# Environmental Health Services

## Guidelines for the Installation of an Apparatus for the Treatment of Sewage

### 1. Background

1.1. Where do I need to install an apparatus for the treatment of sewage?

Where properties cannot be connected to a reticulated sewer scheme, domestic wastewater is normally treated and disposed of onsite. In areas of the Shire where sewer is not available an application should be made to install an Apparatus for the Treatment of Sewage (effluent disposal system).

1.2. When in the approval process should I submit an application?

The Building Act requires that approval for an affluent disposal system must be obtained prior to applying for a Building Permit for the proposed development.

1.3 Ground water and surface water

Please be aware that groundwater is an issue in the coastal plain of the Shire of Murray, generally spanning from the coast to the South Western Highway. The Department of Health requires a separation of 600mm height from maximum historical groundwater level to the disposal height of the wastewater system, namely the base of the leach drains or treated wastewater irrigation field. There are areas, such as in North Dandalup and West Pinjarra, where historical maximum groundwater levels come up to ground level, and a sand pad of up to 600mm is required to achieve separation from groundwater in established subdivisions. For new subdivisions (approved after September 2019), the Government Sewerage Policy requires greater separation distances, being 1.5m from maximum groundwater level. You may be able to obtain details of maximum groundwater levels for your property by contacting the Shire so that we can look at our groundwater mapping for your property.

During wet winters, there are often large areas in the Shire affected by surface water, including in North Dandalup and West Pinjarra. Surface water mapping is not readily available and therefore landowners should take care to assess the drainage of their property, to ensure that the design and location of their wastewater system protected from the ingress of surface water. This can be achieved by discharging and diverting surface water away from septic tanks and aerobic treatment unit tanks, as well as avoiding the siting of houses and wastewater tanks on low-lying portions of properties. It is also recommended that sand pads rather than stumps are installed, that floor levels are raised at least 500mm above areas affected by surface water, and that land is contoured to discharge surface water away from the house and the septic tank. For example, if the septic tank

or aerobic treatment unit tank is integrated into a sand pad, then surface water can run-off away from, rather than into, the septic tanks. When surface water is allowed to enter wastewater tanks, it is a breach of the Health (Treatment of Sewerage) Regulations, the system will not cope, and wastewater will not drain away from the house.

### 1.4 What type of system?

All applications for effluent disposal systems must be Department of Health approved, see web links below.

All properties on the Swan Coastal Plain (including the suburbs of Stakehill, Nambeelup, North Dandalup, Meelon, North Yunderup, Pinjarra, Ravenswood, South Yunderup, West Pinjarra, Barragup, Furnissdale, Birchmont, Coolup, West Coolup, Nirimba and Blythewood) are required to submit an application for a nutrient retentive effluent disposal system in order to comply with the State Planning Policy 2.1 Peel Inlet–Harvey Estuary 1992, and State Planning Policy 2.9 Water Resources. The boundary of the Peel-Harvey Estuary catchment is marked as the red dashed line running down the centre of the image below. All properties west of the red line require a nutrient retentive system. Feel free to contact the Shire in relation to your specific property.

Properties in the coastal plain are considered sensitive environments and often have high ground water levels. However, standard septic systems will be considered for properties at higher elevations, where there is a great depth to ground water, such as within Dwellingup and Inglehope.

The Shire considers systems which reduce phosphorous by a minimum of 90% and nitrogen by a minimum of 80% to be adequate to be approved without the need for a nutrient balance model for the property. Should a property owner wish to consider a system which does not meet the above nutrient reduction criteria then they must demonstrate how the targets for nutrient reduction contained in the Water Quality Improvement Plan for Peel-Harvey and extrapolated in the Murray Drainage and Water Management Plan will be achieved on their lot. This may not be possible in all cases and at an early stage you should discuss your nutrient balance model with the Shire's Environmental Services.

The nutrient balance model must either demonstrate a minimum net reduction in nitrogen output and a minimum 65% reduction in phosphorous output from pre-development inputs or show that the net nutrient export to the environment for the entire property is below the targets set for the Shire of Murray. These targets are as follows:

Phosphorous Targets by catchment:

| | |
|---|---|
| Serpentine | 0.29 kg / ha / yr |
| Murray | 0.28 kg / ha / yr |
| Harvey | 0.45 kg / ha / yr |
| Nitrogen Target all catchments: | 2.4 kg / ha / yr |

Alternatively, you may demonstrate how you meet the requirements of the draft government sewerage policy 2018 for secondary treatment systems with nutrient removal, namely achieving discharged treated sewage concentrations of less than 1mg/L of phosphorus and 10mg/L of nitrogen.

To access a list of the current Department of Health approved systems with nutrient retentive capability please see the following links:

http://ww2.health.wa.gov.au/Articles/A_E/Approved-alternative-treatment-systems

Approved secondary treatment systems and aerated wastewater treatment systems (health.wa.gov.au)

Systems that currently meet the Shire's nutrient retentive requirements are listed below. The first is an aerated wastewater treatment system (AWTS) suitable only in older subdivisions within the Peel-Harvey Estuary catchment, the others are secondary treatment systems (STSs), permitted in all areas:

- Aquarius O-3, O-2NR (150m$^2$ irrigation field or 2.5m flat bed drains);

- Filtrex (septic tank and nutrient retentive leach drains);
- Fujiclean CE1500EX (150m$^2$ irrigation field or 2x5m flat bed drains);
- Taylex (150m$^2$ irrigation field or 2x5m flat bed drains).

Applications and installations are usually arranged by specialised contractors such *Filtrex* in Bunbury (Jo 9726 0118), Brad's Plumbing for *Fujiclean* products (0498 233 759), Saggers Wastewater & Civil Solutions for *Aquarius* and *Taylex* systems (Brad 0449 634 242) or ATU Wastewater Systems for *Taylex* (Gary 0427 837 333).

### 1.5 Why do I require a nutrient retentive system?

Wastewater, commonly termed sewage effluent, when discharged may pose a contamination risk to water resources.

Depending on the type of treatment, sewage effluent may contain:

- Disease causing organisms (bacteria, viruses, intestinal worms and protozoa)
- Degradable organic matter that depletes dissolved oxygen in water and can cause foul odours
- Suspended solids and sediment
- Nutrients such as nitrogen and phosphorus, that foster algae blooms in waterways and wetlands
- Household chemical residues such as cleansers and disinfectants
- Detergent residues (which can harm aquatic plants and animals)
- Trace metals and organics from plumbing fittings
- Any substance flushed into the water management system.

Wastewater treatment is normally designed to remove grow solids, stabilise degradable organic material and settle out solids as sludge. Disinfection is required if the effluent discharge could contact food crops, people or water supplies.

Some treatment systems are also designed to reduce nutrient levels. Nutrient removal systems may be needed where local soils are poor at absorbing phosphorous and nitrogen and where runoff or groundwater may move this nutrient into a surface water body at risk of algae blooms.

The Peel-Harvey Coastal Plain Catchment State Planning Policy 2.1 (SPP 2.1) aims to minimise environmental damage. In particular it attempts to reduce nutrients entering our natural environment to protect the Peel-Harvey Estuarine System.

The Policy sets out environment water quality objectives to prevent further degradation of the Peel-Harvey Estuary. Phosphorous load reduction targets were set for waterways entering the estuary. These targets are intended to be achieved through local government decisions that are compatible with the environmental water qualify objectives.

Water Quality Protection Note 70, Wastewater Treatment and Removal-Domestic Systems, also includes a requirement for recommended minimum buffers for conventional wastewater treatment systems consistent with SPP2.1

In addition, the Shire's Water Sensitive Urban Design Policy sets out objectives and strategies to protect waterways. In order to achieve these objectives and strategies properties in this area are required to install phosphorous retentive systems.

## 2. Application for Approval

2.1. Before approval for construction, installation or alteration of an apparatus can be granted, a completed application to install apparatus for the treatment of sewage form and plans must be submitted.

2.2. The application must include:

a) A completed application form – copy available at: Effluent Disposal System Application (murray.wa.gov.au). Fees made payable to the Shire, calculated from the application form

b) Copy of site plan of the premises accurately drawn to scale showing: -

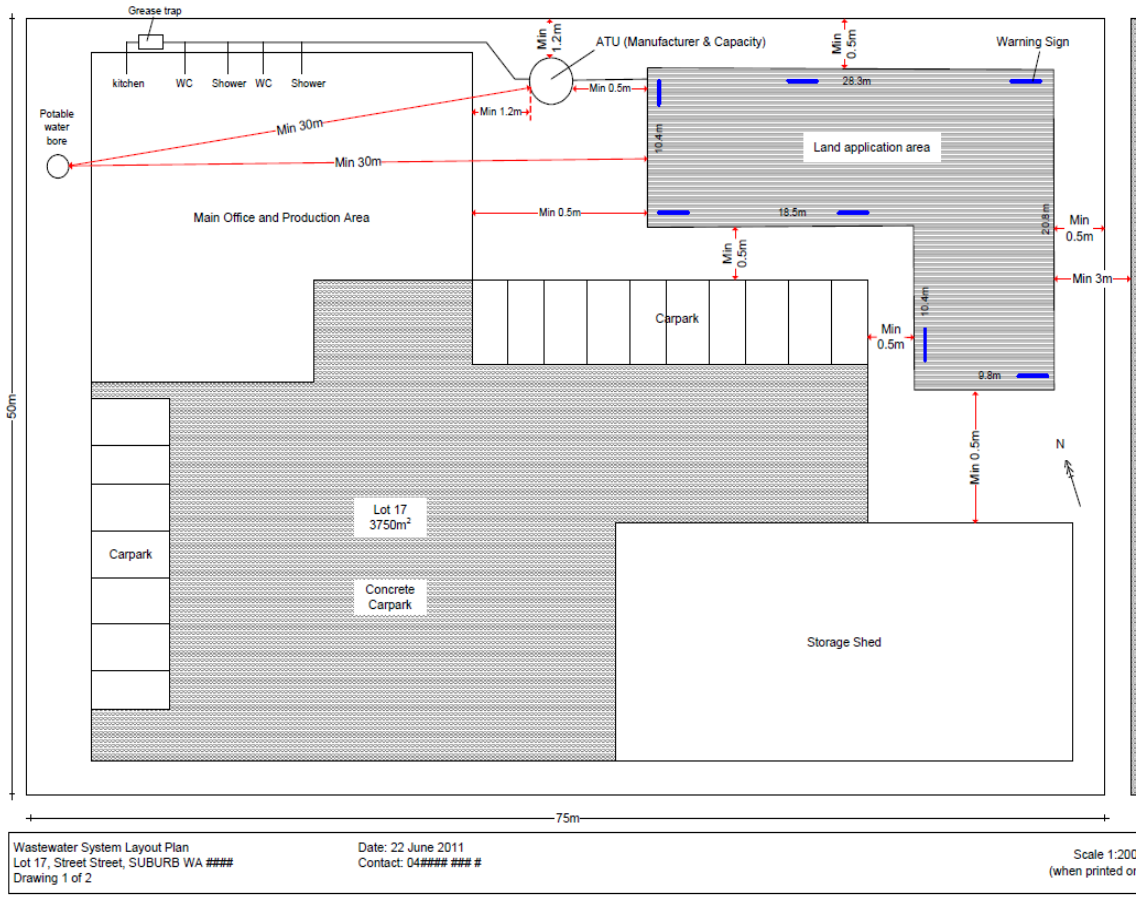
i. The position of all buildings erected or proposed and the position of the proposed apparatus

ii. The position of land contours, any subsoil drains, open drainage channels, wells, streams or underground sources of water intended or available for human consumption;

iii. Details of the apparatus (e.g. type, brand name);

iv. If the apparatus is an Aerobic Treatment Unit (ATU), a copy of the maintenance agreement between the owner and the authorised company must be included

An example of a good site plan to include with your application is shown below: -




**NB:** All internal plumbing, and the connection to the wastewater system, must be carried out by or under the supervision of a licenced plumber/drainage plumber whose licence number must be recorded with the applicant's name on the application form. An owner who applies must provide a written statement from a licenced plumber/drainage plumber accepting liability for all works detailed.

## 3. The Approval Process

3.1 Once an application has been submitted, an assessment will be undertaken to determine conditions of approval. This may include a site inspection of the proposed location. Please ensure that access is available to the site for the inspection.

3.2 The Shire will contact the applicant to advise of any additional information required. Once accessed the Shire will determine the application. Where applications are approved installation can then commence. Installation must be undertaken in accordance with the conditions attached to the approval.

## 4. Septic Tank and Leach Drain Sizes

Only Department of Health approved septic tanks and leach drains may be used.

For details of approved tanks and drains see the following links:

Septic Tanks: Approved primary treatment systems (health.wa.gov.au)

Approved Leach Drains: Approved leach drains (health.wa.gov.au)

4.1 Septic Tanks – for residences treating combined household wastes which have five (5) or less bedrooms, two standard precast septic tanks may be installed, the first of which has an internal diameter of 1520mm and the second 1220mm.

4.2 Leach Drains – normally constructed according to the following:

- Internal width – 600mm
- Effective depth – 450mm
- Length – a dual leach drain system with an approved alternating device must be installed in accordance with the following table:

**Table 1**

| Number of Bedrooms | Soil Classification | | | |
|---|---|---|---|---|
| | Sand | | Loams or Gravels | |
| | Minimum infiltrative area (m2) | Leach Drain (Number x Length m.) | Minimum infiltrative area (m2) | Leach Drain (Number x Length m.) |
| 2 or less | 18.8 | 2 x 6 | 28.2 | 2 x 9 |
| 3 | 25.4 | 2 x 8 | 38.1 | 2 x 12 |
| 4-5 | 27.6 | 2 x 9 | 41.5 | 2 x 13 |

**NB:** Where clay soils are encountered, semi or fully inverted leach drains or any alternative apparatus may be required. This may occur due to the height of the water table being unsuitable for standard on-sit effluent disposal.

## 5. Pumps and Sumps

When a fully or semi-inverted leach drain is required (i.e. the leach drain is partially or fully raised above ground level) the finished floor level of the building may not be sufficient to enable

discharge into the leach drain by gravitation. This is when a pump and sump will be required. The following requirements for the pump and sump are to be met.

5.1 The approved pump is to be automatically operated, electrically driven, permanently installed and equipped with an approved warning device (such as an alarm and light).

5.2 The pump set up is to be installed to ensure maximum storage capacity in the event of pump failure, i.e. installed near the bottom of the tank.

5.3 Where a pump and sump are installed the sump tank is to have a minimum capacity of one thousand (1000) litres.

5.4 Subject to 5.2, if the estimated capacity is expected to exceed 1000 litres the sump is to be of adequate capacity to hold the estimated daily flow rate litres in any 24-hour period.

5.5 A submersible pump or surface mounted pump may be used.

5.6 Surface mounted pumps are to be suitably enclosed unless designed for outdoor usage.

5.7 Lids of sumps are to be at ground level and sealed to prevent the escape of odours or the entry of groundwater.

## 6. Installation

6.1 Before any system is constructed or installed, you should carefully read the conditions of approval.

6.2 The installation must be in accordance with approved plans, and any proposed alterations must be submitted to the Shire for approval.

6.3 The following requirements must be observed when considering the location of septic tank and leach drain installation:

a) If the natural soil contains clay, 300mm or 20-40mm blue metal, washing gravel or other approved material is required to surround each leach drain (discuss with Environmental Health Officer prior to installing), surrounded by 1m of imported sand. Leach drains are to be designed so that stones do not easily enter the inside of the leach drain.

b) Leach drains must be constructed no closer than 30m from any well, stream or underground source of water intended or available for consumption of humans, unless otherwise approved (50m or 100m can be stipulated depending on environmental factors).

Leach drains shall be no closer than 6m from any subsoil drainage system or open drainage channel.

c) Leach drains are required to have a fall of 1 in 200 away from the inlet pipe. A concrete slab is to be fitted into the bed underneath the inlet pipe to prevent scouring of the leach drain beds.

d) Unless otherwise approved, the leach drains must be laid in a straight line parallel to ground contours and not closer than 2m from each other. Joints between modular segments shall be rendered with a cement mix to prevent the ingress of sand and soil.

e) Leach drains must not be installed within 1.8m of any septic tank, building or boundary of a lot. Where leach drains are required to be semi or fully inverted, a minimum distance of 3m from any septic tank will apply.

f) Septic tanks must not be installed within 1.2m of any house or other building foundation or property boundary or structure.

g) All subsoil drainage and stormwater must be discharged or diverted away from the leach drain soakage area.

h) Approval to construct or install an apparatus is valid for a maximum of 2 years.

i) An apparatus must be constructed and installed to a trade standard.

## 7. Inspection and Approval of an Apparatus Installation

7.1 Upon completion of the installation of an apparatus, an appointment must be made with an Environmental Health Officer at the Shire to conduct an inspection of the apparatus. It is recommended that the inspection be arranged by a plumber as it may require the application of specific preparation and procedures.

7.2 Where the apparatus is an aerobic treatment unit (ATU) or nutrient retentive system the person notifying the Shire shall provide an ‘as constructed’ plan and written certification that the unit has been installed in accordance with the Department of Health approval.

7.3 If the installation is approved a Permit to Use will be issued approving the use of the apparatus. **Please note** it is an offence to occupy a dwelling or building prior to the issue of the Permit to Use.

7.4 A re-inspection fee will be payable if it is necessary for a re-inspection of an installation as a result of faulty workmanship or incomplete compliance with conditions of approval.