbour.
- 2 **Fences or barriers** – if possible, place any pool or spa equipment behind a solid fence, wall or barrier to screen the equipment from the direct view of your neighbours.

However any nearby surface other than that between your pool equipment and your neighbours may reflect the noise back towards them – so be careful.

- 3 **Noise enclosures** – in some instances steps (1) and (2) will be insufficient to adequately reduce the noise. In these cases noise enclosures can be constructed relatively cheaply and may be effective in reducing the noise, while still allowing the equipment to function normally. Alternatively, you may be able to buy a ready-made enclosure. If you decide to build an enclosure yourself, refer to the enclosed sketch and remember these points.

- (a) The enclosure cover needs to be strongly constructed and should not contain any holes or gaps other than those shown in the sketch for ventilation.



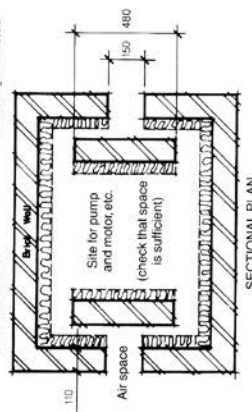
- (b) The cover should fit firmly on the ground and should not come into contact with any equipment or pipework. It is preferable that pipework enter or exit the enclosed space from under the ground, rather than through the walls of the enclosure.

If it is necessary for pipework to pass through the enclosure, then make sure that the gap is as small as possible without touching the enclosure and fill the gap with a resilient sealant.

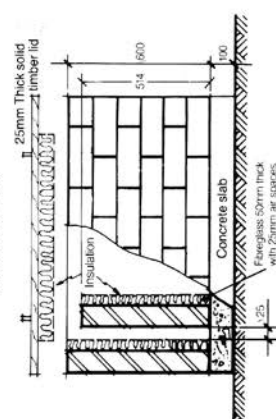
- (c) Ventilation should be provided – enough to ensure that the motor does not overheat. Ventilation ducts or passages should be treated with sound absorbing materials.

Typical Enclosure for Swimming Pool Pump and Motor Unit.

Notes: 1. Outside dimensions of enclosure to suit pump/motor requirements.
2. Drawings not to scale.



SECTIONAL PLAN



NOTE: Enclosure lined with fibreglass 50 mm thick and of a density 70-100 kg m³ faced with perforated aluminium foil.

Noise Guide for Local Government

Part 6 Glossary, Further reading and Index



Part 1 Framework for noise control

Part 2 Noise assessment

Part 3 Noise management principles

Part 4 Regulating noise impacts

Part 5 Appendixes

Part 6 Glossary, Further reading and Index

Part 6 Glossary, Further reading and Index

Glossary

A Weighting

An adjustment made to the sound level measurement to approximate the response of the human ear.

Ambient noise

The all-encompassing noise within a given environment. It is the composite of sounds from many sources, both near and far.

Appropriate regulatory authority (ARA)

The body responsible for regulating particular activities. Section 6 of the POEO Act and Chapter 7, Part 1 of the POEO (General) Regulation 2009 specify which body is the ARA for different activities.

Authorised officers are appointed by an ARA under section 187 of the POEO Act, and act on its behalf in investigating alleged environmental problems relating to activities/premises for which it is the ARA. Authorised officers have a range of investigative powers. The POEO Act provides authorised officers with powers to:

- require information or records (Part 7.3 of the Act)
- enter and search premises (Part 7.4 of the Act)
- question and identify persons (Part 7.5 of the Act).

Section 187 of the POEO Act enables a local council to appoint officers and employees of other local councils (as well as its own officers and employees) as authorised officers for the purposes of the Act, in relation to its area. This is to facilitate investigations under the Act that require action across local government boundaries.

Authorised persons can issue Noise Abatement Directions under Part 8.6 Division 3 of the POEO Act. Section 275 of the POEO Act makes Police officers and people who have been made authorised officers under section 187 of the POEO Act authorised persons.

Background noise

The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is described using the L_{A90} descriptor (see below).

Community annoyance

Includes noise annoyance due to:

- characteristics of the noise (e.g. sound pressure level, tonality, impulsiveness, low-frequency content)
- characteristics of the environment (e.g. very quiet suburban, suburban, urban, near industry)
- miscellaneous circumstances (e.g. noise avoidance possibilities, unpleasant associations)
- human activity being interrupted (e.g. sleep, communicating, reading, working, listening to radio/TV, recreation).

Compliance

The process of checking that source noise levels meet with the noise limits in a statutory context.

Decibel (dB)

A measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm of a given sound power to a reference power.

dB

Abbreviation for decibel.

dB(A)

A measure of A-weighted sound levels.

Enforcement officers are people who are authorised by the agencies listed under clause 81 of the POEO General Regulation to issue Penalty Notices for certain offences. There are different classes of enforcement officers depending on which organisation has authorised the enforcement officer. Schedule 6 of the POEO General Regulation sets out which classes of enforcement officers can issue penalty notices for which offences. It is expected that ARAs will usually appoint those it has appointed as “authorised officers” also as “enforcement officers”, however, there may be occasions on which an ARA decides it is appropriate to appoint a person as one but not the other. As well as the ARAs, other organisations such as NSW Police, NSW Port Corporations (Sydney, Port Kembla and Newcastle) and the Sydney Harbour Foreshore Authority may also appoint enforcement officers.

Environmentally unsatisfactory manner

Referenced under Part 4.3 of the POEO Act as a requirement for issuing Prevention Notices.

An activity is carried on in an environmentally unsatisfactory manner if:

- it is carried on in contravention of, or in a manner that is likely to lead to a contravention of, this Act, the regulations or a condition attached to an environment protection licence
- it causes, or is likely to cause, a pollution incident
- it is not carried on by such practicable means as may be necessary to prevent, control or minimise pollution, the emission of any noise or the generation of waste, or
- it is not carried on in accordance with good environmental practice.

Extraneous noise

Noise resulting from activities that are not typical of the area. Atypical activities may include construction, and traffic generated by holiday periods. Normal daily traffic is not extraneous noise.

Feasible measures

A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements.

Habitable room

Any room (in a dwelling) other than a garage, storage area, bathroom, laundry, toilet or pantry. Used in determining the audibility of noise under the 'Times of Use' clauses of the POEO Noise Control Regulation.

Impulsive noise

Noise with a high peak of short duration or a sequence of such peaks.

Intermittent noise

Noise that is characterised by significant fluctuations of volume.

L_{A90}

The A-weighted sound pressure level that is exceeded for 90% of the time over which a given sound is measured. This is considered to represent the background noise (see above).

L_{A10}

The A-weighted sound pressure level that is exceeded for 10% of the time over which a given sound is measured.

L_{Aeq} (equivalent continuous noise level)

The level of noise equivalent to the energy average of noise levels occurring over a defined measurement period.

L_{Amax}

The A-weighted sound pressure level that represents the maximum noise level measured over the time that a given sound is measured.

L_{A1} (60 seconds)

The A-weighted sound pressure level that is exceeded for 1% of the time over a 1 minute measurement period, i.e. is exceeded for 0.6 seconds. This measure can approximate to the maximum noise level but may be less if there is more than 1 noise event during this 0.6 second period.

L_{Aeq} (15 minutes)

The level of noise equivalent to the energy average of noise levels occurring over a 15 minute measurement period.

L_{Ax(T)} : meaning of the symbol 'T'

'T' is the time period over which measurements are taken.

Low Frequency noise

Noise containing major components in the low frequency range (10Hz to 250 Hz) of the frequency spectrum.

Protection of the Environment Operations Act 1997 (POEO Act)

An Act that consolidates air, water, noise and waste requirements into a single piece of legislation. The POEO Act repeals and replaces (among other Acts) the *Noise Control Act 1975*. It contains the provisions for Noise Control Notice, Prevention Notice, Compliance Cost Notice and Noise Abatement Directions discussed in this Guide.

POEO (Noise Control) Regulation 2008

The regulation that provides controls on specific community noise situations, including noise from individual motor vehicles, vessel noise and a range of neighbourhood activities such as use of power tools, alarms, air conditioners and amplified music. Also referred to in this Guide as the Noise Control Regulation.

Rating background level (RBL)

The overall, single-figure, background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24-hour period used for the assessment of background level). This is the level used for assessment purposes. It is defined as the median value of:

- all the day assessment background levels over the monitoring period for the day (7:00 am to 6:00 pm)
- all the evening assessment background levels over the monitoring period for the evening (6:00 pm to 10:00 pm)
- all the night assessment background levels over the monitoring period for the night (10:00 pm to 7:00 am).

Reasonable measures

Selecting reasonable measures from those that are feasible involves making a judgment to determine whether the overall noise benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the noise abatement measure. To make such a judgement, consideration may be given to:

- **Noise level impacts**
 - existing and future levels and projected changes in noise levels
 - number of people affected or annoyed
 - any noise performance criteria required for associated land uses
- **Noise mitigation benefits**
 - the amount of noise reduction expected including the cumulative effectiveness of the proposed work practices/abatement measures
 - potential ability of the work practices/abatement measures to reduce noise during both the construction and operational stages of the project
 - the number of people protected

- **Cost effectiveness of noise mitigation**
 - total cost of mitigation measures, taking into account the physical attributes of the site, such as topography and geology, and the cost variation to project given the benefit expected
 - noise mitigation costs compared with total project costs taking into account capital and maintenance
 - impact of disruption to essential transport and utility networks (for example, main roads, railways, water supply, electricity supply)
 - risk to worker safety during live traffic (road or rail) conditions
- **Community views**
 - engagement with affected land users when deciding about the aesthetic or other impacts of work practices/abatement measures
 - views of all affected land users not just those making complaints, determined through early community consultation
 - practices/measures with majority support from the affected community.

Receiver

The person who is hearing the noise.

Sleep disturbance

Awakenings and disturbance to sleep stages.

Tonality

Noise containing a prominent frequency and characterised by a definite pitch. A quantitative definition is at Part 4 of the NSW Industrial Noise Policy at www.environment.nsw.gov.au/noise/industrial.htm.

Further reading

A list of references is also found within each Part.

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