

essentialfacts

Winneke Treatment Plant

Most of Melbourne's water comes from forested catchments high up in the Yarra Ranges in the north and east of the city. In these catchment areas, access is restricted to help ensure the highest quality water. Purification of the water occurs naturally due to long detention times in the major storage reservoirs and only minimal disinfection (by chlorination) is required to ensure our water is safe and healthy to drink.

Depending on demand, about 10 to 30% of Melbourne's water is treated at Winneke Treatment Plant, at Sugarloaf Reservoir in Christmas Hills. This water is drawn from the Yarra River and the Maroondah Aqueduct. Use of this water for human consumption means the water requires full treatment as it is not drawn from protected catchment areas.

Winneke Treatment Plant was commissioned in November 1980 and represented a milestone in the history of Melbourne's water supply system, as it was the first time that fully treated water had been introduced into the water supply. Winneke Treatment Plant supplies water to City West Water and Yarra Valley Water customers.

From river to reservoir



The Yering Gorge Pumping Station pumps water from the Yarra River and the Maroondah Aqueduct, up through a tunnel into the Sugarloaf Reservoir. The pumping station has four variable speed pumps, each with a maximum capacity of 250 million litres of water a day. Pumping only occurs in periods of high flow to ensure adequate environmental flows in the Yarra River.

Sugarloaf Reservoir has a maximum capacity of 96,000 million litres, incorporating a main dam and two saddle dams. The pumping station at Sugarloaf Reservoir draws water from the reservoir and delivers it to the Winneke Treatment Plant. The pumping station is 300 metres from the treatment plant and has three variable speed pumps, each with a capacity of 350-400 million litres a day.

The treatment process

The function of the Winneke Treatment Plant is to produce drinking water that meets water quality guidelines set by the National Health and Medical Research Council. Water treatment involves a number of processes: coagulation; clarification; filtration; disinfection; and fluoridation.

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Coagulation: raw water is pumped from the reservoir to the Winneke Treatment Plant inlet control structure, where it is mixed with liquid aluminium sulphate (alum). The alum acts as a coagulant encouraging suspended solids and microorganisms in the raw water to bind together to form larger particles.



Clarification: the water then flows through an underground channel to a water distribution chamber that feeds the five clarifiers. Water is detained and circulated in the clarifiers for about three hours. The clarifiers enhance the cohesion and entrapment of the suspended solids and remove colour from the water. Solid particles are separated from the raw water producing what is termed 'settled water' and sludge.

Filtration: the 'settled water' is delivered through concrete channels to 14 gravity filters, which remove most of the remaining suspended solids. Each filter is a rectangular, concrete structure with a bed of sand supported by a layer of coarse media that is supported on a layer of pebbles.

Disinfection and pH correction: after the water passes through the filters, it is disinfected (by chlorination) to destroy residual microorganisms. Lime is added to adjust the alkalinity/acidity (pH) level.

Fluoridation: Melbourne Water is required by State Government legislation under the *Health (Fluoridation) Act 1973* to fluoridate the water supply. Fluoride is added in precise quantities as a last step of the treatment process. The fully treated water flows into a large enclosed storage reservoir adjacent to the treatment plant. This reservoir is a buffer storage and water is supplied from it as required.

Major Hazard Facility status

Winneke Treatment Plant is registered as a Major Hazard Facility under the *Occupational Health and Safety (Major Hazard Facilities) Regulations 2000*. This is because of the quantity of chlorine stored on-site for disinfecting the water as part of the treatment process. As a registered Major Hazard Facility, the plant has a comprehensive Safety Management System and Emergency Plan. This includes a formal safety notification procedure for local residents in case of an emergency.

Further information

If you would like further information on any other aspect of Melbourne Water's role in managing our water resources, please call 131 722 or visit melbournewater.com.au

Melbourne Water is owned by the Victorian Government. We manage Melbourne's water supply catchments, remove and treat most of Melbourne's sewage, and manage rivers and creeks and major drainage systems throughout the Port Phillip and Westernport catchment.

Telephone 131 722 or visit melbournewater.com.au