

Water Treatment

We all take for granted that the water we drink is safe, but what is the process that enables water to be suitable for our standard of living?

Bundaberg Regional Council
PO Box 3130
BUNDABERG QLD 4670
1300 883 699
www.bundabergrc.qld.gov.au

Council hours
8.15am to 4.45pm
Monday to Friday

Fact Sheets available:

1. Water Cycle
2. Water Treatment
3. What I need to know about Wastewater
4. Wastewater Treatment
5. Water Pollution
6. Water Recycling
7. Water Efficiency
8. How to read your Water Meter
9. Water Meter Home Accuracy Check
10. Drip Water your Garden and save
11. Important things to know about drip watering
12. Water Audit for the Household
13. Rainwater Tanks
14. Pool Maintenance

Booklets available:

1. You Can Take Control
2. Create Your Own Water Wise Garden

Additional fact sheets from WaterWise Queensland can also be obtained through your Local Council.

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There are various water resources required to sustain the quantity of water supply in the Bundaberg Regional Council. In Bundaberg water is provided from two sources. Surface water is drawn from the Ben Anderson Barrage on the Burnett River and underground water from various bores throughout the city. Bargara is also provided from two sources. Surface water is drawn from the Woongarra Main Channel and two underground bores positioned near the Hummock. Gin Gin surface water is provided by Gin Gin Creek. Surface water is also drawn from the Gregory Weir on the Gregory River to provide water for Childers and Woodgate.

SURFACE WATER TREATMENT

The treatment process is essentially a five stage process defined as coagulation, flocculation, sedimentation, filtration and disinfection. This process provides a multi-barrier to ensure water is safe both chemically and bacteriologically for human consumption.

The process is monitored by conducting regular laboratory tests to ensure each treatment stage is performing to maintain optimum conditions and water quality. The plant has a number of online instruments that continuously monitor process streams.

The Plant Processes

The plant process has been developed to suit various water types (hard or soft) and treatment varies depending on the different weather condition and variations in local activities affecting run-off in the catchment.

The river water is highly coloured from natural organics such as tannin and other organic debris. This river water colour is made up of small particles referred to as a colloidal suspension which is removed in the coagulation and flocculation stages.

The coagulation and flocculation stages are essentially clarification stages where a metal salt is added in the flash mixer to cause the small particles to clump together to form floc particles. These floc particles become big enough that they settle to the bottom of the tank by gravity in the sedimentation stage.

Powder activated carbon is added prior to the sedimentation stage primarily for the removal of taste and odours. This process is also

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useful in the removal of toxins from blue green algae as well as the elimination of herbicides and pesticides.

The sedimentation stage is made up of large tanks called reactivators that allow gravity settling of floc to occur to produce a clear water stream and a liquid sludge stream. The liquid sludge is removed via a piping system where it is sent to a thickener tank. The thickened sludge then passes through a centrifuge to produce a dry sludge cake which is disposed of to landfill. The clear water stream is decanted from the top of the re-activators to the filtration stage.

Filtration occurs when the clear water passes through five fine sand filters to produce clear clean filtered water. The filtration process removes carryover particles from the sedimentation stage. The accumulation of particles on the filter sand is removed by a backwash sequence. The dirty backwash water is combined with the liquid sludge and incorporated in the thickener tank.

The filtered water has a final pH check and if necessary lime and/or soda ash is added to correct the value.

Disinfection stage is the final stage of treatment and involves the addition of chlorine to the clean filtered water prior to storage in the reservoir. Chlorine is used to disinfect and kill organisms that may carry disease. The water from the reservoir is then pumped into the town's pump station where it is distributed throughout the reticulation system.

UNDERGROUND (BORE) WATER TREATMENT

Bundaberg and Bargara have bores at various locations. Because of the pristine quality of the bore water used, little treatment is needed.

Water is drawn from sand and gravel aquifer between 20 and 40 metres below ground level and pumped to the surface using either turbine or submersible borehole pumps.

The water is then applied to limestone aeration beds. This process removes carbon dioxide and other gases in the aeration sprays. Iron and manganese is also removed in the aeration process.

The water then filters through limestone for pH correction and neutralisation prior to being gravity-fed to ground level storage reservoirs.

As the water is required, it is chlorinated and pumped to the reticulation system, into the water storage towers and finally to the household services.

Bundaberg Regional Council takes pride in providing quality water to all residents.