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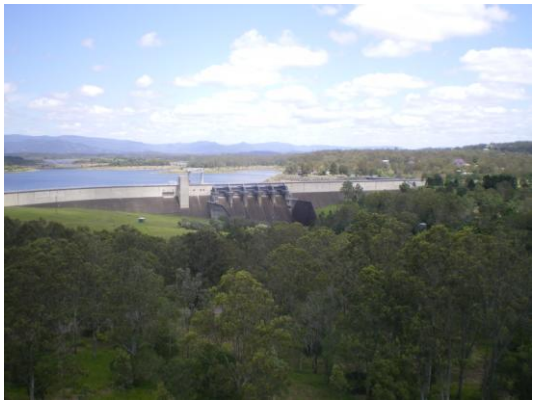
WATER FOR LIFE

Fact Sheet

North Pine Water Treatment Plant

SEQ Water Grid
safe · secure · sustainable

Water from North Pine Dam and its associated catchment area goes through a treatment process before it's ready for storage and delivery to your home.



The SEQ Water Grid, Seqwater Water Treatment plant at North Pine Dam treats water and supplies many northern Brisbane suburbs as well as the regions of Moreton Regional Council including Pine Rivers,and Caboolture as well as Redcliffe City.

This treatment plant is located downstream and adjacent to the NorthPine Dam.

Construction of this treatment plant began in 1970 and it commenced operation in 1974.The plant can treat 250 megalitres of water per day.

The Treatment Process.

Water is discharged from the intake tower at North Pine dam through a suction tunnel pipeline to the raw water pumping station where it is lifted to the inlets of the treatment plant . A **powder activated coated carbon process** operates at this plant whereby **powder activated carbon** is added to the water entering the plant. This process absorbs unwanted taste and odour compounds present in

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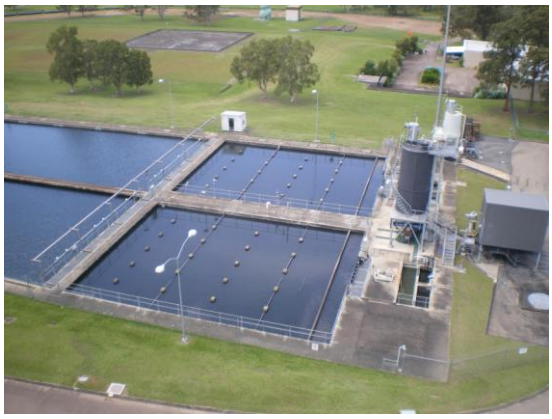

algae waste products found in North Pine Dam. This process enhances the taste and quality of water supplied from North Pine.

Aside from this carbon process the plant follows similar processes that are present at the Mt Crosby Treatment plants.

The whole process is designed to remove suspended particles such as clay, bacteria, algae and viruses that may be present in the water.

Sedimentation Basins.

The untreated water is firstly pumped to two sedimentation basins where most of the silt is removed.

Coagulating chemicals are added to pre treat the water which may contains large amounts of fine clay particles. The main chemical used is **aluminium sulphate (Alum)** , the addition of which results in the formation of tiny jellylike particles referred to as **floc**.

Mixing of floc and the clay particles causes the particles to stick together and sink to the bottom of the sedimentation basin as **sludge**. The sludge is removed via submersible pumps. Settled water from this sedimentation basins flows to filters after **polyelectrolyte** is added (a filter aide) This polyelectrolyte binds together any fine floc particles that have carried through to the filters and these flocs are then trapped and the quality of the water improved.

Filtration

Under carefully controlled conditions water flows through sand that filters and removes any remaining suspended floc particles. Including entrapped micro-organisms. North Pine treatment plants operates a number of sand and anthracite filters to polish the water and remove these remaining suspended particles.

Filters are **backwashed** regularly to clean the sand of the build up of carry-over floc from the basins.

The filtered water is then discharged into 2 cells of a large **underground pure water reservoir** with a storage capacity of 91 megalitres .This storage allows the treament plant to process water at a steady rate. A water service reservoir supplies water to the plant for drinking and backwashing of filters. As it leaves the treatment plant the water is then **disinfected with choramine** to ensure that any harmful micro-organisms are made inert.

Water is finally pumped via a number of pipelines to be stored by local government water entities and finally supplied to homes and businesses in the surrounding regions.

Sludge

Sludge removed from sedimentation basins and back wash filters is the waste product in the treatment process. Treatment of these byproducts is an important part of the water treatment process.

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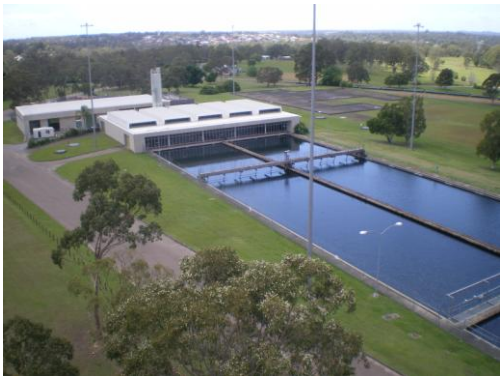
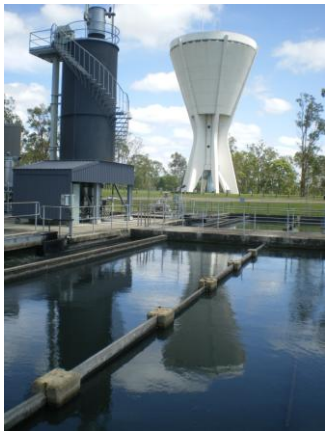
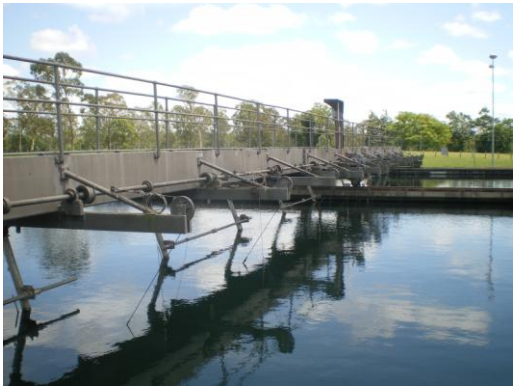
Solids are first thickened in circular settling tanks and then water is separated and the solids pass through centrifuges to separate out the remaining water from the **sludge**. This sludge is then conveyed to be dried . The separated water (effluent) is passed onto polishing lagoons where it is finally recycled back into the plant. . That is also the case at Mt. Crosby. North Pine has drying beds to which the sludge is pumped. This sludge contains around 4% solids and as a result a lot of time and storage is taken up decanting and evaporating water from the sludge. When the sludge is dry large end loaders and trucks remove it from the drying beds. It is then used for land fill. Although, because of the carbon compounds in the sludge it could be successfully be transformed into bricks.







Chemical additives

There are virtually no fresh water sources that can be guaranteed free from contamination. Water authorities need to treat water to ensure a safe water supply.
At Seqwater treatment plants these chemicals are present in the water supply:

powdered activated carbon or PAC is used in the initial stages of treatment to remove compounds from Algae that cause taste and odor in the treated water

aluminium sulphate (alum) is added to combine with dirt and bacteria particles in water so that they settle and can be filtered out during the treatment processes. These processes leave only a fraction of the alum. Alum dosing makes the water slightly acidic

lime is added to reduce acidity so water doesn't corrode the city's water mains

ammonia and chlorine are added to form **chloramine**, which kills bacteria. Chloramine is maintained in the water to ensure bacteria do not re-grow in the distribution system and the water remains disinfected

fluoride is added to help reduce tooth decay. It was introduced to the water supply for Brisbane and parts of south east Queensland in December 2008. This is a Queensland Government initiative.

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