

GoldCoast Waterfuture

Recycled water facts

Recycled water is a valuable resource that has been used on the Gold Coast for over 35 years. Gold Coast Water is actively pursuing recycling water as just one of a diverse range of proactive water supply initiatives to ensure a sustainable Waterfuture for Gold Coast City.

What is recycled water?

Recycled water is wastewater that is collected and treated according to stringent environmental and health standards. Recycled water can be treated to different standards or classes so it is 'fit for the intended purpose'.

Recycled water is sometimes mistakenly confused with other common water terms:

- **Grey water** is water released from household bathrooms and laundries, but excluding water from toilets. In some areas grey water is recycled in an on-site septic tank or aerobic treatment plant such as a "Biocycle". The treated recycled water is then reused in the household garden. The State Government has developed guidelines for the use of grey water in sewered areas.
- **Black water** is toilet and kitchen waste.
- **Wastewater** is the spent or used water from a community. It comes from domestic, commercial and industrial sources and includes grey water and black water.

Guidelines for recycled water

As the use of recycled water is becoming more widespread in cities throughout Australia, it is essential to protect the health of both the community and the environment.

In Queensland, the treatment and use of recycled water is governed by the Environmental Protection Agency's (EPA) *Queensland Water Recycling Guidelines* (December 2005). Under these guidelines, recycled water quality is defined in classes from A+ to D (with A+ being the highest).

New national guidelines for water recycling are currently being developed. Phase 1 of the guidelines, which has already been published, prescribes a proactive risk management approach to protecting public health and the environment for traditional water recycling schemes around Australia.

This type of approach has been used in the food industry for many years and is also used for managing drinking water quality. It is called the hazard analysis and critical control point system (HACCP).



The risk management approach involves a number of steps including:

- Identifying the hazards in the recycled water that could potentially affect human or environmental health;
- Estimating the risk from each hazard by assessing the likelihood that the event will happen and the consequences if it did;
- Identifying what preventive measure can be put in place;
- Monitoring to ensure that preventative measures keep the system under control; and
- Reviewing the system to ensure it effectively controls the risk of hazards.

Phase 2 of the guidelines which are still in the drafting stage, will include guidance on storm water reuse and producing recycled water to a drinking water quality standard.

Treating recycled water

Treating wastewater to create recycled water involves an overall risk management approach including 'multiple barrier' treatment. The more barriers or treatment processes that are used, the higher the class of recycled water that is produced. Recycled water is produced to a particular class, so it is 'fit for the intended purpose'. By taking a 'fit for purpose' approach we ensure that recycled water treatment and usage remains safe, environmentally sustainable and economical. See the table opposite for more information on the class of recycled water required for specific uses.

Managing wastewater quality

Restrictions are in place under the Water Act 2000 to limit the amount of harmful chemicals that enter the wastewater system. Industry and hospitals for example, must have appropriate procedures in place to dispose of harmful waste and chemicals, without discharging to the wastewater system.

The wastewater treatment plant – Classes D to A

Wastewater treatment plants treat wastewater to remove nutrients such as phosphorus and nitrogen, chemicals and microorganisms. Recycled water produced at these plants can then be released to waterways or used for a range of purposes such as irrigation, but not for residential use or where public access cannot be controlled. The class of recycled water produced depends on the technology available at the individual treatment plants.

Advanced water treatment – Class A+

Class A+ recycled water will be produced by a new recycled water treatment plant at Pimpama and available to dual reticulated properties in the Pimpama Coomera Master Plan area from the end of 2008. Class A+ treatment involves additional treatment processes such as ultra-filtration which acts as a extremely fine filter to remove small particles, proteins and most microorganisms.

'Purified recycled water' treatment*

To produce recycled water of drinking water quality, further treatment such as reverse osmosis and advanced oxidation is required to destroy any remaining chemicals and purify the recycled water. This product can be used for water supply replenishment where the 'purified recycled water' would be released into a dam catchment to blend with raw dam water. The water would then be subject to the usual drinking water treatment before being piped to residential homes through the drinking water distribution network.

How can recycled water be used?

Class A+

Domestic and commercial property use

- Toilet flushing, outdoor hosing and wash down and above ground garden watering

Irrigating food crops and retail nurseries

- Food crops consumed raw or minimally processed
- Retail nurseries irrigating ready to eat crops
- Root crops and other food crops with above ground irrigation

Industrial use

- Open system use where there is potential for high human contact (eg. commercial car wash)

Fire fighting

Class A

Irrigating public open space and golf courses

- Where access is uncontrolled
- Dust suppression

Recreational purpose

- Fountains and water features where public access is restricted

Irrigating non-food crops

- Retail nurseries irrigating non-food crops

Industrial use

- Open system use where safeguards are in place, but there is potential for occasional human contact

Class B

Irrigating pasture/fodder and agricultural wash down

- Pasture / fodder for dairy animals without withholding period
- Wash down of hard surfaces in agricultural industries

Class C

Irrigating public open space and golf courses

- Where access is controlled or subsurface systems are used

Irrigating pasture/fodder and agricultural wash down

- Pasture/fodder for dairy animals with withholding period of five days
- Pasture/fodder for other grazing animals (except pigs) with withholding period of four hours

Irrigating sugar cane and wine grapes

Industrial use

- Closed system (low human contact)
- Irrigation of "no public access" areas

Recreational purposes

- Water features for amenity purposes only where access is controlled
- Natural or artificial wetlands

Class D

Irrigation of non-food crops

- Silviculture, turf, cotton, wholesale nurseries with controlled access and other safeguards to protect workers and neighbours

This information has been adapted from the EPA's *Queensland Water Recycling Guidelines (December 2005)*.

*The use of Purified Recycled Water is not currently included in these guidelines. New legislation will provide for this.

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