Alice Springs Water Resource Strategy 2005

Alice Springs Water & Sustainability

So how long has Alice got? This issues sheet discusses sustainability of Alice Springs water supply and links to the submission form to allow you to have a say on the how long you want our major water supply source to last.

Water mining

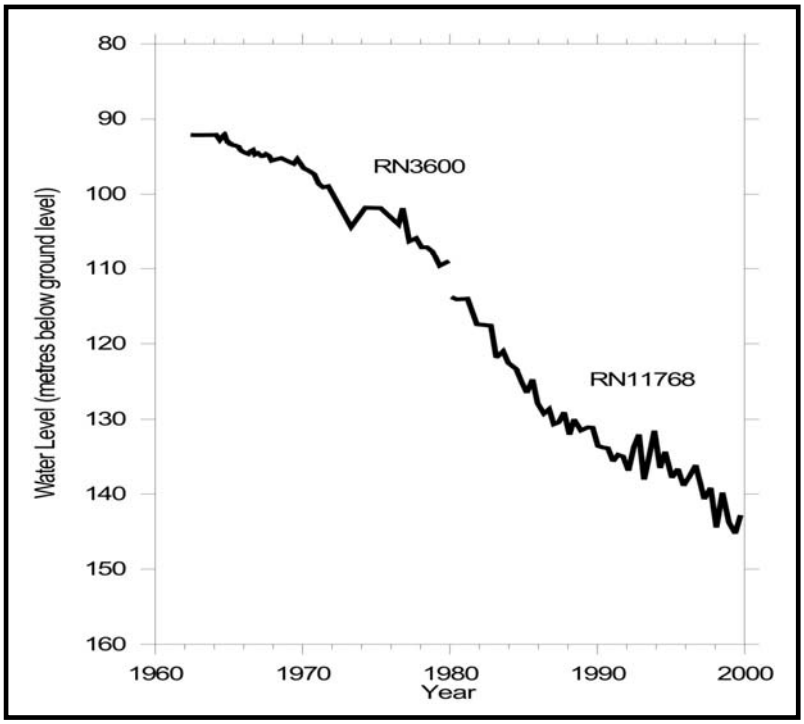
Unlike water supplies in many other parts of Australia, Alice Springs current drinking water supply is not renewable at the rate we are using it. Our water storages are not regularly refilled each year by rains, but were deposited in nearby underground reservoirs (aquifers) many thousands of years ago.

Rain and river flows still refill our aquifers, but very slowly. The rate that water is extracted for Alice Springs residents to use is far greater than the rate of refilling or 'recharge.' Much like coal removed from a coal mine, in effect much of the water we use today is permanently removed or 'mined' from our aquifers.

Fortunately we have large volumes of water stored in underground rock formations south of the Alice Springs. However, as we are mining our water reserves the choices we make today will affect future generations. Alice Springs residents bear a responsibility to future generations to be efficient with how we use this precious resource.

The level of water in bores located at Roe Creek has dropped by around 50 metres since 1964 and is now dropping a little over 1metre per year.

At some time in the future, it will become increasingly difficult to extract enough water from the Roe Creek bore-field and a second bore-field will have to be developed in a neighbouring part of the same aquifer system. Development of a new bore-field will be very expensive.



Typical 'drawdown' or drop in standing water level in two Roe Creek bores.
RN is the 'registered number' that identifies each bore.

Determining sustainable yield in the Alice Springs Water Resource Strategy

The National Groundwater Committee uses the term ‘sustainable yield’ and defines this as follows:

The groundwater extraction regime, measured over a specified planning timeframe, which allows acceptable levels of stress and protects dependant economic, social, and environmental values

As Alice Springs current water supply relies on large storages of ancient waters, ‘sustainability’ has been defined as an acceptable rate of depletion of the resource.

The draft Alice Springs Water Resource Strategy suggests determining sustainable yield by adhering to the following conditions:

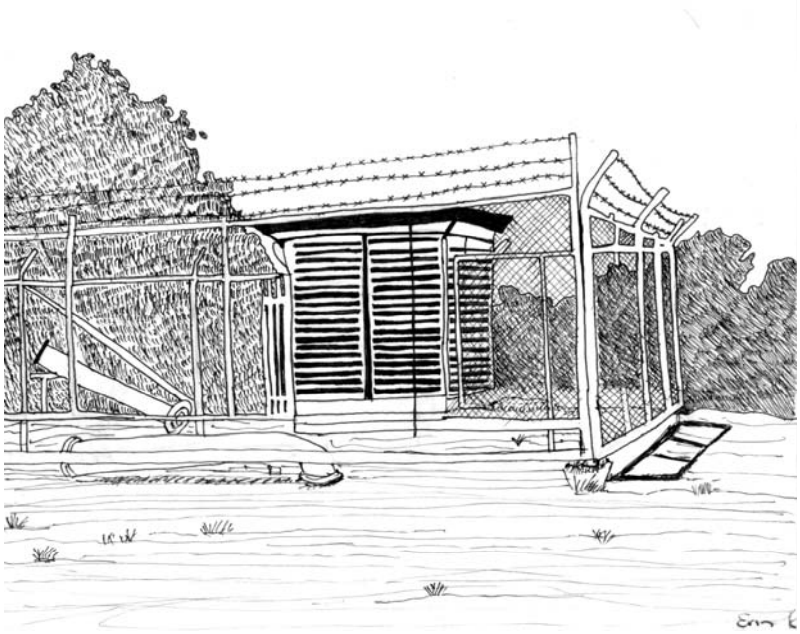
There will be no deleterious change in groundwater discharges to dependent ecosystems;

And,

Total extraction over a period of not less than 100 years will not exceed 80% of the available storage* at start of extraction

In effect, this draft policy allows water to be allocated and licensed for use up to a volume that could see the Amadeus Rock aquifers with only 20% of available storage present in 1963 still remaining in the year 2063.

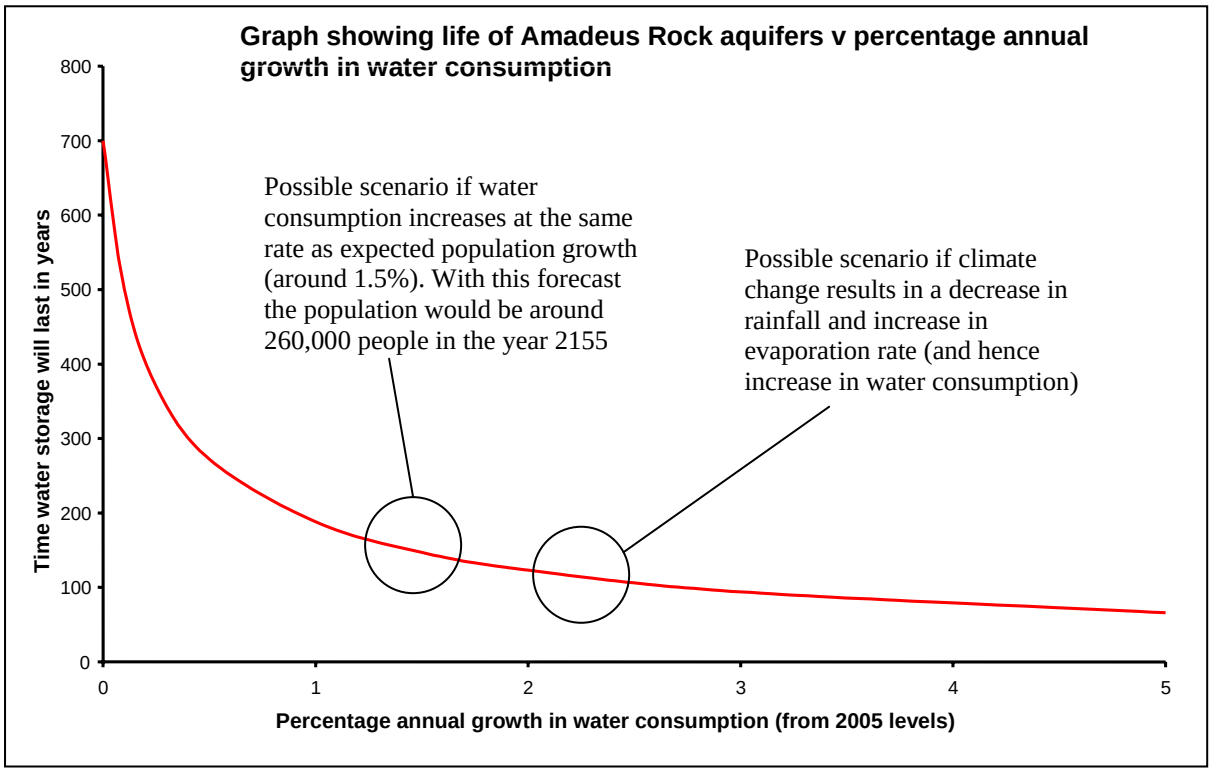
The Alice Springs community are invited to comment on the draft sustainability policy. Community members need to have a basic understanding of Alice Springs water resources and trends in water consumption and depletion to be able to contribute to sustainability discussions in an informed way. The following page contains scenarios showing the rate of depletion of water resources over time compared to growth in water consumption that would be expected to occur with population growth.



* *Available storage* means the water in an aquifer that is of sufficient quality, and technically and economically feasible to extract for use, this is less than the total amount of water stored in an aquifer. Available storage is also known as ‘available drawdown.’

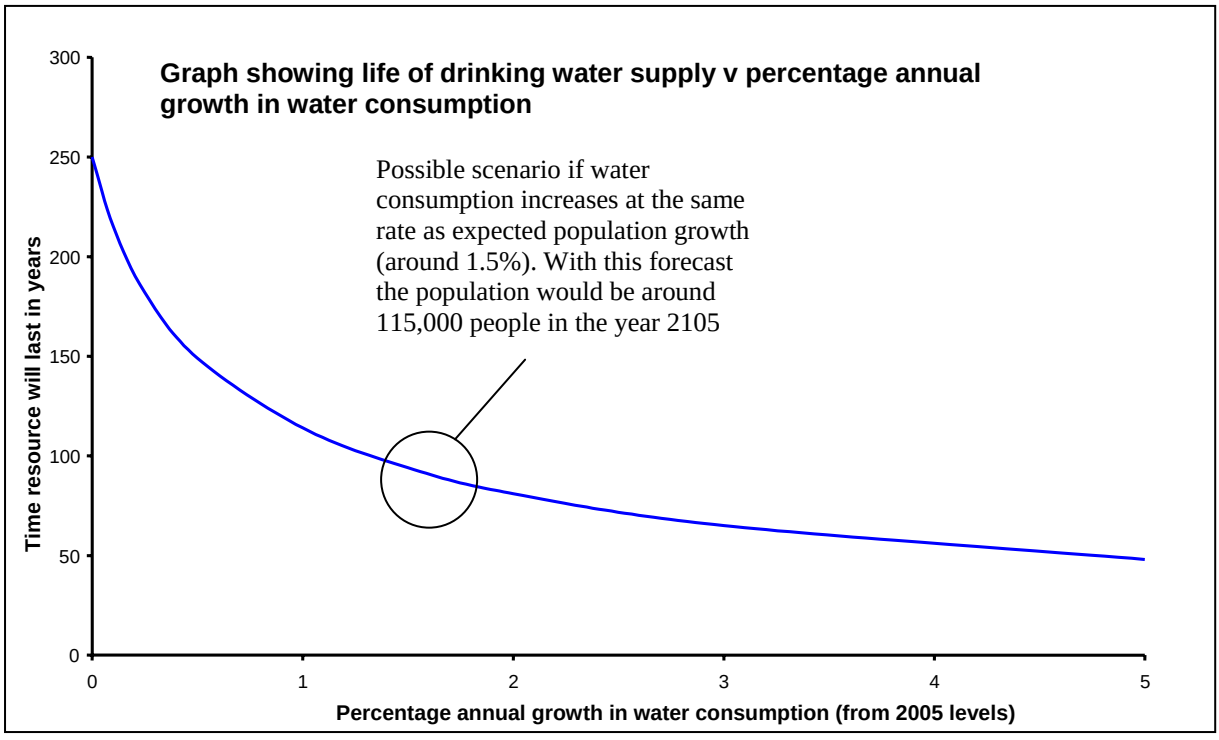
How long have we got?

The life of the Amadeus Rock aquifers depends on how we use our water resources now and in the future. The following graph provides an estimate of how long the Amadeus Rock aquifers will continue to be productive at current extraction rate and for various scenarios of annual growth in consumption rate.



The Amadeus Rock aquifers contain water of varying quality. The Australian Drinking Water Guidelines (NHMRC 2004) classify water of TDS better than 1000 mg/L as acceptable for drinking. However, the Guidelines further state that only water of less than 500 mg/L TDS is considered to be good quality. Despite the considerable volume of water stored within the Mereenie Sandstone aquifers, only a smaller portion of water (approximately 1,252,000 ML of 5,200,000 ML in total or 24%) has a quality less than 500mg/L.

The following graph provides an estimate of how long the drinking water portion of the Amadeus Rock aquifers will last at current extraction rate and for various scenarios of annual growth in consumption rate.



*The Australian water quality guidelines classify water with less than 500 mg/l TDS (NHMRC 2004) as "good". 500-800 mg/L TDS = fair. 800-1000 mg/L TDS = poor.

Constraints on sustainability

Environmental, social and economic constraints impact on the ability of Alice Springs to meet sustainability targets, for example:

- Hydrology – we have little influence over the volume of water stored in Roe Creek aquifers and the natural rate that they are recharged (refilled). However, alternative supplies such as the renewable 'Town Basin Aquifer' provide some opportunities for supply substitution.

- Climate – climate will continue to affect demand for water and natural recharge rates. The predicted effects of climate change are uncertain in Central Australia and may increase the pressures on our water resources.

- Demand for water – the population of Alice Springs is expected to grow and projected targets for future demand for water remain high, even when considering the impact of water efficiency programs.

- Economic – although the aquifers at Roe Creek extend many kilometres below the surface, due to extraction costs it is not economically feasible to draw water from beyond a certain depth.

- Social – the community have attitudes and expectations regarding lifestyle, such as urban design, landscaping and ownership of swimming pools etc. Even if water is used more efficiently in the future, meeting these expectations requires significant amounts of water.

Have your say about sustainability

Click here to link to sustainability questions in the Alice Springs Water Resources Strategy submission form, or

Download the submission form from www.alicewaterplan.nt.gov.au , or contact

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