

## SOUND INSULATION METHODS

In a number of urban neighbourhoods there may be insufficient space between residences for exterior heat pump units to be installed without causing noise problems for the neighbours or occupants. Noise may be directly transmitted to a neighbour's house wall, or indirectly from reflection off the wall of the house being heated, or a combination of both. Higher frequency sounds are readily reduced by structure, but lower frequency sounds may penetrate structures unless they are reduced at the source. If locating the unit away from the vicinity of neighbour's rooms is impractical, some degree of noise control will usually be necessary. The Council has a detailed handout that describes some of the principles of noise control that can be employed to reduce noise from the heat pumps. Conceptually, the soundproof enclosure should provide a noise reduction of at least 5 decibels. If it is well constructed you can be reasonably sure of a 10 decibel reduction, and you may achieve a 15 to 20 decibel reduction.

## NOISE RULES

Section 16 of the Resource Management Act 1991 makes every occupier of land responsible for adopting the best practicable option to limit noise emissions from their property to a reasonable level. The City of Lower Hutt Operative District Plan contains Noise Maps that identify appropriate noise limits for different areas of the city during different times of the day. These limits are used to identify a reasonable level for noise emissions from heating and ventilation equipment. The District Plan noise limits are measured in dBA (L10), which is a sound pressure level with a frequency weighting that more closely approximates the response of the human ear to sound.

While District Plan maps should be used to precisely determine the reasonable level of noise for an area, indicative noise limits are provided in the table below:

### NOISE LIMITS: GENERAL RESIDENTIAL

Day-time	7am - 10pm	45 dBA
Night-time	10pm - 7am	35 dBA
Sundays and statutory holidays	24 hours	35 dBA

Generally noise is measured at or within the boundary of any dwelling not on the same site. Council officers will respond to noise complaints and determine if it is necessary to reduce noise emissions to ensure a reasonable level of noise is achieved. A failure to comply with Section 16 of the Resource Management Act 1991 may result in enforcement action being taken in accordance with the Resource Management Act 1991.

## FOR MORE INFORMATION

See our guide to noise control methods for heat pumps online at [www.huttcity.govt.nz](http://www.huttcity.govt.nz)

Get in touch with the Environmental Health team at Hutt City Council

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# INSTALLING HEAT PUMPS TO PREVENT NOISE NUISANCE

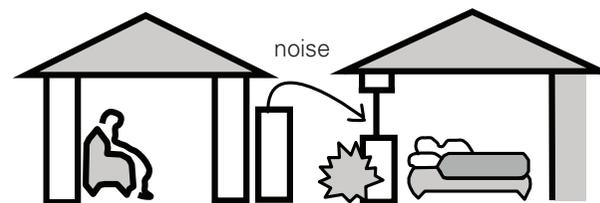


# PREVENTING A NOISE NUISANCE

Heat pumps are a popular form of home heating. With the increasing number of heat pumps being installed in Lower Hutt, there has been a corresponding increase in the number of noise complaints about the units. If installed inappropriately, they can cause sleep and amenity disturbance. This brochure provides simple advice to owners and installers of heat pumps on how to prevent a noise nuisance.

## SITING HEAT PUMPS

- The main reason for noise complaints is the inappropriate location of heat pumps close to, and facing, neighbouring bedrooms and living areas. Before installing a heat pump you should consider the effects noise from the unit may have on yourself and your neighbours.
- Heat pumps should be located as far away from your own and your neighbours' bedrooms as possible, and never with the fan facing directly towards the windows of a neighbouring residence, particularly habitable rooms and outdoor living areas. The unit should face the boundary of the property furthest away from the adjoining residences.
- Try to avoid mounting the pump on a wall and in particular at a high level, as this can result in unimpeded transmission of noise to neighbouring properties. If possible mount the heat pump at ground level and on a solid base, preferably a concrete pad or block. Use rubber pads between the unit and the base to eliminate vibration.
- Ensure that where refrigeration lines pass through walls, they have adequate clearance and insulation. Vibration from within walls can magnify noise levels beyond acceptable levels.
- Make use of fences and walls between you and your neighbour's home as these can help reduce the transmission of noise. If a nuisance eventuates, other options such as acoustic barriers or acoustic treatment may be pursued.



INCORRECT SITING OF HEATPUMP

## SEEK THE ADVICE OF YOUR INSTALLER WHEN SELECTING A HEAT PUMP

- Installers and retailers have a community obligation to provide responsible advice and service to prevent noise nuisance. Installers should discuss noise issues with customers before the heat pump is installed. Ask your installer for advice on the most appropriate size of unit to install for the area to be heated. Select the pump that is most suitable to prevent excessive operation times or load on the unit.
- Choose a heat pump with a low sound power level. The exterior sound power level will be specified on the side of the unit and will give you an indication on how noisy the heat pump will be outside your house. The higher the number the louder the heat pump unit will be. Note the sound power level is different from the sound pressure level.
- A cheaper brand of pump may not necessarily prove to be the most cost effective option.

## MAINTENANCE OF HEAT PUMPS

Tonal type sounds, or sounds with a narrow frequency range, are common from rotating parts in units, such as fans and motors. These noises can greatly increase if there is no preventative maintenance to replace worn bearings or limited life parts before they fail. Loose screws in a metal casing are a common source of buzzing or rattling noises. When you have your pump installed, ask the installer to provide you with an appropriate maintenance schedule.

