

FACTSHEET 9: SEPTIC TANK & REED BED SYSTEMS

If you live in an unsewered area, you need to choose an appropriate method for the treatment and disposal of household wastewater to protect public health and preserve the environment. Reed beds are an innovative, sustainable solution for on-site sewage treatment. For specific information go to <http://www.epa.vic.gov.au/your-environment/water/onsite-wastewater>

What is a reed bed?

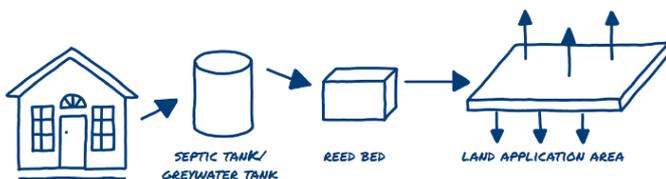
A reed bed is a secondary treatment phase that can be incorporated into on-site sewage management systems.

It is essentially a precast cell filled with gravel and planted with macrophytes (aquatic plants) such as reeds and rushes.

Wastewater (black or grey, which has already been through primary treatment – septic tank) passes through the root zone of the reeds where it undergoes treatment via physical, chemical and biological interactions between the wastewater, plants, micro-organisms, gravel, and the atmosphere.

Inlet and outlet pipes are positioned below the gravel surface so that the water always remains below the surface.

This minimises the risk of human exposure to the wastewater, mosquito breeding and unpleasant odours.



How does a reed bed work?

Raw wastewater from the house flows into a collection tank for primary treatment (septic tank) to remove large solids, grease and oils.

The partially clarified effluent from the septic tank passes through an effluent filter to trap any large solids that remain, and then flows into the reed bed.

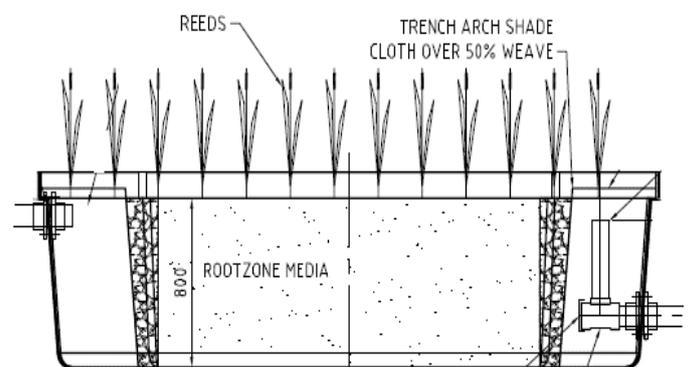
Once inside the reed bed, the wastewater undergoes a complex series of natural treatment processes as it moves laterally through the root zone from one end of the bed to the other.

The wetland plants leak small amounts of oxygen out through their roots, creating small oxygenated sites within an otherwise anaerobic environment.

This mix of aerobic and anaerobic conditions creates an ideal environment for the growth of micro-organisms on the surface of the gravel and plant roots.

These micro-organisms are largely responsible for the pollutant removal that occurs in a reed bed, as they feed on and breakdown organic matter and nutrients.

This treated water can then be applied to land.



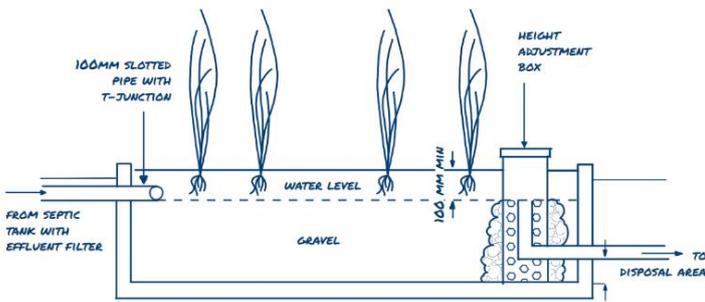
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Reed bed benefits

The use of a reed bed produces a secondary treated effluent that allows owners to better utilise their wastewater, especially on sites with soil and waterway constraints.

A reed bed with a residence time greater than five days (time it takes wastewater to flow from input to output) will approximately halve the nitrogen load in wastewater while reducing BOD and suspended solids (see table for sand filter sizing requirements).

This reduces the land area required for irrigation of wastewater and poses less of a risk to human health.

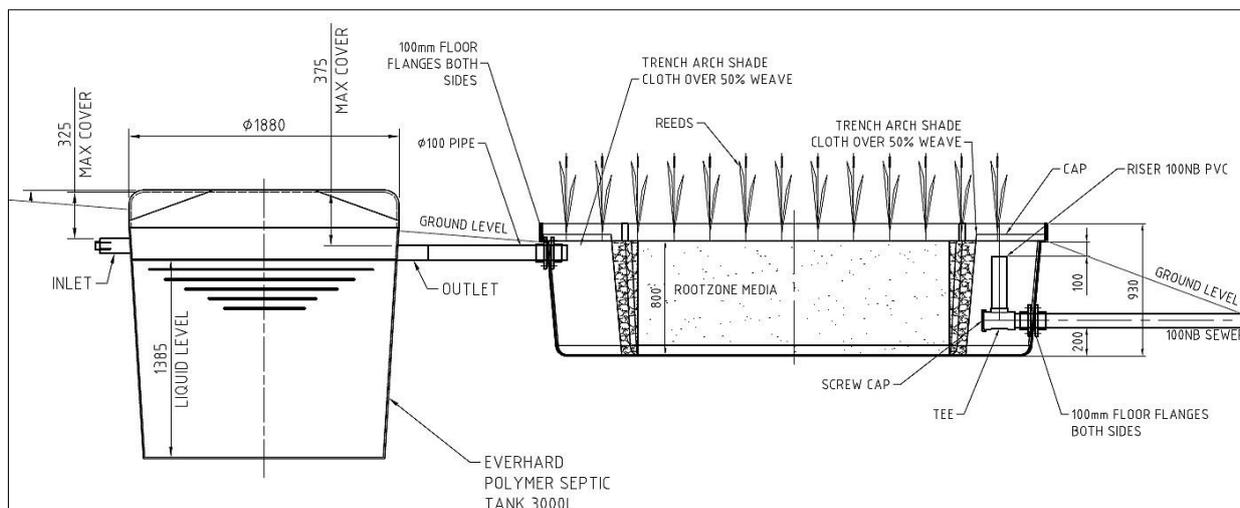


Please note: Reed beds are not suitable for flood-prone land.

Sand Filter Sizing (square metres)	1 Bed House	2 Bed House	3 Bed House	4 Bed House	5 Bed House
Standard fixtures	8 m	11 m	15 m	18 m	22 m
Full water-reduction facilities	6 m	9 m	12 m	15 m	18 m

Reed bed maintenance

- If a well-designed reed bed is installed, maintenance requirements are minimal and can generally be undertaken by the property owner.
- Operating costs are very minimal, especially when water is gravity fed as there are no mechanical or electrical requirements.
- Harvest reeds once a year.
- Thin out reeds as needed.
- Check and clean inlet/outlet filters when needed.
- Reed beds also cope well with variations in input, for example, if you take a long holiday or have multiple guests visiting.
- Reed beds are considered to be a long-term and sustainable wastewater treatment option.



Information Guide adapted from existing Rootzone & Tweed Shire Council resources. Moyne Shire Council acknowledges these sources.