

Groundwater facts

Groundwater is one of the most important, abundant, yet sometimes misunderstood resources on earth.

Billions of people worldwide depend on groundwater for survival.

Local groundwater reserves have saved Geelong from crisis during prolonged dry spells.

What is groundwater?

Groundwater is water found below the surface. It is typically contained in aquifers, which are porous materials such as gravel, sand and fractured rock that hold water in the gaps, like a sponge.

Rainfall and run-off enters aquifers at recharge areas, flows underground, and eventually discharges to creeks, rivers, lakes or the ocean. Some aquifers discharge at natural springs.

Groundwater can be harvested via bores, *i.e.* pipes drilled into the ground to tap into the aquifers.

The quality of groundwater sources varies widely. Some supplies are so pure they are

bottled at the source and sold as spring water or mineral water. Others are so high in dissolved salts they are unsuitable for drinking.

Groundwater may be tens, hundreds or even thousands of years old.

Many cities and countries around the world depend on groundwater. Waterways and ecosystems also rely on it.

Groundwater around the world

Groundwater is by far the world's largest source of fresh water.

Parts of Asia and the Middle East, such as Iran and northern China, are more reliant on groundwater than surface water.

Up to 80 per cent of drinking water across Europe and Russia comes from underground.

Around 46 per cent of US residents rely on groundwater as their primary source of fresh water.

Fast facts

Groundwater is part of the water cycle. It is recharged by rainfall, linked to surface water and ecosystems, and eventually discharges to lakes, rivers or the ocean.

Groundwater is abundant. It is the world's largest source of fresh water, more than lakes, reservoirs and rivers combined.

Groundwater is crucial to Geelong. In 2007, at the height of the worst drought on record, Geelong's water supplies plummeted to 14 per cent and groundwater provided up to 70 per cent of the city's drinking water.

Groundwater is varied. No two groundwater sources are the same. The depth, capacity, quality and usability of groundwater sources can vary considerably.

Groundwater must be managed. Like all natural resources, groundwater must be carefully monitored and managed to ensure it is used sustainably.

Groundwater in Australia

Australia has approximately 1.5 million groundwater bores. Around one in 20 Australians rely on groundwater for drinking, yet in some parts of the country it is considered under-utilised.

Groundwater is the main drinking water supply for Western Australia and the Northern Territory where it underpins key agricultural and mining industries.

The Great Artesian Basin is the largest groundwater system in the world, covering approximately 1.7 million square kilometres, or around one fifth of mainland Australia.

Groundwater in our region

In addition to the forested surface water catchments in the Otway and Brisbane ranges, Geelong is fortunate to be connected to vast underground reserves in the Otway foothills.

Barwon Downs

The Barwon Downs borefield consists of six bores that pump groundwater from an aquifer 300 to 630 metres below ground.

The aquifer is estimated to contain some 3,500 billion litres of water – more than 160 times the capacity of the West Barwon Reservoir and almost 120 times Geelong's average annual consumption.

The Barwon Downs borefield first supplied Geelong in 1983. It has been used just four times since during prolonged dry spells. Due to healthy surface storages, it is not currently operating and is being recharged.

Barwon Water operates and monitors the borefield under licence from Southern Rural Water. This licence was granted in 2004 and is due for renewal in 2019.

Anglesea

The Anglesea borefield began operation in 2010 and consists of seven production bores that tap into a deep aquifer 350 to 700 metres underground.

The Anglesea borefield can supply around 20 per cent of Geelong's current demand, but is not currently required due to the healthy state of surface water storages.

Barwon Water operates the borefield under a Bulk Entitlement granted by the Department of Primary Industries and Environment.

The future

With healthy surface water storages, increased use of recycled water and several new water sources, Barwon Water does not expect to draw on its groundwater reserves in the near future.

Barwon Water, however, is improving its groundwater monitoring, particularly at Barwon Downs.

An expanded monitoring program will include 26 new monitoring bores, 13 terrestrial ecology study sites, acid sulphate soil testing, aquatic ecology studies and stream flow measurements.

The data and findings will form part of a licence renewal application in 2019.



For further information

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