

# Groundwater Resources

## Management of Eyre Peninsula's groundwater

The groundwater systems of Eyre Peninsula are unique in comparison to other semi-arid regions in the State. Recharge rates and groundwater quality are, in some parts, higher than would normally be associated with similar semi-arid environments.

There is a strong link between groundwater levels and rainfall – that is, when there are high levels of rainfall, there are high levels of recharge. However, groundwater systems continue to discharge no matter what the seasonal conditions, so in times of low rainfall the overall groundwater levels fall.

Climate – not extraction – predominantly dictates groundwater levels, so risk management practices are in place to effectively manage human demands on these sources.

## History

During 1916 investigations were carried out into the viability of sourcing drinking water supplies from the Polda region.

In 1935 the first groundwater lens was used when water was pumped from shallow trenches in the Robinson Basin to supply Streaky Bay. Interestingly, supply from the Robinson Basin failed during the prolonged drought of 1949-50 and again in 1976-77 when major increases in salinity were recorded.

In 1949 the Uley Wanilla lens was brought into operation, followed in 1960 by the development of the Lincoln Basin. In 1962 groundwater from

within the Polda lens was pumped into the Tod trunk main. In 1976 the Uley South lens was developed (expanded again in 1998) and Coffin Bay was supplied with reticulated groundwater from 1986.

## Groundwater Extraction

Groundwater extraction across Eyre Peninsula has increased over time to match demand from rural and urban development. Total water consumption is currently about 10 billion litres a year, of which groundwater is the major source.

The reticulated water supply for much of Eyre Peninsula comes from a number of well-fields developed by SA Water within the Southern Basins Prescribed Wells Area. These include the Lincoln A, B and C, Coffin Bay A, Uley-Wanilla and Uley South well-fields. Other groundwater resources are found throughout Eyre Peninsula and are used to supply coastal townships, particularly along the western side of the peninsula.

A lack of recent rainfall and increasing demand on some of the region's smaller groundwater resources has lessened the amount of fresh water within these lenses and increased salinity. Such is the case for Robinson lens, which supplies Streaky Bay. A new pipeline has been required to augment the Robinson lens.

## Groundwater Monitoring

Earliest water level monitoring records begin in the late 1930s and offer a semi-continuous record of water level change up until the present day.

During this time up to 204 monitoring wells have been established across the Uley Basin and many of the original observation wells were subsequently replaced as the old wells failed and were subsequently abandoned.

Currently in the Uley Basin about 60 wells are monitored for groundwater levels and 30 are monitored for groundwater quality. Water levels are recorded monthly throughout the year and water quality measurements are monitored daily by SA Water at the major pumping stations.

## Groundwater Trends

Groundwater levels across the peninsula are near their lowest point on record. The last major recharge event occurred in late 1992 and early 1993, rainfall exceeded 100mm during October, December and January and water levels in the aquifers rose by approximately one metre.

The monitoring data from the past 60 years indicates that during periods of below average rainfall (such as the period around 1945 through to the mid 1960s) groundwater levels declined, irrespective of pumping.

The Uley East lens does not undergo large extractions for town water supply requirements yet groundwater levels continue to decline. This decline is in response to the natural discharge from the system. The rate of decline in groundwater levels in the Uley East lens, where only natural discharge occurs, averages 0.24m/year since the last major recharge event of 1992–93. Similarly, the Uley Wanilla lens has experienced an average rate of decline over the past seven years of about 0.22m/year.

Previous groundwater level monitoring has shown long periods of sustained pumping at volumes greater than 1200ML per annum significantly impact on this resource. Consequently SA Water has reduced the volumes taken from the Uley Wanilla lens.

You can see detailed monitoring data through the ObsWell site on the Department of Water, Land and Biodiversity Conservation website - [www.dwlbc.sa.gov.au](http://www.dwlbc.sa.gov.au).

## Resource Management

It's important for appropriate risk management practices to be in place to ensure groundwater extractions meet demands in a sustainable way.

Water allocation plans aim to balance social, economic and environmental demands against the long-term sustainability of the available resource, under a regime of below average rainfall and reduced recharge.

The basic objectives for managing the available groundwater resources include:

- Sustainable use of the underground water
- Encourage development of water efficient industries
- Efficient use of the water
- Equitable allocation of water
- Adequate portion of water to meet environmental demands

Annual extractions from each resource are calculated based on the past ten-year average of recharge, taking into account rainfall and aquifer storage. Consideration is also given to natural discharge required for environmental needs and the balance is then made available for extraction.

Current water allocation plans ensure that even where there is continued below average rainfall for extended periods of time there is still a capacity to reduce demand and ensure the long-term sustainability of the resource.

Water allocation plans do not stop the decline in groundwater levels, this will happen even if there is no pumping demand.

Further information of groundwater management policies is available from the Eyre Peninsula Natural Resources Management Board.