Fact sheet Water Treatment Plant

About Landers Shute WTP

Seqwater's Landers Shute Water Treatment Plant supplies clean drinking water from the Baroon Pocket catchment to taps in homes around the Sunshine Coast.

The plant operates 24 hours a day, 7 days a week and is the primary source of the Sunshine Coast's drinking water. It also supplies water to the Water Grid, which can be distributed to Brisbane if required.

Source

Water treated at the Landers Shute Water Treatment Plant starts in the Sunshine Coast Hinterland, in the the Baroon Pocket catchment. Water collects and is stored in Baroon Pocket Dam. When needed, water is drawn through the dam's intake tower, into a network of underground pipes. It is then gravity fed to the water treatment plant.

Treatment

Water quality instrumentation in Baroon Pocket Dam provides consistent information about the quality of the dam water. This helps water treatment plant operators understand the raw water quality, to allow them to choose the best methods of treatment.

All water treated in Seqwater's water treatment plants must adhere to stringent legislation: the *Australian Drinking Water Quality Guidelines 2011*.

The water treatment processes involves coagulation, flocculation, sedimentation, filtration and disinfection of water. The water is tested throughout the process, and comprehensive water testing is undertaken on treated water to ensure it is safe to drink before distribution.

Key facts

Name	Landers Shute Water Treatment Plant
Dam	Baroon Pocket Dam (Lake Baroon)
Location	Montville
Intake location	Baroon Pocket Dam
Catchment area	72 square kilometres
Commenced operation	1989
Sedimentation basins	2
Depth of basins	4.25 metres
Volume of basins	6,590 kilo litres p/basin
Filter tanks	11 dual media primary filters 8 BAC filters (Biologically Activated Carbon)
Total treated water production capacity	140 megalitres per day
Storage capacity of treated water	18 mega litres (2 x 9 mega litre tanks)

Treatment processes

The water is gravity fed from Baroon Pocket Dam and has the chemical potassium permanganate added to it. This helps to remove manganese, a mineral that naturally occurs in the raw water, through a process called pre-coagulation oxidation.

Water needs to be close to a neutral pH level (between 6.8 – 7.2) for the process of coagulation to occur. If the raw water is not at this pH level, the chemical calcium hydroxide (lime) is added. Caustic soda might also be added at this stage, to correct pH.

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Aluminum sulphate (alum) is added to the water to begin the process of coagulation in an area called the flash mixer. The flash mixer moves the alum through the water, and encourages fine particles in the water stick together (or flocculate). The fine particles that are bound together are known as 'floc'.

The water then moves into two large pools known as sedimentation basins. Pieces of floc become bigger as particles become attached to each other: they become heavier and finally settle to the bottom of the basin. This is known as sedimentation.

The heavy particles are called sludge. The sludge is scraped from the bottom of the sedimentation basin into a sludge hopper, and moved through pipes into a waste sludge pool.

The water moves into the filtration process. The water moves into one of 11 dual media filters, which are a pool about six metres deep which are lined at the bottom with four metres of sand and anthracite (coal). The water trickles down through the sand and anthracite, which collects tiny pollutants like algae and chemical residue.

The filtered water is collected within pipes below. Filters are regularly backwashed to ensure they stay clean. A backwash involves draining the pool, then pushing clean water up through the filters from below to remove any debris.The dirty water is washed out of the filter tanks. All waste collected during this process is transported to the waste sludge pool.

After filtration, the water undergoes ozonation. This is an advanced water treatment technique and is only used at certain water treatment plants, where extra treatment is required due to a large variety of pathogens. Ozonation involves injecting the water with ozone (a form of oxygen) to remove bacteria and viruses.

The water is then filtered again, this time through one of eight special filters lined with Biologically Activated Carbon (BAC).

Using BAC is another advanced water treatment process, and helps eliminate organisms from the water. After the second filtration process, the water again undergoes ozonation.

The final stage in the water treatment process is disinfection. Chlorine is added to disinfect the water, and pH correction (using lime or caustic soda) may occur if required. Fluoride is added as a protective dental health measure.

The water is pumped to large storage reservoirs on the site. All sludge that is collected through the water treatment plant undergoes a sludge thickening process. A coagulant is added to allow heavy particles to sink to the bottom of the waste sludge pool, to be removed.

The clear water at the top of the pool is returned to the head of the plant, to undergo the treatment process again. The solid sludge is removed and dewatered using a centrifuge. This involves pushing the wet waste through a large machine which dries it out and compresses it. The dried sludge is then collected and taken to landfill.

Supply

When it leaves Landers Shute, a final dose of chlorine and ammonia (chloramine) is added. Chloramine is a long lasting disinfectant, which ensures that any harmful micro-organisms are destroyed.

Local councils often add chlorine to maintain disinfection of the water supply as it travels along many kilometres of pipelines to homes.

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Did you know?

- Water treated at Seqwater's water treatment plants exceeds the standards set by the *Australian Drinking Water Guidelines 2011*.
- Seqwater's Landers Shute Water Treatment Plant can treat 140 megalitres of water per day.
- Landers Shute utilises both hydroelectric and solar power. The hydroelectric system has a maximum output of 324 kilowatts. Solar generates around 3 kilowatts of energy per day.
- There are only three Seqwater water treatment plants that use ozonation; Landers Shute, Noosa and Ewen Maddock.
- Under normal circumstances, it takes about one day for water to undergo the water treatment process from start to finish.
- Baroon Pocket Dam holds 61,000 mega litres of raw water when at full capacity.

For more information

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