ACOUSTIC PRIVACY

ADVISORY INFORMATION

Acoustic privacy

Swimming pools and spas

Air Conditioner noise

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ACOUSTIC PRIVACY

We all value acoustic privacy because we generally don't like the idea of being heard by our neighbours when we don't want to be. Good design and careful planning can identify and reduce potential noise sources and improve the living environment.

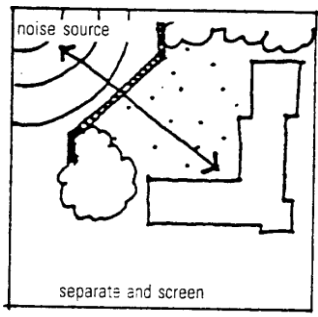
In the urban environment, acoustic privacy is a type of privacy to consider.

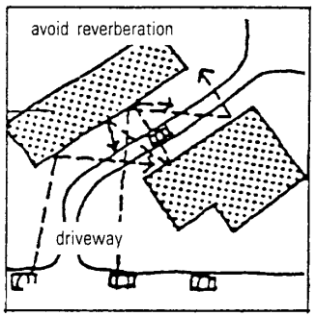
Controlling Noise In And Around Your House.

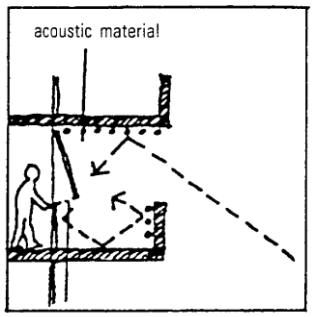
Noise is usually only discovered after your house is built. But once you realise that noise is travelling from the driveway, or your neighbours' house, or the street, to your house it will be too late to make changes. So acoustic privacy should be considered right up front at the design stage.

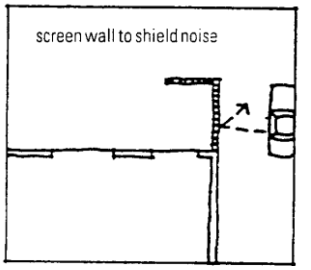
Acoustic Privacy is achieved by:

- *careful siting of the house and interior planning (room layout);*
- *considering the location of windows and walls in relation to noise sources;*
- *being aware of noise penetration properties when selecting building materials and construction methods.*









- *DO consider acoustic privacy at the site planning stage;*

- *DO design houses which are close to busy roads so that bedrooms and private open space are away from the noise;*

- *DO ensure that bedroom windows are at least 3 metres from shared*

driveways and the parking areas of other dwellings;

- *DON'T put active recreational areas, garages, driveways and service equipment areas near bedrooms;*
- *DON'T put equipment such as air conditioning units and pool pumps near habitable rooms.*

(source adapted from Australia's Guide to Good Residential Design, AGPS)

Design bedrooms so that wardrobes act as sound buffers between them.

The design should locate the driveway and garage away from bedrooms.

Any mechanical equipment, such as pool pumps or air conditioners, should be located where they won't annoy you or your neighbours (see the following pages).

If you are on a busy road, design your home so that bedrooms and outdoor sitting areas are away from the road

BEFORE YOU TAKE THE PLUNGE CONSIDER NOISE FROM SWIMMING AND SPA POOLS

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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 responsibility

Respect your neighbours' rights to peace and quiet. Consult your local Council or the Environment Protection 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.

Make sure your contract has a statement that binds your installer to satisfy the laws about noise.

Before you sign for your pool or spa

Discuss your concern about noise with your pool salesperson 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 and spa.

Place pool and spa equipment so it is out of sight and out of hearing from your neighbours.

1. Distance
Locate the noisy equipment as far as practicable from your neighbour.

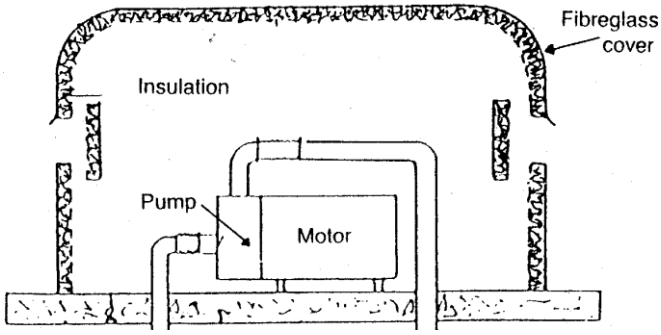
2. Fences or barriers
If possible, place any pool or spa equipment behind a solid fence, wall or barrier to screen the equipment from the direct view of your neighbours.

However, any nearby surface other than that between your pool equipment and your neighbour may reflect the noise back toward them – so be careful.

3. Noise enclosures
In some instances step (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 sketch below and remember these points:

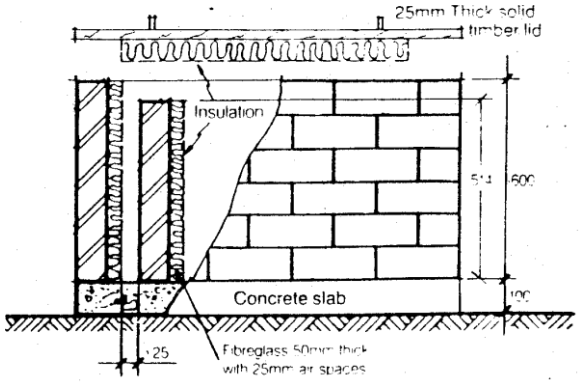
(a) The enclosure cover needs to be strongly constructed and should notcontain any holes or gaps other than those shown in the sketch for ventilation.



Typical custom built enclosure

(b) The cover should fit firmly on the ground and should not come intocontact with any equipment or pipework. It is preferable that pipework enter and exit the enclosed space from under the ground, rather than through the walls of the enclosure.

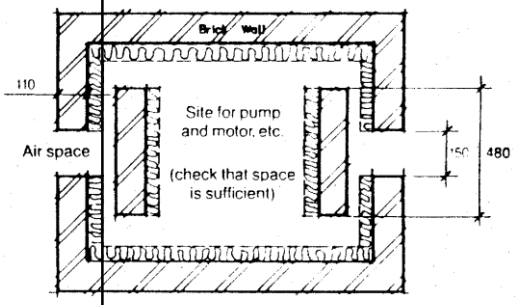
If it is necessary for the pipework to pass through the enclosure, then make sure the gap is as small as possible without touching the enclosure and fill the gap with a resilient sealer.



Elevation and part section

Note: Enclosure lined with fibreglass 50mm thick and of a density 70-100 kg m3 faced with perforated aluminium foil.

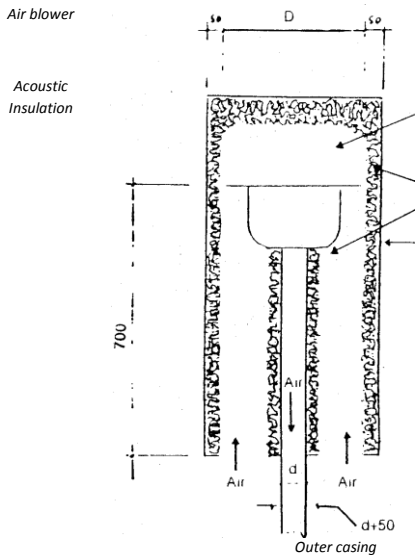
(c) Ventilation should be provided – enough to ensure that the motordoes not overheat. Ventilation ducts or passages should be treated with sound absorbing materials.



Typical Enclosure for swimming pool pump motor unit

Sectional Plan

Noise enclosures can reduce the amount of noise from pool and spa equipment, such as pumps. They should be: • strong • fit firmly on the ground and • ventilated



Notes

1. Outer casing 22g sheet metal or equivalent 2. Acoustic insulation Nylex 'sound foam' or equivalent 3. Insulation thickness Outer: 50mm Inner: 25mm 4. Dinemsions in millimetres

Acoustic Attenuator for Spa blower

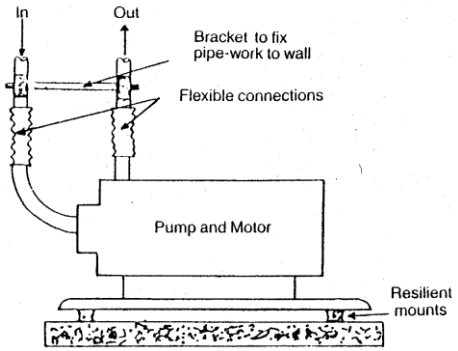
4.Vibration

Problems can be overcome by isolating the equipment using vibration mounts and flexible connections on the pipework as shown in the following sketch

Vibration

connections can reduce

vibration



Example of a good pump installation

(Reproduced with the permission from The Australian Environment Council)

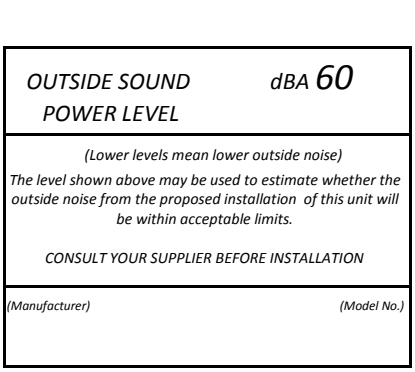
AIR CONDITIONER NOISE

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 all 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.



The number on the air conditioner you buy should not exceed the number you calculate using the guide.

Note Appendix C 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.

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, or locating the air conditioner elsewhere or replacing it.

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It will help you decide what air conditioner to buy and where to place it.

What to do - Using the full estimation method

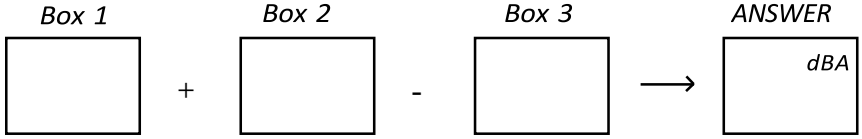
Follow Step 1- 4 carefully or make sure that the person selling or fitting your new air conditioner makes a similar check for you. More detail on these steps is provided in the following pages.

Step 1 *The closer your air conditioner is to your neighbour the quieter it will need to be. Follow the procedure in Instructions for Box 1 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 Instruction for Box 2 and put your answer in Box 2.*

Step 3 *Noise can reflect off walls and make your air conditioner appear louder. Follow the steps in Instructions for Box 3 and put your answer in Box 3.*

Step 4 *Add the numbers in Box 1 and Box 2, then subtract in Box 3.*



Maximum noise requirements are set by the Noise Act.

The noise level permissable for your air conditioner is influenced by its distance from the property boundary and noise barriers, such as fences.

Example of full estimation method

Step 1

You plan to locate your air conditioner 3.5 metres from your neighbour's patio so

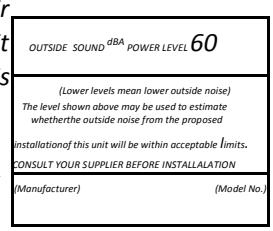
you put a mark at 3.5 in column 1
The Local Council advises you that the noise level at your neighbour's property should not exceed 40dBA, so you put a mark at 40 in column 2. Joining these two points with a straight line through column 3 gives a value of 58.

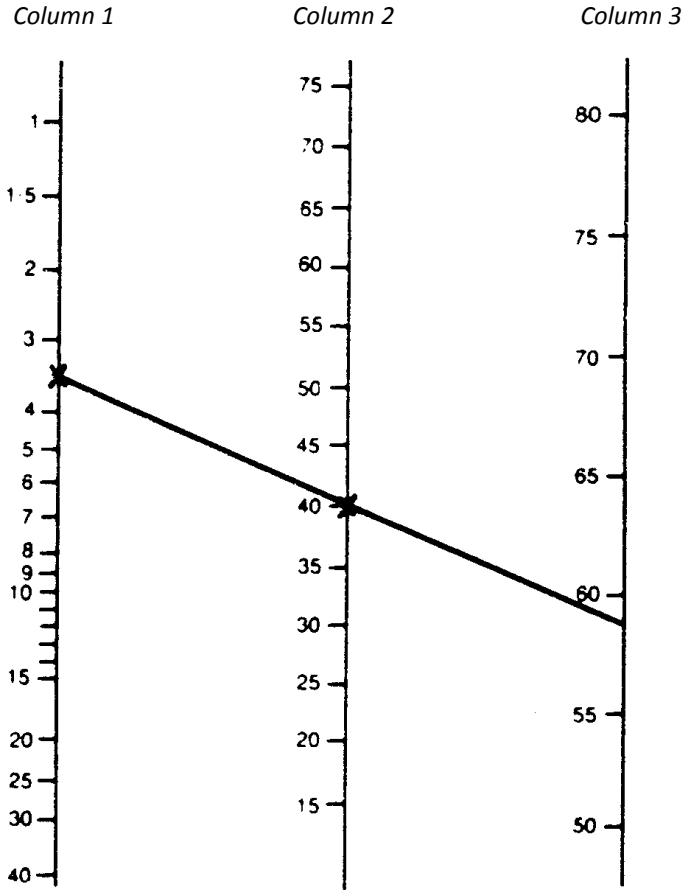
Step 2
The fence between the air conditioner and your neighbours would block the "line of sight" and is made of galvanised iron. Put 10 in Box 2

Step 3
The air conditioner is between two walls as shown in Appendix C example 3d. Put 6 in Box 3.

You have therefore found that the number on the air conditioner you buy should not exceed 62 dBA if you install it at this location.

58	10	6
Box 1	Box 2	Box 3





You should buy an airconditioning unit with a noise level rating below the maximum noise level you have calculated.

Instructions for Box 1

Refer to the Noise Act and Part 5.5: Privacy, Safety and Security in the Better Home Design Guide.

Step 1

Measure the shortest distance, in metres, between where you want to put the air conditioner and the nearest neighbouring fence line. Mark the distance with an X 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.

Step 2

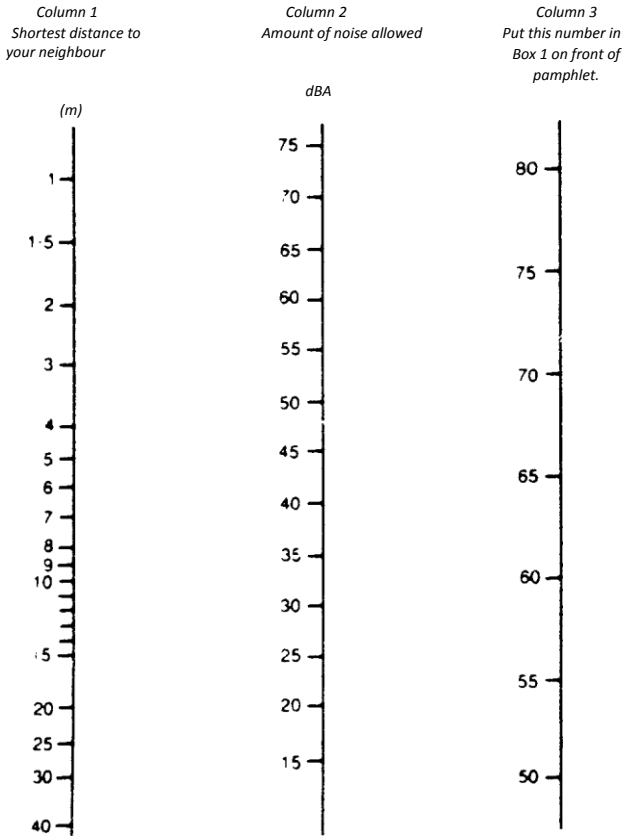
Find out if there are laws regarding noise in your State or local area.

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 the number in column 3 that is on the line you have drawn.

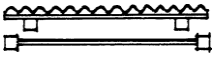
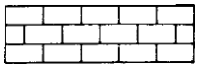


Instructions for Box 2

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 multi storey 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 the "line of sight" and it is made of material having gaps, such as a standard picket 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 *eg Hedges/bushes/trees* *Tea 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 from noise sensitive locations. *Typical paling fence*  *6 eg Planks overlapped by 25mm planks, 13mm thick. Air gaps between palings due to warping etc. Solid fence with no gaps and flush to the ground*	*10*
eg Galvanised iron  *Fibre cement sheeting* *20mm Pine planking with 35mm overlap* *Concrete block/masonry/brick* 	

Special notes

1. *If you consider that your house would stop noise reaching your neighbours, consultCouncil for an appropriate value.*
2. *If in doubt about your fence type, select a low value*

Different types of fences will have different impacts on the reduction of noise.

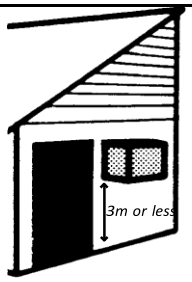
A solid fence is a better noise barrier than a picket fence.

Instructions for Box 3

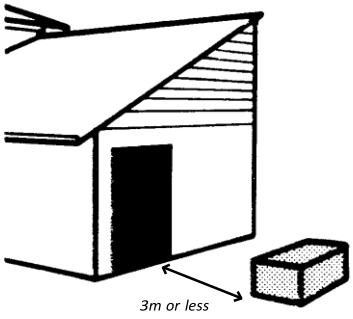
Just as light reflects from mirrors surfaces, sound will reflect from walls, carports, roofs and the like. Find a diagram below which would correspond to the placement of your air conditioner. Put the corresponding value in Box 3 and go to STEP 4.

Value for box 3

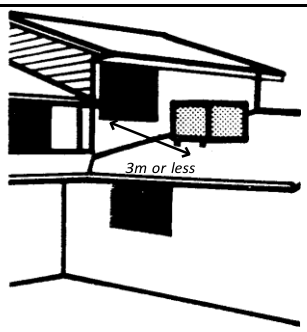
One reflective surface *3*



on side of building

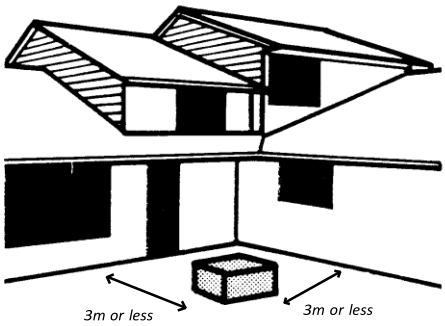


on ground

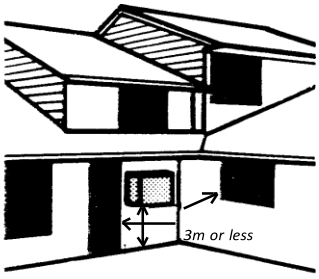


on roof

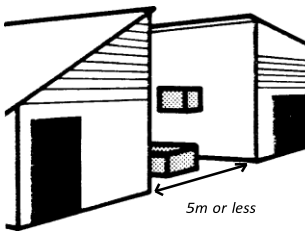
Two reflective surfaces *6*



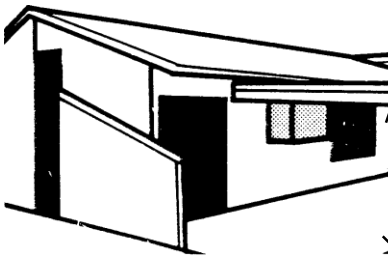
on ground



on side of building

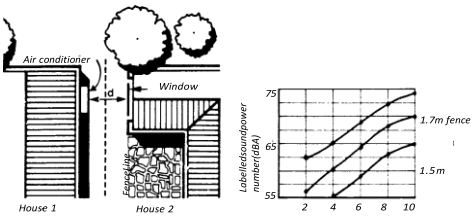


between two



Noise is reflected off surfaces such as walls, carports and roofs.

Quick estimations for commonly occurring air conditioner installation locations.



Case A

An air conditioner between two houses

1 Measure the shortest distance d, in metres, between where you plan to put the air conditioner and a noise sensitive location on the neighbouring premises.

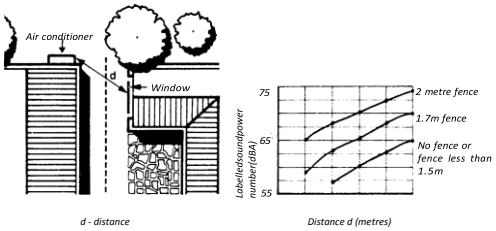
2 Measure the height of the fence (if any) between your house and your neighbour.

Assume the fence is less than 1.5m high if it has openingse g picket, brush, poor condition paling fence, brick walls with lots of gaps.

Case B

An air conditioner against the front or back wall

3 Looking at the graph find the applicable distance d then take a vertical line up to meet a line corresponding to the fence height. Read across to the left to determine the maximum sound power number that may be on your air conditioner.



Note 1 Where there is no fence or a fence less than 1.5 m high and d = 2m, or less, then there is unlikely to be an air conditioner suitable for this location.

Note 2 These examples are based on single storey homes located on flat ground. If your situations differ you are advised to use the full calculation method.