

# The Well

## Water treatment

Every day, we provide more than 600 million litres of safe, clean drinking water to South Australians.

This water comes from many sources, including:

- the River Murray
- the Mount Lofty ranges
- desalination plants
- groundwater.

Before you can drink this water, we make sure every drop goes through a treatment process to ensure it is safe, clean and meets the Australian Drinking Water Guidelines.

There are different treatment processes, depending on where the source water starts. Learn more about the desalination process.

Most of South Australia's water undergoes a full treatment process before it reaches your tap.

### There are seven steps in the water cycle:

#### 1. Coagulation

A chemical (coagulant) is added to the untreated raw water and reacts with impurities such as small particles and dissolved organic matter. The coagulant traps the suspended particles and much of the dissolved organic material.

#### 2. Flocculation

The coagulant combined with the captured particles is called 'floc'. Flocculation is a gentle mixing process that brings together the flocs formed in the coagulation step to form larger flocs that settle more easily. Water remains in the flocculation tanks for at least 20–30 minutes.

#### 3. Sedimentation

Water and suspended floc pass slowly through sedimentation basins or clarifiers, where most of the floc settles to the bottom as a sludge. The clarified water (now containing only a small amount of very fine floc particles) continues to the filters. The sludge is periodically removed from the basins for further treatment and disposal. An alternative technique called dissolved air floatation is used at the Myponga Water Treatment Plant. This uses fine air bubbles to float floc to the surface to form a sludge blanket, which is periodically removed by overflowing the floatation tanks.

#### 4. Filtration

The remaining floc particles are removed by passing the clarified water through filtration media. The most common filters at the larger water treatment plants are deep beds of sand or a combination of sand and anthracite. In our newer and smaller water treatment plants, the final filtration step is achieved by forcing the clarified water through synthetic membranes.

#### 5. Disinfection

A chemical disinfectant is generally added at a point between the filters and the filtered water storage tank, to destroy any microorganisms that may not have been removed in the earlier flocculation and filtration stages. In South Australia, we most commonly use chlorine to disinfect. Chloramine, produced by reacting chlorine and ammonia, is used in some of our supply systems. Disinfection sometimes requires the pH of the water to be adjusted to enhance the performance of the disinfectant. Sometimes, ultraviolet (UV) light is used to complement chemical disinfection.

#### 6. Fluoridation

Fluoride is added in accordance with SA Health guidelines to provide a significant public health benefit. Fluoride does not affect the appearance, taste or odour of drinking water and is controlled to ensure levels comply with the Australian Drinking Water Guidelines.

#### 7. Storage

Treated drinking water is then stored in tanks which are strategically located to deliver water effectively during peak use times.



### Did you know?

- Treating water is believed to be an even more vital part of human civilization than advancements in medicine.
- South Australia has one of the largest waterpipe networks in the country, with more than 27,000 kilometres of underground pipes. That's roughly from Adelaide to Los Angeles and back.
- If the entire world's water was to fit into a 4 litre jug, the fresh water available to humans would only be equal to one tablespoon.
- It takes between 5,000 litres and 20,000 litres of water to produce 1kg of meat.
- It takes more than 17,000 litres of water to produce 1kg of chocolate.