



Groundwater in the White Gums & Ilparpa Region - Alice Springs

This fact sheet is intended to assist residents of White Gums & Ilparpa (hereafter collectively referred to as “White Gums”) to understand the regional groundwater resource, called the Wannardi Basin.

White Gums is a low density, semi-rural development that has historically attracted residents who are keen to live a partly self-reliant lifestyle. White Gums residents have always supplied their own water and the NT Government advice has been that the water supply cannot be considered reliable, either in quantity or quality. Some residents have experienced difficulties with water supplies. This fact sheet outlines reasons for supply issues and suggests how to secure a more reliable water supply.

White Gums is situated over a groundwater basin (aquifer) called the Wannardi Basin, which is the major source of water for the area. Within the Wannardi Basin water is mostly held in alluvium; old river bed channels or deposits comprised of sand, silt and clay. The main source of recharge or water flowing into the Wannardi Basin is surface water flows in the Roe Creek. This small alluvial basin has a limited storage capacity or volume - much less than the aquifer that provides water to Alice Springs.

Water table heights vary across the Basin with time and depend on the local topography and proximity to Roe Creek. Over the years the water table has fluctuated by almost 10 metres in some locations. The water table height decreases with time due to the natural flow of groundwater towards the south west. However, most water level decline is in response to residents extracting groundwater from bores. The water table rises when enough water flows in the Roe Creek to recharge the basin. Placing a higher demand on the water supply would exacerbate water supply problems in drought periods.

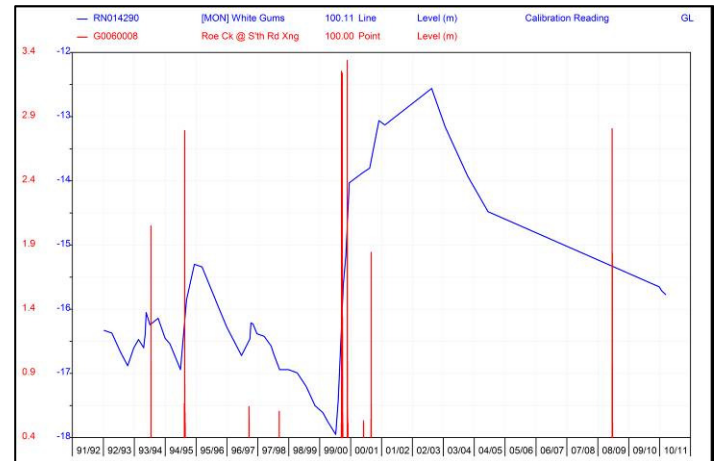


Figure 1 - compares flows in Roe Creek from 1992 to 2010 with water table levels in a monitoring bore near to White Gums. Flow peaks in Roe Creek correspond to peaks in the water table.

Roe Creek stream flows (NTG Gauging Station G0060008)

Standing Water Levels or distance from the ground surface to the water table in NTG Monitoring Bore RN14290 in the White Gums area

Pump Rates

The original Planning document stated that bores in the White Gums area were to have a maximum groundwater pumping rate of 0.5L/s, and the NT Government Water Management Branch continues to recommend this pump rate. This is ample to allow a good supply of water to a household but is low enough to minimise interference with other lots.

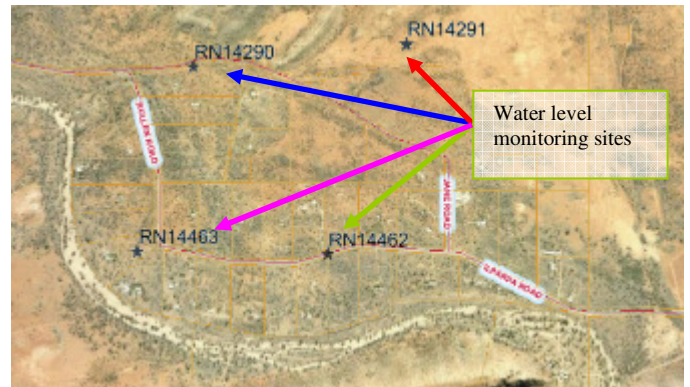
Water Supply Problems

There are several reasons that could explain why residents experience difficulties with their water supply in addition to the natural rise and fall of groundwater levels.

- **Pumping rates:** Groundwater pumping rates may be much more than 0.5L/s. This could cause localised depressions in the water table, meaning that water levels may be

reduced in neighbouring bores. Pumping at a lower rate over a longer period of time can result in a much improved performance from the bore.

- **Bore infrastructure:** Some of the original bores in the area were drilled more than 30 years ago and may not be deep enough. Some bores may not have been designed or constructed to a high standard. High pump rates can collapse the bottom of a bore impeding its performance. Poorly constructed bores may also be silted up at the bottom as surrounding material slumps into the hole. The perforations in the casing can become blocked (by rust or fouling) over time, even in a well-constructed bore. Some bores may be being pumped at a rate that is not compatible with the changed condition of the bore.
- **Location of bore:** Some parts of the Wannardi Basin provide a more reliable water supply than others. Some bores may be located in areas that yield less water, or that decline at a faster rate compared to other areas. This is due to variations in aquifer characteristics and basin topography, for example the thickness of the aquifer at the individual bore location can affect the available yield of the bore.
- **Pumping equipment:** Worn pumps and holes in the pump column are another cause of reduced yield. Is the pump set at the right height or does it need to be reconditioned?

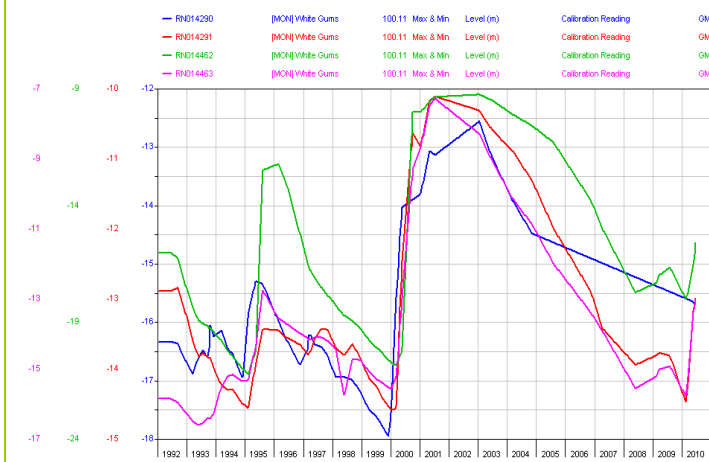


How to Investigate Your Water Supply

Watable fluctuations are a normal feature of any aquifer; especially where there is regular water extraction, hence available yield in some bores can also be expected to vary with time. Residents need a good understanding of the groundwater conditions and the details of their bore and pumping system to assist in managing their own water supply.

- To find out more about your bore or the water supply in your local area, visit NRETAS maps (www.nt.gov.au/nretamaps). Zoom in on your house, find the nearest bore and examine the bore report for standing water levels, drilled depth, water quality, bore design and construction details and if any pumping tests have ever been carried out. Check whether its current depth is the same as when it was first drilled. For assistance contact the NRETAS Water Regulatory and Advisory Officer (details below).
- Think about how close your bore lies to Roe Creek and your position in the landscape. How may this affect your local groundwater levels?
- Measure your pumping rate: is it less than 0.5L/s?
- Talk to your neighbours about their water supply. How does it compare to yours? What is their pumping rate? Could it be that your water use is affecting a neighbour or vice versa?
- If water levels and bore total depths have changed little but pumping efficiency has dropped, assess the condition of your pump and bore casings. Are they old and rusted or fouled by chemical deposits etc? It may even

Figure 2 shows water table height fluctuations in four monitoring bores in the White Gums area. Water table levels can be seen declining and then rising in response to significant river flows in early 1995 and 2000. Water levels are again rising due to Roe Creek flowing again in the 2009-10 period.



be necessary to have an NT-licensed driller assess the status of your bore and try remediation measures.

- If you are convinced that neither the bore, pumping rates or geography are affecting your water supply, the next step is to consider how you can reduce your water demand or supplement your existing water supply.

How to Maximise Efficient Use of Your Groundwater Supply

Did you know that one White Gums property collected enough rainwater over the wet months at the end of 2008 to supply the property for more than 6 months so far? This is how;

- Captured rainwater in several rainwater tanks (around 40-50 000 litres in total). The tanks provide water to the household and can also irrigate gardens.
- Use of a composting toilet that requires no water (refer to NTG requirements below).
- Garden is largely remnant bushland that requires minimal water.
- Garden watering using recycled household water or rainwater when available.

Alice Springs residents are amongst the highest water users in Australia, with those houses maintaining gardens using over half of their annual water use on the garden. Residents must consider carefully what an appropriate garden type and irrigation rate is for White Gums. Strategies to maximise water efficiency include;

- No swimming pool
- No garden irrigation using bore water; consider using rainwater or greywater.
- Use of efficient household plumbing fixtures; aim for a minimum 4-star rating for washing machines, dishwashers, toilets and tap ware, and a 9L/minute (or lower) shower rose. (Rebates are currently available).
- Divert greywater from showers and washing machines to the garden, or treat and reuse all household wastewater on gardens or in toilets.

Consider installing a rainwater tank or tanks. Large property sizes in the White Gums area mean that minimum 9 000L tanks can be installed and connected to high water-usage fixtures such as the hot water system, toilet or washing machine. (Rebates are currently available).

- Think carefully about small changes in behaviour that could save water – can shower times be limited or less water hungry plants used in the garden?
- Have a Desert Knowledge Australia COOLmob home water audit; a trained auditor will assist you to identify water savings through behaviour change or technology.

White Gums residents could see real benefits by committing to high standards of water efficiency; primarily by reducing the rate of regional water level declines. At the same time, installing rainwater tanks, and ensuring bores and pumps are functioning well makes households more resilient to long term drought conditions.

Useful websites

NT Government rebates for water saving products;
www.waterwise.nt.gov.au

NT Government requirements for recycled water and composting toilets;
<http://www.nt.gov.au/nreta/water/wise/pdf/greywater.pdf>

www.health.nt.gov.au/Environmental_Health/Waste_Management/index.aspx

NT Government fact sheets on requirements for rainwater tanks;
<http://www.nt.gov.au/nreta/water/wise/pdf/rainwatertank08.pdf>

www.health.nt.gov.au/Environmental_Health/Water_Quality/index.aspx

Desert Knowledge Australia COOLmob home water audits;
<http://www.dkacoolmob.org/audits.html>

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