

## Precious water—a finite resource

Water is a precious, finite (limited) natural resource that is essential for all life on this planet. We use water for cooking, drinking, gardening, hygiene, recreation, sanitation and washing—ourselves, cars, clothes and dogs are a few examples. Water is also used in ways we rarely consider, such as heating and cooling, power generation, and a huge range and variety of industrial and agricultural processes. Water is doubly involved in giving us everyday products like fruit and vegetables, cotton fabrics and household furniture, as it is used when the raw materials are grown, and again in the processing or manufacture of these products.

### ...❖ Water globally

Around 75% of the earth's surface is covered by water. Of the estimated total of 1 386 000 000 cubic kilometres of water on this planet:

- ◆ 97% is salt water in the oceans
- ◆ 2.25% is frozen water in ice caps and glaciers
- ◆ 0.15% is fresh water, and therefore potentially available for use, but the majority of the earth's fresh water supply is underground.

The United Nations has identified access to clean water as one of the greatest environmental issues facing humanity, with increasing debate about water trading and water rights. Globally, water resources are under increasing pressure from pollution and the effects of climate change, such as variable rainfall patterns. The frequency and severity of droughts, floods and storms, combined with unpredictable rainfall patterns, have highlighted the importance of water conservation. In addition to climatic variability, the rising global population, increasing farming requirements and growing industrial needs, compounded by increasing salinity of fresh water sources, are adding to the challenges of managing water resources and developing careful, sustainable water use.

### ...❖ Water in Australia

Australia is the driest inhabited continent on earth. It occupies 5.6% of the world's total landmass yet receives little more than 1% of the world's water run-off. When this is considered in association with the often erratic rainfall patterns, it is evident that Australia's water resources are highly vulnerable to climate variability and change.

As dwellers on the world's driest inhabited continent, Australians are coming to realise we must:

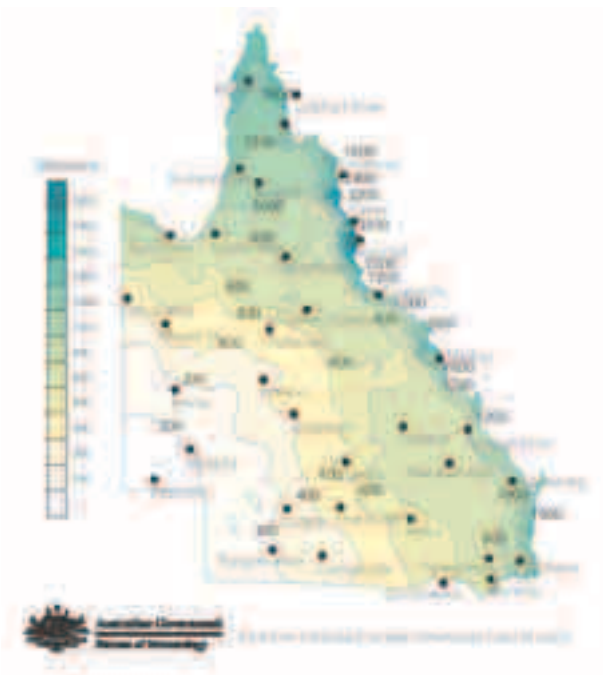
- ◆ conserve water and use it wisely
- ◆ reduce pollution of waterways
- ◆ develop ways to harvest rain efficiently and store water safely
- ◆ develop climate-independent sources of water.

Indigenous Australians are the original inhabitants of Australia; before colonisation there were over 250 distinctive language groups found across the country. There are two Indigenous Australian cultural groups: Aboriginal people and Torres Strait Islander people. Both groups place great importance on, and value, land and seas. Each group has a close relationship to the land and the environment; over time, each has developed an intimate knowledge and understanding of the country and its water resources, both surface and underground.

The pristine condition of water resources throughout Australia at the time of first colonisation is testament to the great skill of Australia's Indigenous peoples in utilising traditional knowledge. This included knowledge of drought and storm flows within waterways, as well as likely locations of groundwater, and how water resources could be protected.

European settlement of Australia had a dramatic impact on the land and water resources. With growing recognition of how important, and finite, our water resources are, Australians are learning how to preserve, care for and sustain water resources. The result is an increased focus on ensuring the health of Australia's waterways, and the need to provide more natural flows to maintain the ecosystems along them.

The great challenge facing water managers, including the Queensland Government, is to balance available water resources against ever-increasing need.

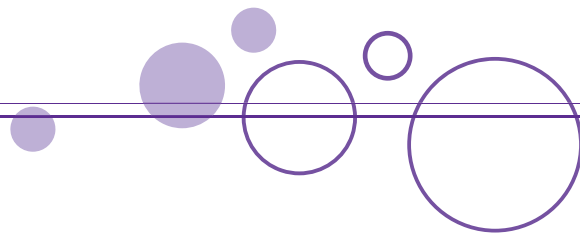


Average annual rainfall throughout Queensland

## ❖❖❖ Water in Queensland

Queensland has about half of Australia's fresh water reserves, but most of Queensland's rain falls north of Townsville. The more populated areas of the state—mostly along the east coast strip—receive only 12% of the state's total rainfall; only 6% of river water reaches inland communities.

Across the state there is great variation in rainfall, with low rainfall and hot summers in the inland west, a monsoon season in the north, and warm, temperate conditions along the coastal strip. This contrasts with low minimum temperatures inland and about the southern ranges. Some regions of the state receive massive flooding from rains that have fallen in distant areas, while large areas can experience drought that sometimes lasts for years. These variations can be seen on the map above, which shows average annual rainfall across Queensland.



Queenslanders are among the highest water users in the world—we use about 1.1 million litres per person every year. The demand for water by residential, agricultural and industrial users is increasing as the population grows. Queensland is the fastest growing state in Australia; a mid-range projection indicates that its population is predicted to grow from 4.04 million people in 2006 to 5.5 million in 2026 (a 40% increase), and reach 7 million by 2051 (OESR, 2006). The majority of Queenslanders live near the coast; this concentration of people in a relatively small part of the state will exacerbate future demand for domestic water supplies in coastal urban areas.

Farmers will be expected to produce more food to feed the increasing population, while using fewer resources (OESR, 2003). New sources of fresh water must be found, and existing water supplies need to be used sustainably and wisely.

Much of Queensland’s water is sourced from dams or reservoirs located throughout the state. During long periods of reduced or below-average rainfall or drought, this reliance on reservoir stores of water means that water shortages sometimes occur. To meet the shortfall of water supply, householders, businesses, industrial users and farmers throughout Queensland are encouraged to adopt water-saving techniques such as installing rainwater tanks.

Per-person water use should be efficient and matched to local conditions. The Queensland Water Commission has proposed that long-term daily average water use in South East Queensland should be 230 litres per person per day while

combined dam levels are above 60%. However, during severe drought, when dam levels are below 60%, setting and meeting lower targets is critical to managing water supplies. The dam level triggers for water restrictions in South East Queensland are shown in Table 1 below.

**Table 1: Dam level triggers for water restrictions in South East Queensland**

Restriction level	Water usage target (L/person/day)	Combined dam levels
Extreme	140	below 40%
High	170	between 40% and 49%
Medium	200	between 50% and 59%
Low (permanent water conservation measures)	230	60% and above

Other regions in Queensland may adopt different targets, but all targets should reflect and promote efficient use of existing and future water supplies.

Technology and information are now available to improve the ways in which we use existing water resources and make better use of alternative water sources such as recycled water and desalinated sea water. To maintain an adequate supply of clean fresh water, we need an understanding of where water comes from, how we can use it wisely, and what happens to it after it goes down our drains.