

ALICE SPRINGS WATER RESOURCES

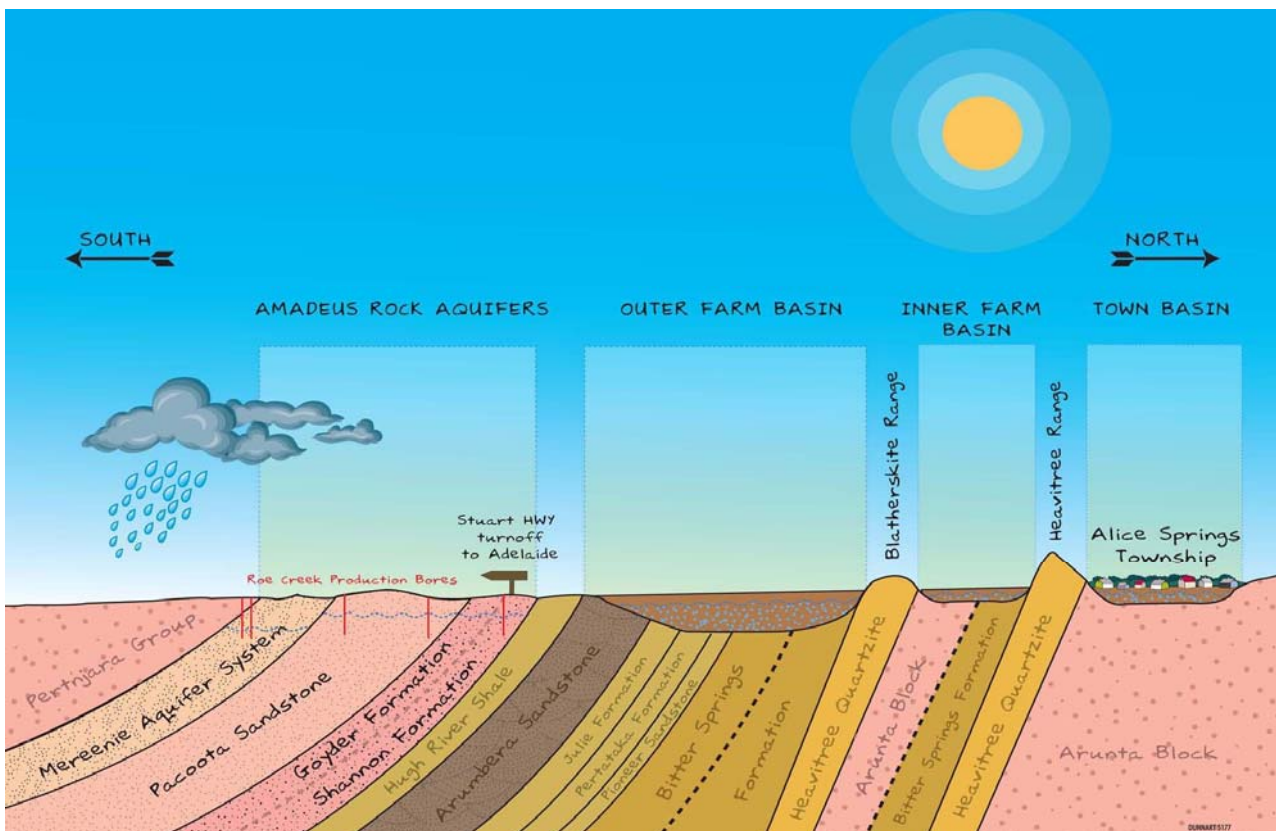
Where does Alice Springs water come from?

Alice Springs and most other towns in Central Australia rely almost completely on groundwater aquifers as a source of water. Central Australia experiences an arid climate with low, variable rainfall and high evaporation rates, meaning surface water is an unreliable water source.

Two categories of groundwater aquifers supply useful quantities of water to Alice Springs - alluvial aquifers and Amadeus Basin aquifers. Alice Springs alluvial aquifers are comprised of a mixture of gravel, sand, silt and clay, which have been deposited over many years by surface water flows and weathering of the underlying sedimentary rock. The Town Basin, Inner Farm Basin and Outer Farm Basin are all alluvial aquifers (see Figure 1).

The Amadeus Basin is comprised of rock formed by the laying down of sediments that have been altered by pressure over time. The Amadeus Basin extends south of Alice Springs towards South Australia and westwards into Western Australia. It contains very large quantities of stored groundwater in sandstone and limestone aquifers, most importantly the Mereenie Aquifer System, Pacoota Sandstone and Shannon & Goyder Formations, in which the Roe Creek production bores are located (see Figure 1).

Figure 1: Cross section of Alice Springs aquifers



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What is the current state of our groundwater aquifers?

Roe Creek

Alice Springs public water supply is sourced almost entirely from the Roe Creek borefield. The Roe Creek borefield is located 15km south of Alice Springs and draws water from the Amadeus Basin rock aquifers; 80% of which is from the Mereenie Aquifer System because of higher water quality and yield. Recharge to the Amadeus Basin occurs via rainfall, surface water flows and throughflow from other aquifers. Groundwater is being extracted at a rate greater than recharge, meaning water levels in the Roe Creek borefield have dropped from 90 to 150 metres below ground level since pumping commenced in 1964.

Rocky Hill / Ooraminna

Rocky Hill is a secondary borefield used to access the Mereenie Aquifer System (Amadeus Basin), with water currently being used to grow grapes, melons and other crops. Water from Rocky Hill is good enough to drink so most of the good quality water has been set aside to supplement future public water supply if and when extraction from Roe Creek becomes less economical.

Town Basin

Drinking water was originally drawn from the Town Basin, until overuse saw it necessary to source water from the new borefield at Roe Creek in 1964. Nowadays, the Town Basin is used to irrigate sports fields, public open spaces, schools, the golf course and some domestic gardens. In the 1970's a period of high rainfall coincided with cessation of pumping for public water supply raising water levels. Water levels have since remained high, contributed to by recharge from the irrigation of parks and gardens, and flows from the Todd River. Town Basin water has salinity levels too high for drinking; however, it is an important source of water for irrigation that reduces dependence on Roe Creek supplies.

Inner Farm Basin and Outer Farm Basin

The Inner and Outer Farm Basins provide water for small scale agriculture, horticulture and secondary industries such as caravan parks. Both of these aquifers remained unstressed from groundwater extraction activities and maintain stable groundwater levels.

What is the expected future demand for our water?

Alice Springs Water Resource Strategy

The Alice Springs Water Resource Strategy is a Water Allocation Plan, made under the Northern Territory's *Water Act 1992*. The Strategy outlines how Alice Springs water resources will be managed over the next 10 years, ensuring a balance of environmental protection and social outcomes, while allowing for economic growth. Community involvement was important in the preparation of the Strategy and occurred through public forums, community surveys, submissions and a community-based steering committee.

The Water Act defines the uses of surface water and groundwater as "beneficial uses". The Alice Springs Water Resource Strategy identifies beneficial uses of surface water and groundwater resources in the Alice Springs Water Control District.

Beneficial uses include;

- Environmental and Cultural (non-consumptive uses);
- Public Water Supply (consumptive use);
- Agriculture (consumptive use);
- Rural, Stock and Domestic (consumptive use); and
- Industry (consumptive use).

What is the predicted future use of Alice Springs groundwater?

A combination of scientific assessment and community consultation was used to define the acceptable rate of future extraction from surface water (rivers, creeks and dams) and groundwater resources (alluvial aquifers and rock aquifers).

For surface water, no more than 5% of river flow may be diverted at any time, leaving at least 95% of flow allocated to the environment for non-consumptive public benefit.

For alluvial aquifers, inputs (recharge from river flows and irrigation) must balance outputs (extraction, evapotranspiration from plants and throughflow to other aquifers), so that there is no change in the flow of water from extraction that may harm Groundwater Dependent Ecosystems. For the Town Basin, groundwater extraction is therefore balanced between maintaining the health of Groundwater Dependent Ecosystems, such as river red gums, and extracting enough water to allow for fresh water recharge.

For Amadeus Basin aquifers no more than 80% of the total aquifer storage in the Strategy region can be extracted over a period of 320 years (or 25% drawdown every 100 years). An annual increase in the demand for drinking water in Alice Springs of 1.5% would see extraction from the Roe Creek borefield reach around 10 417ML/yr by 2015. At that rate it is expected that the available resource from the Roe Creek and Rocky Hill borefields will last around 400 years. There are many ways that government, business and residents can save water so that the Alice Springs water supply can last longer than 400 years.

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