

Inspection and Troubleshooting of Onsite Wastewater Management Systems

Primary Treatment Systems, Split Systems, Trenches and Beds

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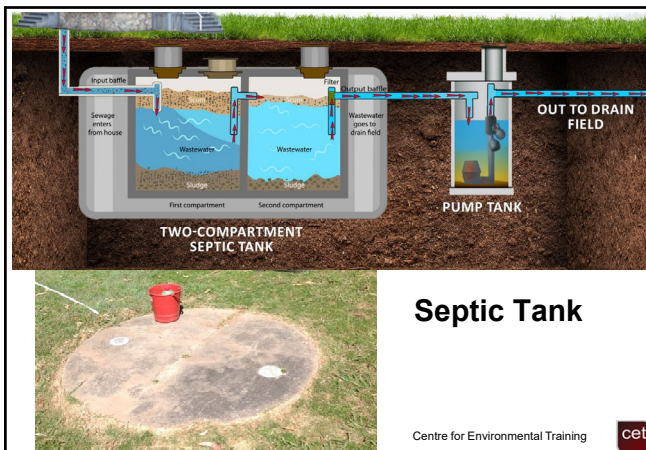
Septic Tank

- Single tank – concrete, poly, fibreglass
- Lid, maintenance and inspection covers
- Internals – inlet and outlet T-pieces, baffle
- Simple, robust treatment
- Brown, earthy scum layer
- Liquid level at base of outlet
- Outlet filter recommended to improve performance



Source: BioSeptic

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Septic Tank

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Issues with Septic Tanks

- Old septics (small lots and sensitive areas, undersized, structurally unsound, poorly located)
- Ingress – stormwater, tree roots, vermin, soil
- Maintenance – often forgotten and poor (hidden, structural decay, high solids build-up, clogged outlet filter, unsealed)
- Blockages downstream cause high liquid levels
- Misuse of a pump directly in septic for LAA

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Lids, Openings and Extras

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Collection Well

- Commonly larger tanks
- Minimal or no solids (scum or sludge)
- Liquid level varies with pump out cycle
- Should have audible / visual high water alarm
- Pump truck access and standpipe

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Tank with Ground Anchors



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Pump to LAA or Sewer System

- Pump well for effluent (tank, pump, alarm, filter)
- Should have an audible/ visual high water alarm
- Liquid level varies with pump out cycle
- Commonly has float switch operated pump
- Can be a stand-alone Sewage Ejection Pump Station (macerated wastewater) to sewer

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Pumpout System



Pump to Sewer System

Issues with Collection Wells and Pumped Systems

- Owner lead maintenance can be poor
- No high water alarm on older systems
- Risk of floating. Must be well anchored
- Limited holding capacity (SEPS and pump well) in event of pump failure and power outage
- Inappropriate disposal of effluent to the environment to reduce costs

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Waterless Composting Toilet Systems

- Toilet wastes only. Separate kitchen and greywater management
- Self contained (batch) – pedestal and treatment
 - Low capacity, no seepage discharge
- Split system – waste chute to treatment chamber
 - Batch or continuous
 - Micro-flush pedestal – allows for offset treatment chamber (Centrex)
 - Commonly have seepage discharge
 - Vent pipe, commonly with fan

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Waterless Composting Toilet System



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Issues with Waterless Composting Systems

- Composting process needs additional care with use and management. Very hands on management can discourage correct use
- Poor management can lead to odour problems and blockages in leachate pipes
- Overfull batch chambers are hard to move
- Additional cost of managing kitchen and greywater separately

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Issues with Waterless Composting Systems

- Humus
 - Build up excessive or peaked?
 - Foreign materials?
 - Humus pile wet or smelly?
 - On-site disposal available and suitable?
- Moisture excessive?
 - Blocked filter or drainage?
- Vent – Clear, fan working?
- Bulking agent present and in use?

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Wet Composting Systems

- Treats all wastewater plus kitchen organics
- May be pumped or gravity release to LAA
- Solids collected on media filled bags allowing worm and microbe action in aerobic conditions
- Filter layer at base of tank
- Risk of tank flooding from clogged filter layer or failed pump
- Vent pipe, often with fan
- Risk of floating. Must be well anchored

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Wet Composting System



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Grease Trap / Arrestor

- Common on older systems
- Located near the kitchen
- Concrete or poly with baffles
- Underground or above ground
- Water level at base of outlet and below top of baffles
- Often hidden
- Maintenance can be poor
- Odour problems common
- Stormwater ingress



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Greywater

- Greywater treatment system (GTS) (includes kitchen)
 - Like AWTS including servicing (see AWTS)
- Greywater diversion device (GDD) (excludes kitchen)
 - Most include filtering
 - Should be subsurface application
 - No storage, only surge management
 - Gravity or pump options

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Issues with Greywater Systems

- Surface diversion is common misconception
- GTS – cost v benefit of reuse and reduction
- GDD – directed to surface reuse
- GDD – poor distribution over LAA
- GDD – poor owner lead maintenance can lead to blocked filters and clogging in subsurface application areas
- Often result in hydraulic overloading of soils (surge loads and small LAA)

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Greywater Diversion

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Distribution Box

- Poly or concrete
- Gravity distribution
- Often hidden
- Uneven settlement
- Stormwater ingress
- Ants import soil
- Often hit by mowers etc.



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Absorption or ETA Trench/ Bed

- Gravity or pressure dosed
- Effluent – primary or secondary treated
- Surface dry / firm
- Standing effluent in inspection openings?
- Risk of uneven settlement
- Uneven distribution
- Stormwater ingress
- Vegetation management



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Micro-trenches/ Low Pressure Effluent Distribution (LPED) System

- Must be dose loaded by pump or passive dosing system (requires fall)
- Zero / minimal standing effluent in trenches
- Requires good soil
- Shallow application
- Even distribution is critical
- Periodic flushing required
- Poor distribution



Issues with LAA Systems

- Poor maintenance of treatment system /solids transfer to LAA
- Gravity application and poor distribution leading to creeping failure
- Damage by vehicles and stock (compacted ground, crushed pipes, pugging)
- Overgrown vegetation leading to mulch build-up
- Poor stormwater management (extra load)
- Shallow groundwater (extra load and increased clogging layer development)

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Other components?

- Associated pipes (vent pipe, yard gully, inspection openings)
 - Ingress points for stormwater, vermin, etc.
- Control panels and alarms
 - Need to be maintained and updated
- Flush points
 - Often filled with soil (ants)
- Diversion drain / berm
 - Need to be maintained to continue working

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