

Fact sheet Water Treatment Plant



About North Pine WTP

The North Pine Water Treatment Plant (WTP) turns raw water into safe, drinkable water for the northern Brisbane and Moreton Bay regions.

The treatment plant is located downstream and adjacent to the North Pine Dam and can treat up to 250 megalitres (ML) of water per day.

Source

The rain that falls on the catchment flows over an extensive area and collects in North Pine Dam. This runoff carries soil, pollutants, debris and micro-organisms into the creeks and rivers that flow into the dam.

The water stored in North Pine Dam is pumped directly to the treatment plant as required, to be made safe for drinking.

Treatment

Raw water is collected from the intake tower (also called an offtake tower) in the North Pine Dam wall, through a suction tunnel pipeline. The raw water pumping station then lifts the water to the inlets of the treatment plant.

Powder activated carbon (PAC) is added to the water as it enters the plant to remove unwanted taste and odour compounds present in the water. All water processed by a water treatment plant must adhere to stringent Australian Drinking Water Quality Guidelines.

The basic water treatment process used at North Pine WTP includes coagulation, flocculation, sedimentation, filtration and disinfection of water.

Key facts

Name	North Pine Water Treatment Plant
Dam	North Pine Dam (Lake Samsonvale)
Location	Petrie
Intake location	North Pine Dam
Catchment area	348.0 square kilometres
Commenced operation	1974
Sedimentation basins	2
Depth of basins	3.66 metres
Volume of basins	13.37 megalitres combined
Filter tanks	5
Total treated water production capacity	250 megalitres per day
Storage capacity of treated water	91 megalitres

Treatment process

Coagulation

To remove any dirt or other suspected material, raw water is pushed through a flash mixer. Various chemicals, including Aluminum Sulphate (alum), are added. The mixer stirs the water and the chemicals, making any particles 'coagulate' or change from a fluid to a thickened mass.

The water must have a pH level of between 6.8 and 7.2 for the next stage of the treatment process to work, so sometimes caustic soda is added to achieve the correct pH level.

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Flocculation

After coagulation, the particles stick together and form 'flocculation', or 'floc'.

Flocculation is the clumping together of suspended particles that have been destabilised through the coagulation process.

When they clump together they form heavier particles.

Sedimentation

The water and 'floc' move into two large sedimentation basins that resemble swimming pools.

Once many particles are bound together, they form a sludge that becomes heavy enough to sink to the bottom of the sedimentation basins. The sludge is vacuumed out regularly, and is transported to a waste sludge pool.

Filtration

Water from the sedimentation basins flows to the filtration room, where polyelectrolyte is added to the water to help bind any finer floc particles still present.

Under carefully controlled conditions, water flows through five gravity sand and anthracite filters, where any remaining floc is removed. The filters are regularly cleaned of any build-up residue through air scourers and a water backwash.

The water now appears as clean as it does when it comes out of our taps. However the water must undergo two more processes before it is ready to drink.

The clean water is disinfected with chlorine to kill microorganisms, bacteria and any viruses that may be present.

Lime is added to correct the pH for human consumption so that it is not too acidic, and also so that it doesn't corrode or rust the pipes as it travels out to homes.

It is mixed into the water as it flows to the storage reservoir.

Fluoride is also added as a protective dental health measure, an initiative of the Queensland Government.

The treated water is then discharged into two cells (91ML) of a large underground reservoir. This storage allows the treatment plant to process water at a steady rate.

Sludge removal

All sludge that is collected through the water treatment plant is processed via a centrifuge that removes the heavy particles from the water. The waste sludge is removed, dried and used as landfill.

The collected water (effluent) is returned to the beginning of the plant, where the water is once again sent on the process of treatment.

Supply

North Pine Water Treatment Plant has a capacity of producing 250 mega litres of drinking water per day.

Water treated by the North Pine WTP can also be transported north, to the Landers Shute WTP via the Northern Pipeline Interconnector (NPI). The North Pine WTP can also receive water from the Sunshine Coast via the same pipeline.

For more information

To book a tour, or to speak to a member of our community education team, contact:

P (07) 3035 5500

E education@seqwater.com.au

W seqwater.com.au/community
upadrygully.com.au

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