



Aerobic Treatment Units

(ATUs) are self contained electrical wastewater (sewage) treatment systems for use on properties that cannot be connected to the sewerage main. They are designed to receive and treat all household wastewater from the toilet, bathroom, kitchen and laundry. There are several ATU designs approved for use in single houses in Western Australia.

They can also be scaled up in size and used in multiresidential and non-residential developments. However, such larger systems require individual assessment and approval of their technical design. In other states, ATUs are referred to as Aerated Wastewater Treatment Systems (AWTS).

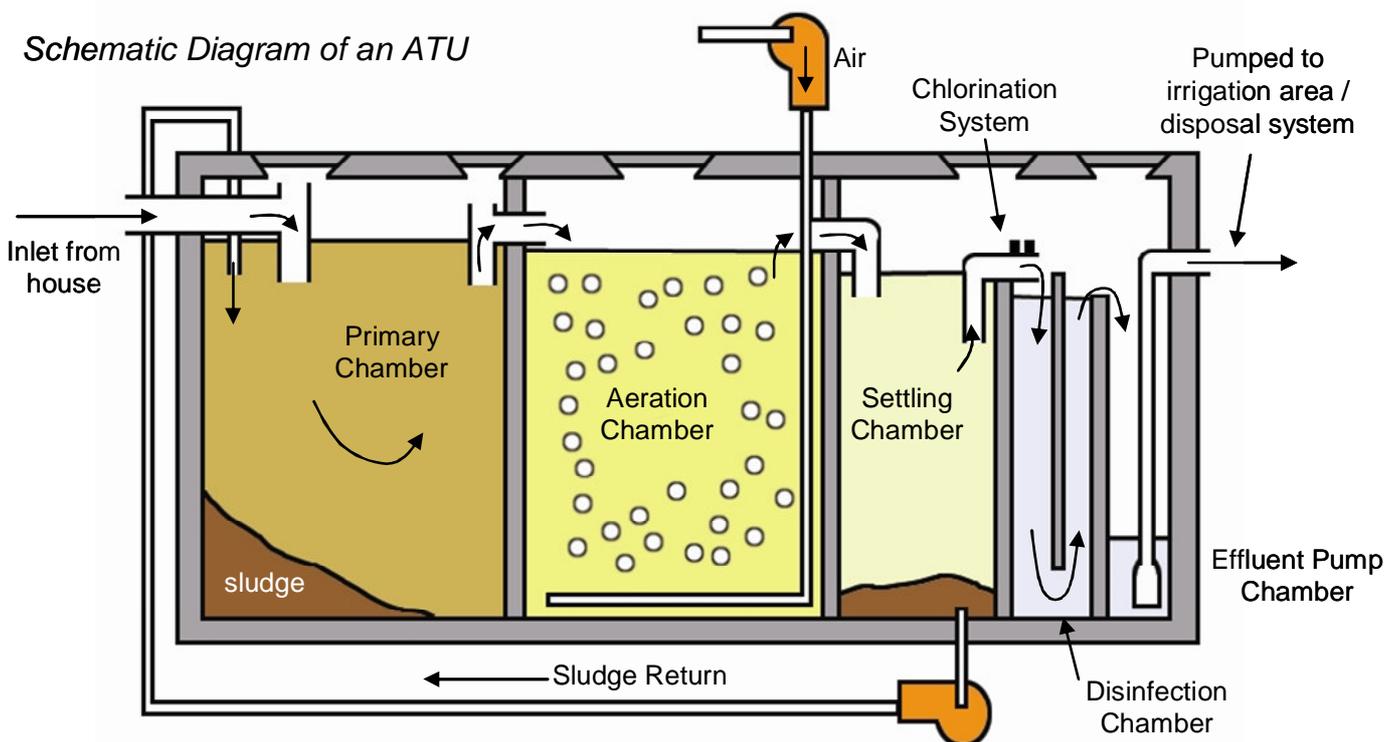
The system

ATUs consist of a series of treatment chambers combined with an irrigation or drain disposal system. The first chamber is similar to a conventional septic tank in that the wastewater enters the chamber, the solids settle to the bottom where they undergo anaerobic digestion by bacteria and form a layer of sludge on the chamber floor. Scum, consisting of oils, grease, etc. floats to the surface of the liquid and the partially clarified wastewater flows into a second chamber. Here the liquid is mixed with air to assist bacteria to breakdown more of the finer suspended organic material. A third chamber allows additional clarification through the settling of suspended solids which are returned to the first chamber.

The clarified effluent in the third chamber is of a high enough standard for it to be successfully disinfected, usually by chlorination, in a fourth chamber. Disinfection reduces the number of bacteria in the final effluent.

ATUs use biological processes to treat the wastewater. Therefore, it is important not to dispose of expired medicines such as unused antibiotics or large amounts of household disinfectants down the toilet or sink as these may be detrimental to the biological performance of the system.





ATU servicing requirements

ATUs are electrically driven mechanical systems. As such, just like servicing a motor vehicle, they require regular servicing to keep them tuned to run at their required optimum performance standard. When an ATU fails to perform, inadequately treated sewage may be discharged from the system and be offensive and a risk to public health.

Under health legislation, ATUs are therefore required to be serviced at least every three months. Servicing can only be carried out by a person who has approval from the Executive Director, Public Health to service ATUs.

Disposing of the effluent

In Western Australia, ATUs that incorporate a disinfection mechanism are permitted to irrigate this treated effluent into a dedicated irrigation area, thereby, in a sense, reusing the wastewater. Irrigation systems can use either above ground spray heads or subsurface or subsoil dripper lines.





Whilst ATU effluent is treated to a higher standard than septic tank effluent and has undergone chlorination, it can still contain pathogenic microorganisms, some of which are chlorine resistant.

Therefore ATU effluent:

- is unsuitable for human contact or consumption
- must only be irrigated onto a dedicated irrigation area
- must not be surface irrigated in areas such as lawns or areas used for recreational purposes
- is unsuitable for irrigation onto vegetable gardens or food crops

In some developments such as childcare centres and shopping centres, surface irrigation of effluent may not be permitted due to the accessibility of effluent even in dedicated areas. In such cases dripper irrigation or below ground disposal may be an alternative options.

Permission to irrigate grassed areas is generally given when subsoil dripper irrigation systems are used.

The irrigation area

If the effluent is used for irrigation, the irrigation area (size and location) forms an integral part of the approved wastewater system. It is illegal for owners to modify the location or size of the approved irrigation area without approval from either the local government or the Executive Director, Public Health. Irrigation areas must:

- have warning signs displayed advising that effluent is being used and is not suitable for human contact or consumption;
- achieve minimum setbacks from certain features such as buildings, boundaries and paved areas, to avoid human exposure to the effluent;
- not be altered or reduced in size without approval;
- be looked after so that irrigation lines are accessible for maintenance;
- be planted out with salt and nutrient resistant plants to avoid puddling or run off of effluent.





Phosphate removal capability of ATUs

Due to environmental concerns associated with the degradation of environmental water bodies, some developments are required to use a wastewater system that is capable of removing phosphates. An ATU system can be capable of removing phosphate.

How does an ATU remove phosphate? It is important to know which method is used when selecting a system because that choice will generally limit the irrigation and disposal options available for the particular system. ATUs can achieve phosphate removal in one of two ways:

- Insystem phosphate removal where the system can precipitate phosphates within the system so they settle out into the accumulated sludge. Such system's effluent can be discharged via surface and subsurface irrigation or directly into drains or soakwells and still achieve phosphate removal.
- Use of a specially approved amended soil mix which is incorporated in the irrigation area. This soil causes phosphates in the effluent to be bound to the surface of the soil particles. This type of system must use surface irrigation for disposal of the effluent where phosphate removal is required.

In some locations the natural soils have an ability to bind phosphates and phosphate removal systems are not necessary. Most analytical laboratories have tests available to provide this information about the soil on your property.

Costs associated with using an ATU

The costs associated with an ATU include:

- application fee to local government or Executive Director, Public Health,
- purchase and installation cost of the ATU,
- three monthly service charges for the life of the system,
- cost of chlorine tablets and other parts,
- cost of periodically desludging the system,
- replacement cost of components such as air and effluent pumps in the event of a breakdown.





Approval to install an ATU

In Western Australia, approval to install or modify a wastewater system must be obtained either from the local government or the Executive Director Public Health, depending on the particulars of the proposal. This includes modifications such as changing the location of the area to be irrigated or the type of irrigation system.

Application forms are available at your local government office.

Please note it is an offence under the Health Act to install or modify a wastewater system without the required approval.

Points to remember

- ATU effluent is not suitable for contact or consumption.
- Don't dispose of medicines or large quantities of disinfectant down the toilet or sink.
- ATUs must be serviced every three months by an approved person.
- Owners are required to have a legal service agreement in place at all times.
- It is illegal to alter the location or size of the ATU irrigation area without having approval to do so.





More Information:

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