

## 18. ECO-INFO - YOUR LAND APPLICATION AREAS

Edited 20/12/01

The re-use of domestic wastewater on-site can be an economical and environmentally sound use of resources.

### WHAT ARE LAND APPLICATION AREAS?

These are areas that allow treated domestic wastewater to be managed entirely on-site.

The area must be able to use the wastewater and treat any organic matter and wastes it may contain. The wastewater is rich in nutrients, and can provide excellent nourishment for flower gardens, lawns, certain shrubs and trees. The vegetation should be suitably tolerant of high water and nutrient loads.

### HOW DOES A LAND APPLICATION AREA WORK?

There are basically two types of land application areas

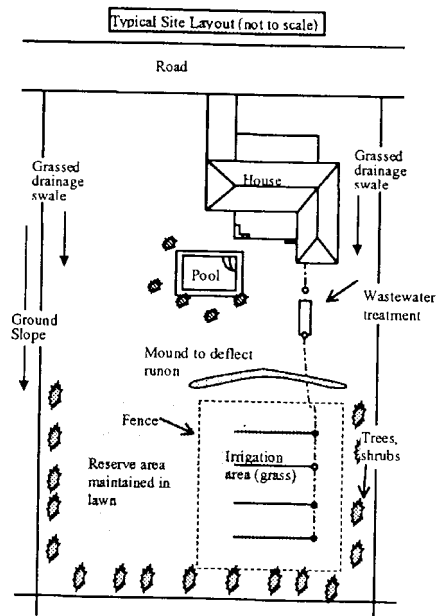
**1. Soil absorption systems** do not require highly treated effluent. Wastewater treated by a septic tank is reasonable as the solids content in the effluent has been reduced. Absorption systems release the effluent into the soil at a depth that cannot be reached by the roots of most small shrubs and grasses. They rely mainly on the processes of soil treatment with minimal evaporation and uptake by plants. Recent evidence however suggests that shallow trenches in biologically active upper soil horizons, with minimal 150 mm cover, will provide for enhanced performance.

**These systems are not recommended in sensitive areas as they may lead to contamination of surface and groundwater.**

**2. Irrigation systems** may be classed as either subsurface or surface irrigation. If an irrigation system is to be used, wastewater needs to be pretreated to at least the quality produced by an aerated wastewater treatment system (AWTS).

*Subsurface irrigation* requires highly treated effluent that is introduced into the soil close to the surface. The effluent is used by plants and evaporation.

*Surface irrigation* requires highly treated effluent that has undergone aeration and disinfection treatments, so as to reduce the possibility of bacterial contamination.



**Figure 1: typical site layout (not to scale)**

The effluent is then applied to the land area through a series of drip, trickle or spray points which are designed to eliminate airborne drift and run-off into neighbouring properties.

There are some public health and environmental concerns about surface irrigation. There is the risk of contact with treated effluent, the potential for surface run-off and wet weather storage. Given these problems, subsurface irrigation is arguably the safest, most efficient and effective method of effluent utilisation.

### REGULATIONS AND RECOMMENDATIONS

The design and installation of land application areas should only be done by suitably qualified or experienced people, and only after a site and soil assessment by an experienced consultant or soil scientist. Care should be taken to ensure correct buffer distances are left between the application area and bores, waterways, buildings, and neighbouring properties.

Heavy fines may be imposed under the Protection of the Environment Operations Act 1997, if effluent is managed improperly.

At least two warning signs should be installed along the boundary of a land application area using surface irrigation. The signs should comprise the following words:

**RECLAIMED EFFLUENT IN THIS LOCATION  
DO NOT DRINK  
AVOID CONTACT**

Wyong Shire Council is currently renewing its requirements for wet weather storage and soil moisture sensors which may need to be installed to ensure that the effluent is only irrigated when the soil is not saturated.

Regular checks should be undertaken of any mechanical equipment to ensure that it is operating correctly. Periodic analysis of soil or groundwater characteristics is also recommended.

Humans and animals must be excluded from land application areas during and immediately after the application of treated wastewater. The longer the period of exclusion from an area, the lower the risk to public health.

The householder is required to enter into a quarterly service contract with a service provider for any aerated wastewater treatment system to ensure the system is maintained and operates efficiently.

**LOCATING THE APPLICATION AREA**

Treated wastewater has the potential to have negative impacts on public health and the environment. For this reason the application area must be located in accordance with the results of a site evaluation, and approved landscaping must be completed prior to occupation of the building. Sandy soil and clayey soils may present special problems.

The system must allow even distribution of treated wastewater over the land application area.

**MAINTAINING YOUR LAND APPLICATION AREA**

The effectiveness of the land application area is governed by the activities of the owner.

**DO**

- ✓ construct and maintain diversion drains around the top side of the application area to divert surface water
- ✓ ensure that your application area is kept level by filling any depressions with good quality top soil (not clay)
- ✓ keep the grass regularly mowed and plant small trees around the perimeter to aid absorption and transpiration of the effluent
- ✓ ensure that any run off from the roof, driveway and other impermeable surfaces is directed away from the application area
- ✓ define irrigation areas with landscaping, signs or fencing
- ✓ ensure appropriate warning signs are visible at all times in the vicinity of a spray irrigation area
- ✓ have your irrigation system checked by the service provider when they are carrying out service on the treatment system

**DON'T**

- x erect any structures, construct paths, graze animals or drive over the land application area
- x plant large trees that shade the land application area, as the area needs sunlight to aid in the evaporation of the effluent
- x plant trees or shrubs near or on house drains
- x alter stormwater lines to discharge into or near the land application area
- x flood the land application area through the uses of hoses or sprinklers
- x let children or pets play on the land application areas
- x water fruit and vegetables with effluent
- x extract untreated ground-water for potable use

**WARNING SIGNS**

Regular visual checking of the system will ensure that problems are located and fixed early. The visual warning signs of system failure include:

- \* surface ponding and run-off of treated wastewater
- \* soil quality deterioration
- \* poor vegetation growth
- \* unusual odours

**VOLUME OF WATER**

Land application areas and systems for on-site application are designed and constructed in anticipation of the volume of waste to be discharged. Uncontrolled use of water may lead to poorly treated effluent being released from the system.

If the land application area is waterlogged and soggy the following are possible reasons:

- overloading the treatment system with wastewater
- the clogging of the trench with solids not trapped by the septic tank, the tank may require desludging
- the application area has been poorly designed
- stormwater is running onto the area

More information can be obtained from additional Eco-info sheets:

- Septic-Safe Your Sewage Management Approval
- Your Septic System
- Your Aerated Wastewater Treatment System

- Your Composting Toilet
- Options for On-site Sewage Mangement Systems

The Department of Local Government has issued Guidelines to assist Councils, home owners, developers and others. These Guidelines are called "*Environment and Health Protection Guidelines - On-site Sewage Management for Single Households*". They are available from Accounts Branch, Department of Local Government Locked Bag 1500, Bankstown NSW 2200 for \$30 or accessible on the Internet on: <http://www.dlg.nsw.gov.au/on-site.htm>.

For further information contact Council's Customer Service Centre on (02) 4350 5555.

