

On-site wastewater management systems

THE ISSUE

As a large number of residents living in our drinking water catchments are located in unsewered areas, their wastewater (sewage) is managed by means of 'on-site wastewater management systems'.

Wastewater contains pathogens – micro-organisms that can cause serious illness and disease such as bacteria, viruses and protozoa (such as Giardia*). Poorly designed, installed, operated and/or maintained on-site wastewater management systems can release pathogens into groundwater and surface water. If this occurs in a drinking water catchment, the drinking water source may become contaminated.

Therefore, the risk of contamination of groundwater and surface water by on-site wastewater management systems is a key concern of Rous Water.

Your local council has a critical role in ensuring the correct design, installation, operation and maintenance of on-site wastewater management systems to ensure the protection of water quality and public health.



*Giardia

We need your help to manage this hazard and ensure it doesn't enter our waterways!

YOUR DUTY OF CARE - YOUR LEGAL RESPONSIBILITIES

If you live in, are intending to live, or are developing land in a Rous Water drinking water catchment, you have a 'duty of care' to protect water quality. This means that you, along with all other land owners in the drinking water catchment, are *legally* required to minimise impacts on waterways in the catchment.

This 'duty of care' extends to on-site wastewater management systems. You have a legal responsibility to make sure the design, installation, operation, and maintenance of any systems on your property are water sensitive.

Effective design, installation, operation, and maintenance of on-site wastewater management systems is critical in minimising the risk of these pathogens being present in our drinking water.

OUR DUTY OF CARE – INTRODUCING THE ROUS WATER ON-SITE WASTEWATER MANAGEMENT GUIDELINES

In association with other local and state government agencies, Rous Water has a 'duty of care' that includes promoting measures that protect water quality within our drinking water catchments.

To help to prevent the release of pathogens to groundwater and surface water in drinking water catchments, Rous Water has developed the *Rous Water On-site Wastewater Management Guidelines (the Guidelines)*.

The Guidelines are designed to help those people who are living, intending to live, or developing land in a drinking water catchment to understand their duty of care to protect water quality with respect to on-site wastewater management systems. This brochure outlines the requirements set out in the Guidelines.

The chance of pathogens entering a nearby watercourse is influenced by two interrelated issues:

- The level of performance of the treatment process used in the on-site wastewater management system; and
- The distance the on-site wastewater management system is from the nearby watercourse.

The Guidelines have been developed to manage these issues when designing and installing new on-site wastewater management systems or upgrading existing systems. They outline strategies for combining appropriate treatment processes with adequate distances between the on-site wastewater management system and watercourses.

Buffer distances and watercourses

THE IMPORTANCE OF BUFFER DISTANCE

Modelling completed by Rous Water has indicated that the distance that an on-site wastewater management system is from a watercourse is one of the key factors controlling the level of pathogen contamination risk. As a result, this 'buffer distance' to the nearest watercourse is a key consideration in the design of any on-site wastewater management system.

DEFINITION OF A WATERCOURSE

For the purposes of the Guidelines, two types of watercourse are considered – perennial watercourses and intermittent watercourses.

Perennial Watercourses

These watercourses essentially flow all-year round but may consist of limited water flows during dry periods.

Intermittent Watercourses

These watercourses flow during certain times of the year when they receive water from surface runoff, springs or ground water. During dry years they may be reduced to a series of separate pools or may contain no water at all.

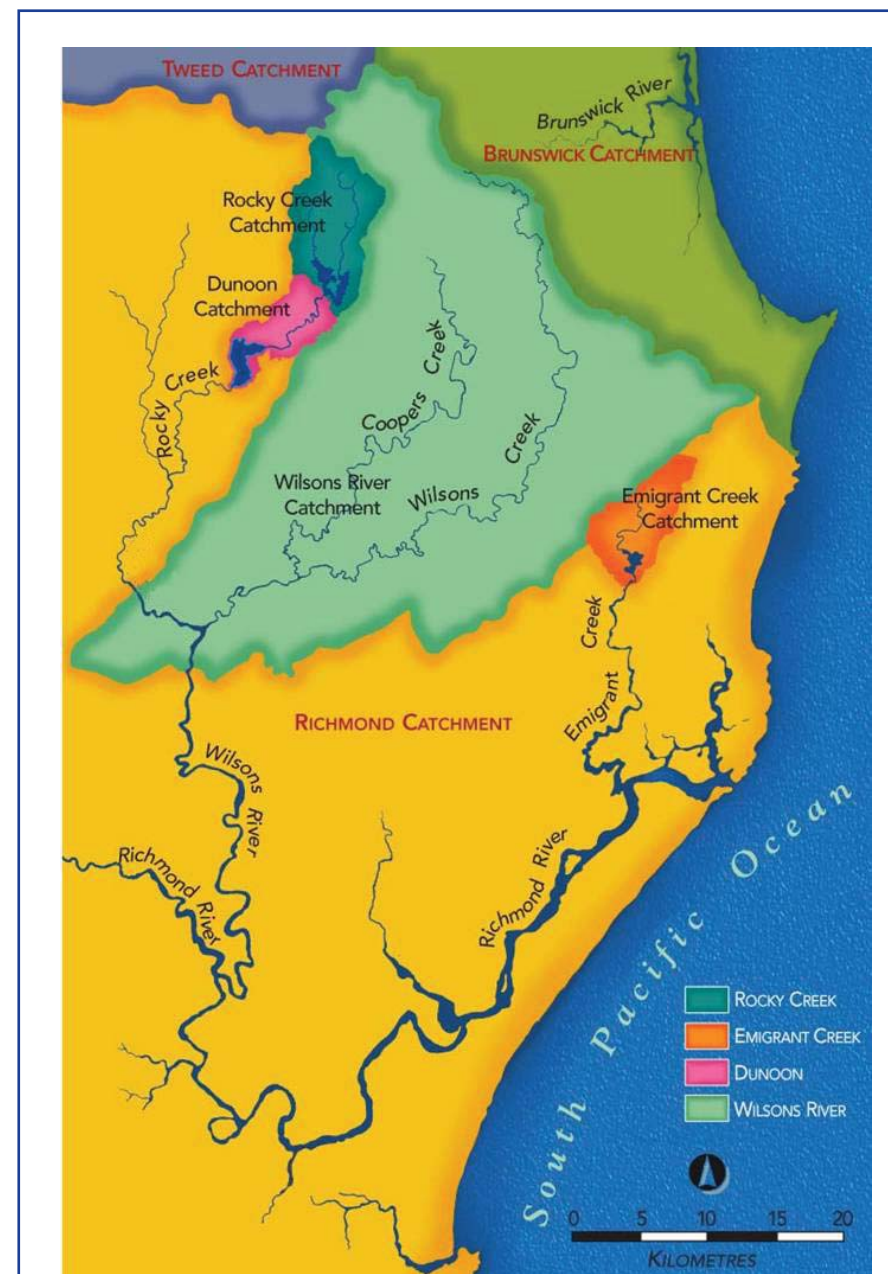
Your local council has a map of watercourses (the NSW Government Drainage Layer). This will assist with the initial identification of watercourses in drinking water catchments, but will need verification on site in consultation with your local council.

Who do the Rous Water on-site wastewater management guidelines apply to?

The guidelines apply to property owners, tenants, plumbers and on-site wastewater designers and installers who install, operate or upgrade on-site wastewater management systems within the four key drinking water catchments managed by Rous Water. These four key drinking water catchments are the catchments of Rocky Creek Dam, Emigrant Creek Dam, the Wilsons River Source and the proposed Dunoon Dam. The guidelines apply to on-site wastewater management systems on all land within these catchments.

Rous Water is a regional water supply authority. It manages these catchments to supply drinking water to over 100,000 people in the local government areas of Lismore (excluding Nimbin), Ballina (excluding Wardell), Byron (excluding Mullumbimby), and Richmond Valley (excluding Casino).

Note: The Rous Water On-site Management Guidelines may also apply if you live within 250 m of a groundwater bore that is used for drinking water supply purposes.



The four main drinking water catchments from which Rous Water provides drinking water to over 100,000 people

Overview of Guidelines

The following points outline the principles underlying the approach adopted in the guidelines for on-site wastewater management systems.

- Rous Water has a preference for secondary treatment of wastewater but acknowledges that the removal of pathogens from your system will be dependent on the type of system you own, the location it is in and the way in which you operate it. A table, which evaluates specific treatment types can be found overleaf.

- In most instances where the wastewater Land Application Area (LAA) is located 100 metres or more from a perennial or intermittent watercourse, the likelihood of contamination of the water supply is significantly reduced.

- The vegetation between a LAA and a watercourse will also influence the risk of contamination of the watercourse. Native or heavily vegetated areas provide a greater barrier to the potential for surface migration of effluent.

- Generally, higher levels of treatment are required for LAA's that are closer to a watercourse to ensure adequate protection of that watercourse.

What is your local council's role in implementing the Guidelines?

Each individual local council has an active role in the implementation of the Guidelines, to ensure:

- New on-site wastewater management systems are appropriately designed for operation within a water supply catchment area;
- That upgrade works to existing on-site systems are adequate for future operation within a water supply catchment area;
- The design of an on site wastewater system considers the level of treatment, the capacity of that treatment train and the site conditions including distance to the nearest watercourse and the vegetation located within that area; and

- Promotion of the use of secondary treatment to ensure the receiving environment is protected.

Local councils may also request Rous Water to provide a review of any new system or upgrade to an existing system to ensure appropriate regulatory requirements are met, and that the treatment train of choice is appropriate for the location of the system within the water supply catchment area.



Photo courtesy of Midcoast Reedbed Wastewater Systems



Your role in implementing the Guidelines?

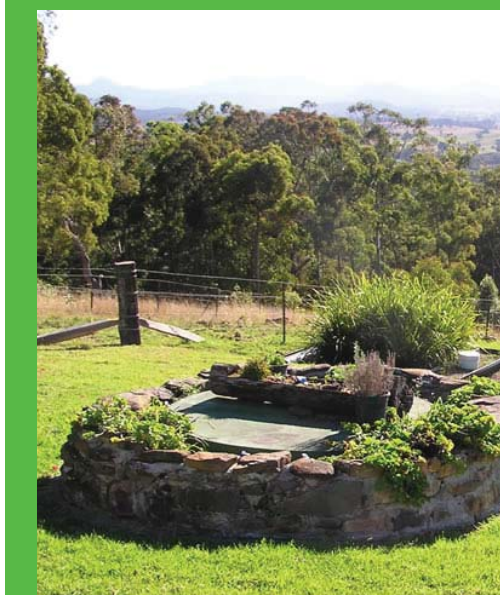


Photo courtesy of Midcoast Reedbed Wastewater Systems

Existing systems within drinking water catchments:

- Must have an "Approval to Operate" which requires that the owner/occupier must operate and maintain the entire system to ensure that risks to the water supply are minimal;
- Are subject to inspection by local councils on a routine basis; and
- Require an application for approval to install when an upgrade is being made.

New systems within drinking water catchments:

- Must be installed in accordance with regulatory approval to install based on a formal application;
- Must be designed to meet the requirements of Rous Water's On-site Wastewater Management Guidelines;
- Must be based on a treatment system that is suitable for the site and will ensure minimal risk of watercourse contamination;
- Incorporates a Land Application Area design that ensures there is no release of pathogens or other pollutants to watercourses.

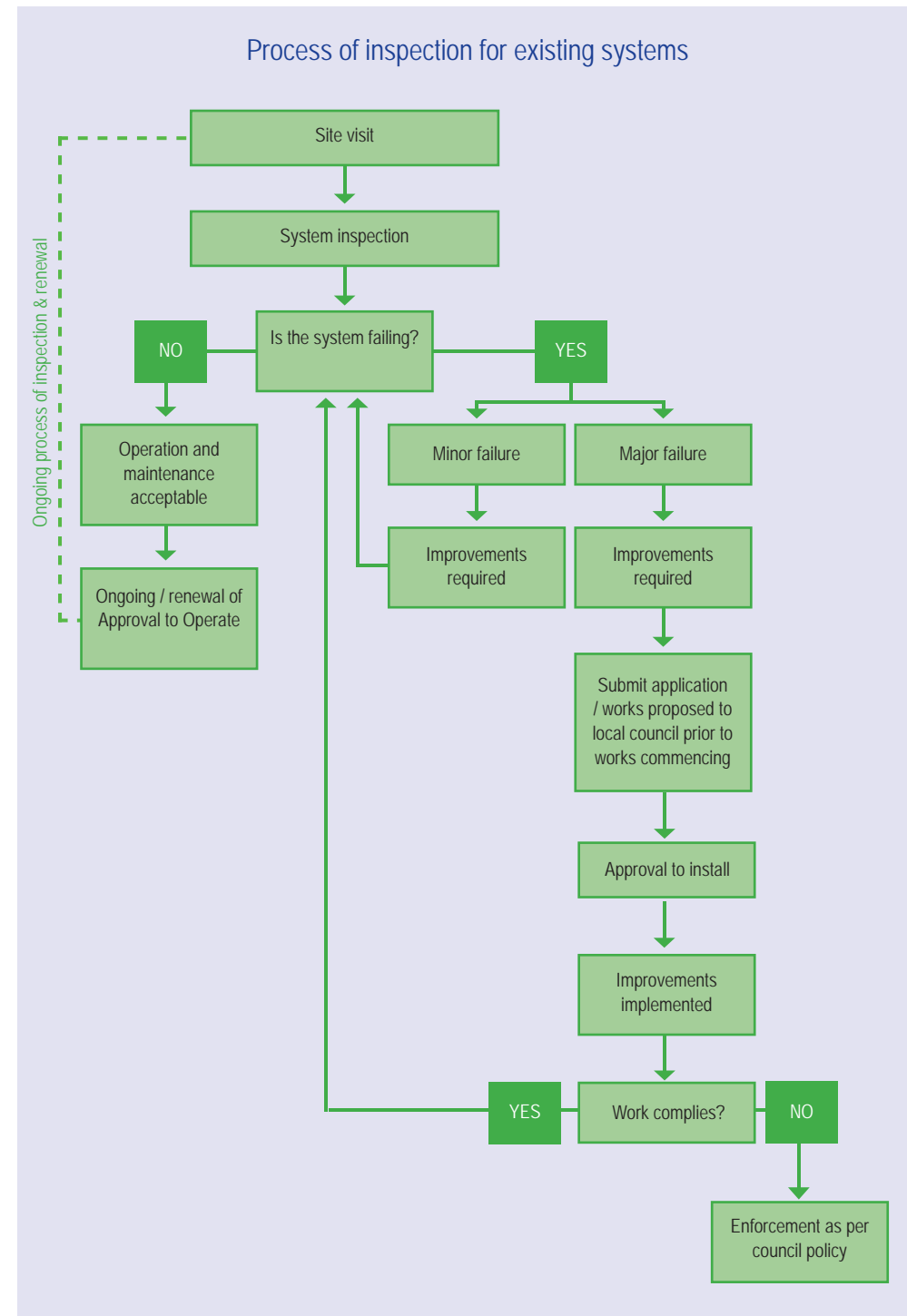
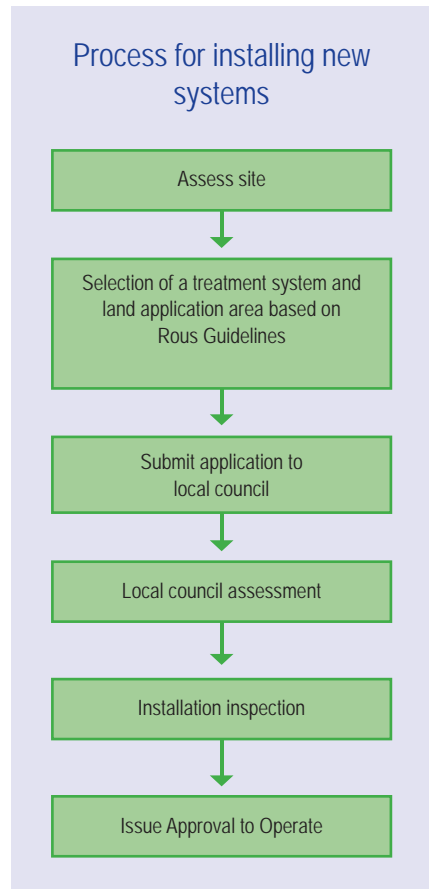
Treatment evaluation

SUITABILITY OF SYSTEM / LIKELIHOOD OF APPROVAL (COMBINED PATHOGEN RISK FOR LOCATION AND TREATMENT TRAIN)

TREATMENT TRAINS (TREATMENT SYSTEM AND LAND APPLICATION AREA)	PATHOGEN REMOVAL CAPACITY OF TREATMENT TRAIN	Distance from watercourse (perennial or intermittent)					Suitability
		100 metres heavily vegetated	100m pasture	50-100m heavily vegetated	50-100m pasture	25-50m	
Septic tank with evapotranspiration (ETA)/absorption beds land application area	Low to Medium	☺	☺	✗	✗	✗	✗
Septic tank with sand filter and ETA / absorption beds or sub-surface drip irrigation land application area	Medium	☺	☺	☺	✗	✗	✗
Septic tank with re-circulating sand filter and ETA / absorption bed or sub-surface drip irrigation land application area	Medium - High	☺	☺	☺	☺	☺	☺
Septic tank with constructed wetland (reed bed) and ETA / absorption bed or sub-surface drip irrigation land application area	Medium	☺	☺	☺	☺	✗	✗
Membrane bioreactor technology (micro filtration) with ETA / absorption bed or sub-surface drip irrigation land application area (some reuse i.e for toilet may be permissible)	Medium	☺	☺	☺	☺	✗	✗
Composting toilet and greywater treatment device (i.e reed beds / sand beds) ETA / absorption bed	High	☺	☺	☺	☺	☺	☺
Aerated waste water treatment system with chlorination disinfection and subsurface irrigation	Medium	☺	☺	☺	☺	✗	✗
Aerated waste water treatment system with sand mound and ETA / absorption bed or sub-surface drip irrigation land application area	Medium	☺	☺	☺	☺	✗	✗
Aerated waste water treatment system with recirculating sand mound and ETA / absorption bed or sub-surface drip irrigation land application area	Medium - High	☺	☺	☺	☺	☺	☺
Biological filter system (based on worm farm style system) and ETA / absorption bed or sub-surface drip	Medium	☺	☺	☺	☺	☺	☺

Note: Subsurface irrigation design requires certification by a Certified Irrigation Designer

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ON-SITE WASTEWATER MANAGEMENT SYSTEMS IN DRINKING WATER CATCHMENTS

Do you live in a drinking water catchment?
If so, you have duty of care to protect water quality.

Do you have an on-site wastewater management system?
If so, inadequate systems can seriously contaminate waterways.

Do you install on-site wastewater systems as a business?
If so, you have a professional obligation to follow guidelines and standards.

This brochure will introduce you to Rous Water's
On-site Wastewater Management Guidelines