Pressurisation:
Currently water is gravity fed into the deep aquifer we are using, meaning that pressures are very low. Advice from experts has indicated that we can safely inject water with up to 25m of head without impacting on the unconfined aquifer above.

Taking on board this advice, we will be retrofitting the existing headworks to enable injection under pressure and will monitor a range of conditions to ensure that the pressurisation does not have an adverse impact on the upper aquifer.

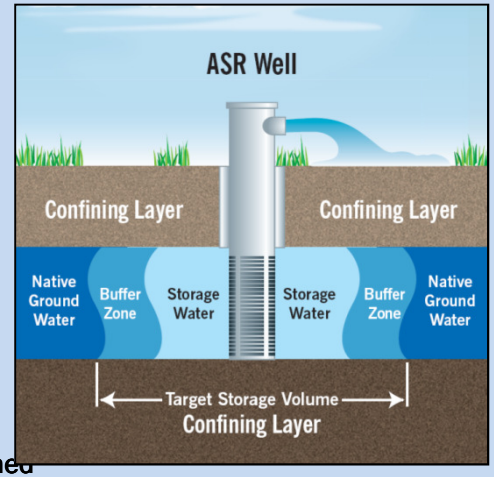
Banking:
One of the most significant advantages of ASR is the ability to inject water underground when rivers have high flows and extract it back out again when river flows are low.

Present licence requirements do not allow this water to be 'banked' from year to year, as is the case with surface water and a dam, for example.

With ASR, water injected takes many years to move away from the injection area. This makes the banking of ASR water from year to year a practical option.

EGW is working with the groundwater regulator to introduce banking for ASR water, whilst ensuring this does not impact on adjacent licence holders or the environment.

Additional infrastructure:
EGW is utilises five bores for ASR. Additional infrastructure may be required in the future and should this occur, details will be provided.



Keeping you informed
EGW will continue to provide irrigators, the local community and Southern Rural Water with regular updates on how the ASR program is progressing. There will be opportunities to provide feedback.

In particular, we will:
- maintain ongoing monitoring and independent scientific analysis of the ASR initiative, and look to implement enhancements as appropriate;
- maintain ongoing consultation with the owners of private bores being monitored and coordinate our program of water extraction with other bore owners.

For further information please contact Simon Robertson on 5150 4426 or via email srobertson@egwater.vic.gov.au

Mitchell River Aquifer Storage and Recovery (ASR) project

December 2012 update

The Mitchell River at Glenaladale

East Gippsland Water

Introduction

In 2011 East Gippsland Water (EGW) received approval from the groundwater regulator, Southern Rural Water, to store bulk amounts of water for drinking, underground in an aquifer.

The technique used is called Aquifer Storage and Recovery (ASR), which was successfully trialled in the Woodglen area in 2009/10. Water sourced from the Mitchell River (only during periods of high flows) is being injected into the Latrobe Valley group of deep aquifers, utilising our borefield at Woodglen. This water is stored in voids created by the drawdown from previous, unrelated activities. It is available to be retrieved (recovered) at a later date (typically months or years) to supply our customers across the Mitchell River Water Supply System.

EGW's latest review of water security, the Water Supply Demand Strategy (WSDS)*, identified the need for additional water storage, such as could be achieved using ASR. It is very cost effective, with ASR coming in approximately a third of the cost of a traditional, comparably sized water storage. Importantly, ASR will also help ensure drinking water supplies for tens-of-thousands of customers are secure well into the future, helping to meet the challenges presented by bushfire affected catchments, climate variability and projected population growth.

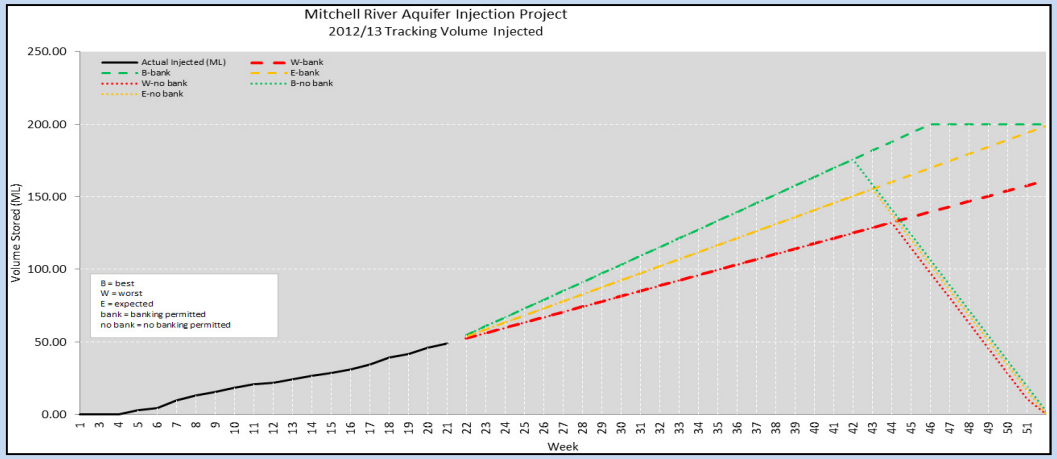
Using an aquifer as an underground storage reduces the potential for water loss through evaporation. It also maintains high quality drinking water, free from risks of algal and airborne contamination.

EGW's licence from Southern Rural Water permits us to store up to 200ML through ASR in 2012/13. There is scope for this to increase to 500ML per year in subsequent years, subject to strict environmental conditions and rigorous scientific monitoring requirements being met.

Progress to Date

To date, we have successfully injected 49.2ML over 5 months (Figure 1). Despite the volume that has been injected being far lower than expected, we have learnt much about how the technique of ASR can be enhanced. Injection will be maintained whilst the Mitchell River continues flowing at levels above 180ML/d and will cease when flows recede below this level, when harvesting restrictions are initiated for irrigators.

Figure 1

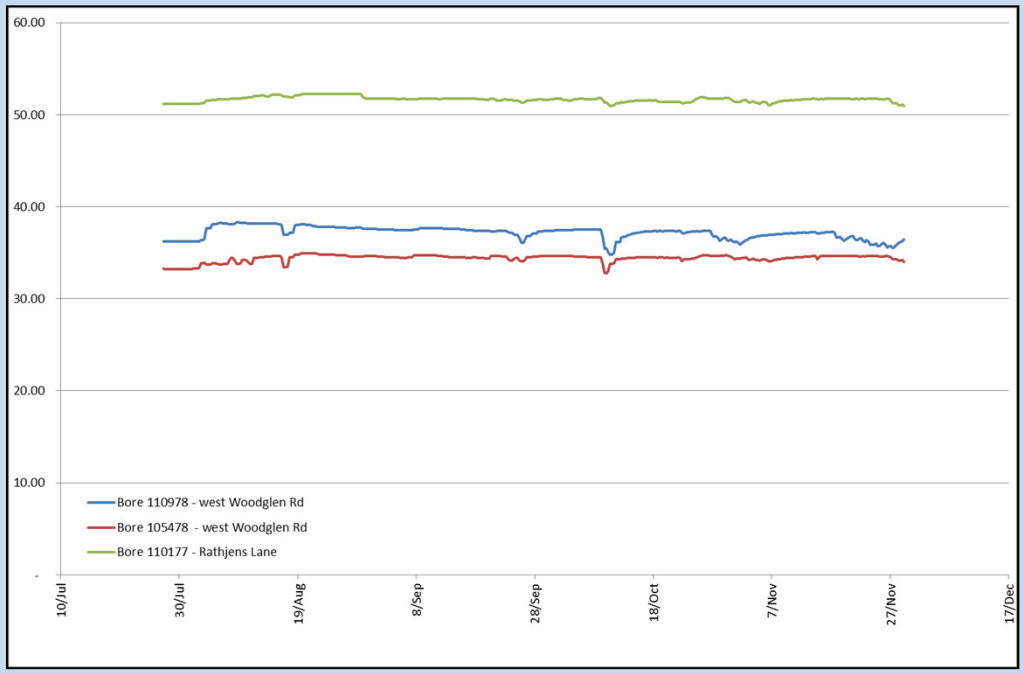


The graph above presumes that river flows will remain at or above 180ML/d throughout the remainder of 2012/13. If flows fall below this figure, injection will cease.

Monitoring Results

Monitoring data results to date indicate that that ASR is having minimal impact on groundwater levels in the Woodglen area. Figure 2 below shows that there is a small increase in the groundwater level at the start of the injection phase, with a gradual return to pre-injection levels as the cycle continues. Slight dips occur where extraction has been undertaken in order to maintain injection efficiency. Ground levels will continue to be monitored. The quality of water has also been monitored and has indicated no discernable impact.

Figure 2



What's next?

Over the coming months we will be looking to further enhance the performance of ASR:

Filtration:

We are keen to filter the water that is fed into the aquifer. Currently it is selectively harvested so that only high quality water is extracted. This water is then stored for several weeks; providing ample time for any sediment to settle out. It is also exposed to sunlight, which reduces the pathogen load in the water prior to injection.

We believe that the rates of infiltration can be improved further by adding an artificial filtration process. This will be trialed initially using water from the Woodglen Water Treatment Plant. If successful, more permanent and effective filtration processes will be introduced.

* For a copy of the Mitchell WSDS, please see our web page (www.egwater.vic.gov.au)