Fact sheet Water Treatment Plant

About Mt Crosby Westbank WTP

The Mt Crosby West Bank Water Treatment Plant (WTP) turns raw water into safe, drinkable water for the Brisbane and Ipswich area.

Two water treatment plants are located at Mt Crosby - East Bank and West Bank. Combined, the plants can produce up to 1000 megalitres of drinking water per day.

Source

The rain that falls on the Upper Brisbane River catchment flows over an extensive area and collects in Wivenhoe Dam.

This runoff carries soil, pollutants, debris and micro-organisms into the creeks and rivers that flow into Lake Wivenhoe.

When required the stored water is released downstream into the Brisbane River, where it makes its way to the Mt Crosby Weir.

From there it is pumped up to the West Bank WTP, where it is made safe for drinking.

Treatment

Untreated water collected at the Mt Crosby Weir is pumped into the WTP at the same level as the bottom of the Brisbane River.

Three pumps are located in pump wells 34 metres deep, each with the capacity to pump 125 million litres per day. Only two of these pumps operate at one time.

All water treated must adhere to the stringent Australian Drinking Water Quality Guidelines. The basic water treatment processes include coagulation, flocculation, sedimentation, filtration and lastly, disinfection of water.

Key facts

Name	Mt Crosby Westbank Water Treatment Plant
Dam	Wivenhoe Dam (Lake Wivenhoe)
Location	Mt Crosby
Intake location	Brisbane River
Catchment area	7020.0 square kilometres
Commenced operation	1986
Sedimentation basins	2
Depth of basins	4.5 metres
Volume of basins	6.5 million litres
Filter tanks	12
Total treated water production capacity	250 megalitres per day
Storage capacity of treated water	90 megalitres (Cameron's Hill Number 1 and 2 reservoirs)

Treatment processes

Coagulation

To remove any dirt or other suspected material, raw water is pushed through a flash mixer. Various chemicals, including Aluminium 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.

High turbidity waters regularly occur at Mt Crosby, so coagulation is an important part of the treatment process.

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

After the sludge is removed, the water is pumped to the filtration chambers (smaller pools) where it undergoes a Dissolved Air Filtration (DAF) process.

As chemically flocculated water enters the filtration chambers, a pressurised stream of water saturated with air is injected, causing a large formation of very fine bubbles to rise up from the floor. These bubbles or oxygen molecules become attached to floc particles and float them to the surface.

The air-floc particles accumulate to form a floating sludge blanket. The floating sludge is removed to the waste sludge pool at regular intervals, leaving behind clear or 'clarified' water.

Clarified water is passed through filters to remove any remaining floc. 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.

Disinfection and pH correction

Any water leaving the West Bank WTP is disinfected with chlorine to kill microorganisms, bacteria and any viruses that may be present in the water.

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 then leaves the West Bank WTP where it is pumped to reservoirs at Cameron's Hill.

Chloramine is added (a chemical compound of chlorine and ammonia) as the water finally leaves Cameron's Hill Reservoir. Adding chloramine ensures that any harmful microorganisms are destroyed and do not regrow in the pipes.

Sludge removal

All collected sludge is processed via a centrifuge, that stirs the sludge to separate the heavy particles from the wastewater. The heavy particles from the sludge are removed and dried out and used as landfill. The wastewater is returned to a lagoon to settle, and may be put back through the treatment process.

For more information

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

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