

Recycled water and livestock

TasWater currently supplies recycled water to around 75 customers, many of which are farms which either graze livestock or grow stock fodder. This factsheet has been prepared to provide information as to how recycled water can be safely used with livestock.

Restrictions on irrigating livestock feed with recycled water

Restrictions in regards to recycled water use for livestock are directly associated with water quality, particularly the microbial content. In Tasmania, the environmental guidelines for the use of recycled water (DPIWE, 2002) define three classes of recycled water based on the concentration of thermotolerant coliforms (see Table 1).

Class A and Class B recycled water is generally suitable for irrigating pasture and fodder for livestock, however there are some important restrictions. Table 2 outlines how Class B recycled water should be used for livestock production.

Class C recycled water is not suitable for producing feed for livestock, either by direct grazing or feeding harvested fodder.

Table 1 – Tasmanian recycled water classes

Class*	Mandatory effluent quality	Suitability for livestock
A	< 10 median thermotolerant coliforms per 100ml	Suitable for irrigating livestock feed (with some restrictions)
B	< 1,000 median thermotolerant coliforms per 100ml	Suitable for irrigating livestock feed (with some restrictions—see table 2)
C	< 10,000 median thermotolerant coliforms per 100ml	Not suitable for irrigating livestock feed

*In Tasmania there are currently no schemes that supply Class A recycled water



Blue green algae and livestock

Blue green algae (BGA) blooms are a reasonably common occurrence in recycled water dams. Signs of a bloom include discolouration, surface scums and sometimes odour. Some blooms are toxic and therefore potentially harmful to livestock and humans via skin contact or ingestion.

Where a bloom is detected in a TasWater storage, users will be notified, toxin analysis will be completed and further advice provided.

Irradiation with UV light assists with the degradation of most algal toxins on pasture. The following withholding periods (post irrigation) apply for grazing or harvesting of fodder crops:

- At least two weeks (if sunny conditions prevail during this time)
- Up to four weeks if moderately sunny.

High concentrations of algae or elevated levels of toxins may lead to cessation of supply until the bloom subsides. Irrigators should monitor private storage dams for signs of algae and seek advice from TasWater as required.

Table 2 – Permitted uses of Class B recycled water for livestock production

	Stock drinking water	Direct grazing (pasture & fodder crops)	Harvested fodder (silage & hay)	Grain*	Withholding period before grazing & harvesting fodder
Sheep	x	✓	✓	✓	4 hours or until dry
Goats	x	✓	✓	✓	4 hours or until dry
Horses	x	✓	✓	✓	4 hours or until dry
Cattle (beef & dairy)^ (without adequate helmith reduction treatment)	x	x	x	✓	2 years
Cattle (beef)^ (with adequate helmith reduction treatment)	x	✓	✓	✓	4 hours or until dry
Cattle (dairy)^ (with adequate helmith reduction treatment)	x	✓	✓	✓	5 days
Poultry	x	x	x	✓	n/a
Pigs	x	x	x	x	n/a

*Grain refers to the dry, harvested grain – not grain crop residue which should be treated as direct grazing or harvested fodder.

^Adopted from Department of Environment and Primary Industries, Victoria.

Tips for the safe use of recycled water

- Avoid contact with recycled water (this includes skin contact, inhalation and ingestion)
- Wash your hands in fresh water after handling recycled water irrigation equipment
- Ensure signage is in place on boundary fencing, points of public access and taps
- Ensure all staff and farm visitors are aware that recycled water is in use
- Remember that recycled water is unsuitable for stock drinking water or any domestic uses (such as irrigation in household gardens, filling tanks or bathing)
- Only use recycled water in accordance with either the Irrigation and Environmental Management Plan (IEMP) for your property or the relevant Development Proposal and Environmental Management Plan (DPEMP).



Stock drinking water

Recycled water, of any quality, is not to be used for stock drinking water. Recycled water storages must be fenced to exclude livestock at all times.

Cattle

The potential presence of helminths in untreated sewage is a risk that needs to be managed in regards to using recycled water for irrigating fodder for cattle. If recycled water is not adequately treated, helminth eggs may be applied to land in recycled water and have the potential to establish cycles of infection between humans and cattle. The resulting disease is Cysticercosis or 'beef measles', (and tapeworm in humans).

Adequate treatment to minimise risk of helminths in recycled water is 25 days pond detention.

The suitability of recycled water for irrigating fodder for cattle depends on the wastewater treatment system and

management of recycled water storages. Recycled water must be stored to allow for 25 days settlement prior to irrigation.

While many of TasWater's lagoon based wastewater treatment systems (generally in rural areas) meet this 25 day storage requirement, the larger urban style wastewater treatment plants do not. Nor do they have alternate adequate forms of helminth removal. Unless you have specifically been advised by TasWater that suitable helminth reduction processes are in place, recycled water is not to be used for irrigating fodder for cattle. If you are unsure, contact TasWater on 13 6992.

If recycled water has not been adequately treated for helminth reduction before it is used for irrigation, a two year waiting period is required before fodder grown on the affected land is suitable for grazing or harvesting feed for cattle.

These restrictions apply to direct grazing situations and where fodder is harvested for hay or silage.

Beef measles lifestyle

Helminth eggs are present in sewage and require specific treatment to be removed from recycled water.

Once helminth eggs are consumed by cattle, the immature tapeworm is released and burrows through the intestinal wall, reaches the blood stream and migrates to a muscle in the animal.

A fluid-filled cyst or 'measle' develops in the muscle and contains small immature helminths. Cysts survive in poorly cooked meat, and when eaten by humans, may develop in the gut to form a tapeworm.





Poultry

The Environmental Guidelines for the Use of Recycled Water in Tasmania (2002) specify that recycled water should not be used to grow feed for poultry. This excludes the production of grain, as grain is harvested dry and exposure to recycled water is limited.

At this time there appears to be a void of explanation for this restriction. TasWater will seek a review of this requirement in the upcoming revision of the guidelines, however, in the interim, the guidelines are to be adhered to.

Pigs

Pigs must not be fed or exposed to land or fodder crops that have been irrigated with recycled water. Recycled water storages must be at all times fenced appropriately to prevent contact between pigs and recycled water.

The restriction is to ensure that *Taenia solium* does not establish a lifecycle in Australia. This pathogen is a helminth which has a pig-human lifecycle and can cause severe disease in humans.

Harvested fodder restrictions

If harvested fodder (e.g. hay or silage) irrigated with recycled water is to be sold, growers should ensure that it is going to be used appropriately.

Pigs and poultry: fodder grown using recycled water is not suitable for feeding pigs or poultry.

Cattle: unless you have specifically been advised by TasWater that suitable helminth reduction processes are in place, harvested fodder grown using recycled water is not suitable for cattle.

This assurance may be achieved by advising buyers of the restrictions associated with its use, or if supplying a wider market, labelling with the relevant restrictions. For example, "fodder not for consumption by pigs, poultry or cattle".

For further information on recycled water management, please contact TasWater on

Ph. 13 6992

Email. enquiries@taswater.com.au

Web. taswater.com.au

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References

1 Environmental Guidelines for the Use of Recycled Water in Tasmania. Environment Division, Department of Primary Industries Water and Environment, December 2002

2 Guidelines for Managing Blue-Green Algae (Cyanobacteria) Blooms in Sewage Treatment Lagoons. EPA Division, Department of Primary Industries Water and Environment, March 2011