

Technical Solution Sheet 2.01

2: Septic Tank Installation

Aerated Wastewater Treatment Systems

AIM

The aim of this technical solution is to inform practitioners on the requirements and procedures for the installation and maintenance of Aerated Wastewater Treatment Systems (AWTS's).

Note:

This technical solution must be read in conjunction with the requirements of the Environment Protection Authority (EPA) and the relevant local government authority (council).

PLUMBING REGULATIONS 2008

The *Plumbing Regulations 2008* states that the internal design, construction, installation, replacement, repair, alteration, maintenance, testing or commissioning of any integral part of an on-site wastewater management system device is not plumbing work to which Part 12A of the *Building Act 1993* applies.

BACKGROUND

Plumbers are often required to install on-site wastewater treatment systems (or septic tanks) at properties not serviced by a reticulated sewerage system.

A two part approval process applies to on-site wastewater treatment systems:

1. The EPA approves the type of on-site systems that may be installed in Victoria, through a "Certificate of Approval System".
2. Councils operate a permit system, which controls the installation, maintenance and monitoring of individual units.

PROCESS

AWTS's are an alternative to a conventional septic tank. They use automated mechanical and electronic technology to treat on-site wastewater to an acceptable standard as required by the EPA. The treatment process varies between manufacturers but generally involves the processes in Figure 1.

EPA APPROVAL OF SYSTEMS

AWTS's must be approved to strict guidelines by the EPA. Approval is generally subject to a range of conditions including:

- A description of effluent quality depending on the type of discharge.
- The length of subsurface absorption trenches.
- Maintenance and servicing requirements.
- Desludging requirements.
- Alarm system provisions.
- Full details of EPA approvals can be downloaded from the EPA website at:
<http://www.epa.vic.gov.au/water/wastewater/onsite.asp>

APPLICATION TO INSTALL AN AWTS

The owner of the property or their authorised agent must apply to the local council for permission to install (or alter) an AWTS (or septic tank). Councils are responsible for the assessment of the site and disposal area required. Generally a Land Capability Assessment (LCA) must be carried out by an independent consultant to ensure the soil characteristics on the site are suitable for either a septic tank or an AWTS.

Technical Solution Sheet 2.01

The application to council will need to include a range of information (applications vary from council to council) and plans of the site which show:

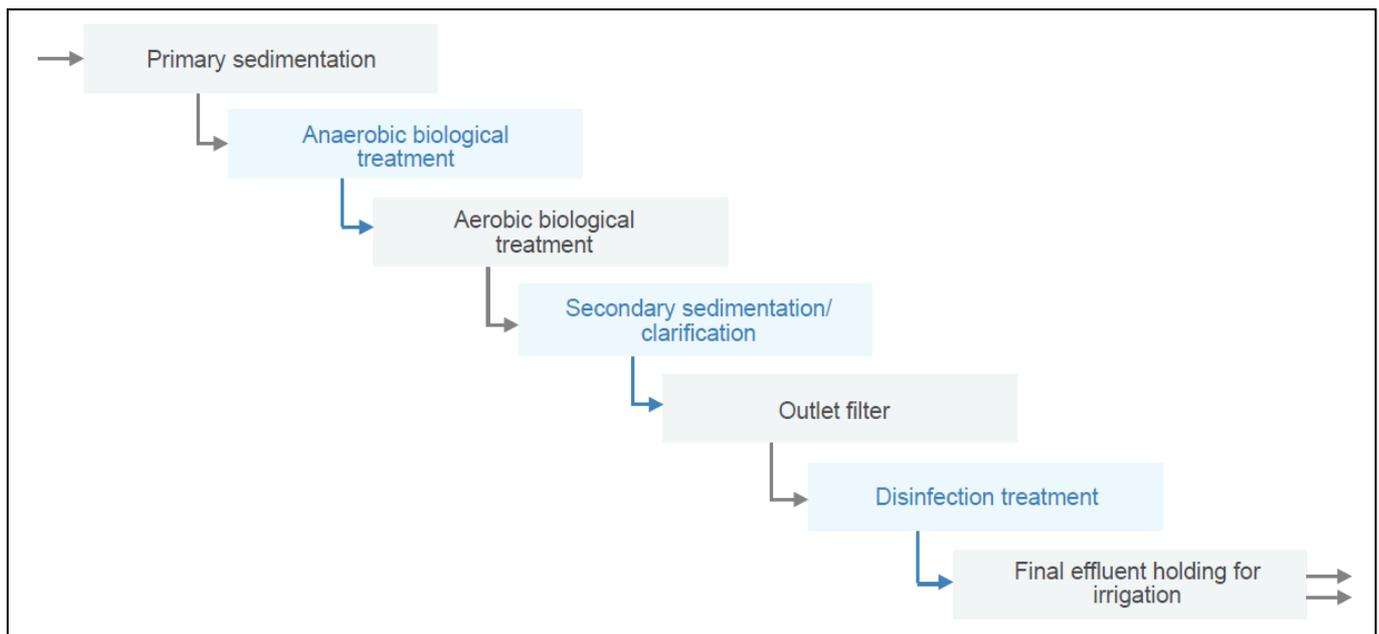
- The location/s and dimensions of buildings and structures in relation to the property boundaries.
- Other features such as water tanks, driveways, swimming pools, underground services, and surface waters (creeks, rivers, dams etc.).
- A House plan showing detail and location of the plumbing fixtures.
- Location of the proposed treatment plant / septic tank and any connecting sanitary drains.
- The Location and description of effluent disposal fields.

- Levels showing the fall of land on the site.
- When the council has received the application and appropriate fee, an initial site inspection is carried out by the council's Environmental Health Officer (EHO) prior to issuing of a "Permit to Install".

INSTALLATION

The installation must be carried out to the instructions and specifications provided by the manufacturer and any conditions imposed by the council's "Permit to Install". The EPA conditions of approval require the manufacturer to supply detailed drawings specifying the size and depth of the excavation and the bedding required.

FIGURE 1 – TREATMENT PROCESS



Technical Solution Sheet 2.01

The plumber must ensure that these instructions and dimensions are adhered to, in particular the depth of the tank in relation to finished ground level. The tank should then be filled with clean water to prevent floatation and the excavation partially backfilled to ensure stability. The connection of the below ground sanitary drain from the house must comply with the usual requirements of *AS/NZS 3500.2: Plumbing and drainage Part 2: Sanitary plumbing and drainage*.

ELECTRICAL CONNECTION

Most AWTS's are automatically controlled by a preprogrammed microprocessor. It is essential that a competent licensed electrician carries out the electrical installation in strict accordance with the manufacturer's wiring instructions.

EFFLUENT DISPOSAL

Treated effluent from an AWTS must be discharged to land so that the effluent is contained within the property to the satisfaction of the council and in accordance with the EPA's Code of Practice - *Onsite wastewater management*".

Note: Publication 891.2 is currently under review.

There are two methods of effluent disposal from an AWTS, subsurface absorption irrigation and surface irrigation.

1. Subsurface absorption irrigation

The minimum effluent quality usually required for subsurface irrigation is 20/30 standard. This is the water quality standard indicating an effluent quality of ≤ 20 mg/L BOD5 and ≤ 30 mg/L suspended solids.

2. Surface irrigation

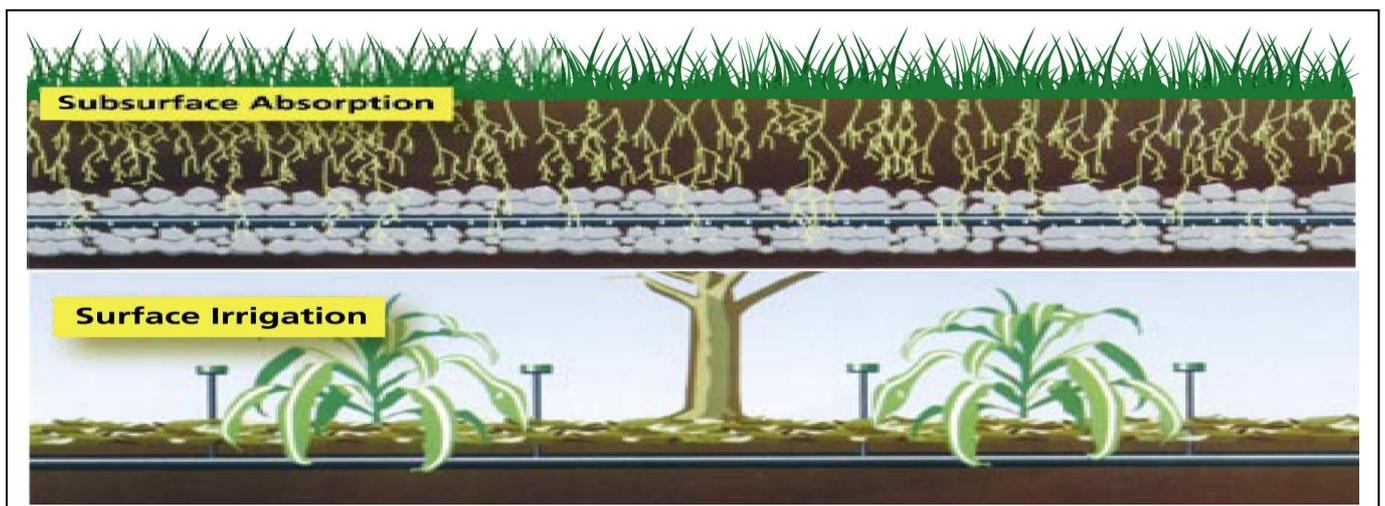
The minimum effluent quality usually required for surface irrigation is 20/30/10 standard. This is the water quality standard indicating an effluent quality of ≤ 20 mg/L BOD5 and ≤ 30 mg/L suspended solids and E.coli ≤ 10 cfu/100mL.

Surface irrigation allows the treated effluent to be used for garden watering from drippers or sprinklers which produce coarse droplets and not a fine mist. Where effluent disposal by surface irrigation is used, the installation must comply with the EPA conditions of approval.

These conditions generally include:

Water Quality

- A defined quality of treated effluent.
- A sample to be tested by an NATA (National Association of Testing Authorities) accredited laboratory annually and a report sent to the council.
- Treated water must not be used for growing edible herbs, fruit or vegetables.



Technical Solution Sheet 2.01

Irrigation System

- Spray drift or runoff from the property is not permitted.
- Size of the irrigation area is dependent on design discharge rates.
- Warning signs are required.
- See the EPA website and relevant local council authority for the full list of conditions.

INSPECTIONS

In addition to the preliminary inspection by the council's EHO, a final inspection of the AWTS and effluent drains (by the EHO) is required prior to backfilling to ensure the installation complies with the provisions of the "Permit to Install". The council may need a minimum notice time to book a final inspection. Once the installation has been inspected and approved, the council will issue a "Permit to Use" and the system can be commissioned to the manufacturer's instructions.

Note:

The licensed plumber or drainer is not required to book a below ground sanitary drainage inspection for an AWTS connection. This is because the council issues a "Permit to Install". Generally, only Water Authorities can issue a PIC consent number to book below ground sanitary drainage inspections.

COMPLIANCE CERTIFICATE

The licensed plumber or drainer must lodge a compliance certificate for the installation and circle category 2, septic tank installation and category 3 drainage (below ground sewer) on the compliance certificate. The council may require the compliance certificate details prior to issuing a "Permit to Use".

MAINTAINANCE SERVICING

AWTS's require regular maintenance by a competent trained person or servicing agent at least once every three months in accordance with the manufacturer's specifications. This is also an EPA condition of approval. Desludging of the system by an approved contractor is also required at least once every three years.