

Anglesea borefield – Groundwater level and trigger update February 2022

This monthly update includes observations from the groundwater pumping test and a status of groundwater levels against the threshold level for the two key bores - P8 and P19 - highlighted in Barwon Water's Bulk Entitlement for the Anglesea borefield.

Background

- On 27 January 2022, Barwon Water commenced a groundwater-pumping test to inform a review of its bulk entitlement and environmental monitoring program at the Anglesea borefield.
- This pumping test will run for six months, with strict environmental protection controls in place.
- The pumping test extracts water from the Lower Eastern View Formation (LEVF) aquifer with the water supplementing existing drinking water supply.
- Environmental triggers are in place to measure any changes in groundwater levels and to observe whether changes are due to climate variability or are associated with groundwater pumping. However, the triggers can be strongly influenced by extreme weather events.
- Our environmental monitoring for these triggers involves observing the status of groundwater levels against the threshold level for the two key bores – P8 and P19.

February: activities and observations

- During February, we extracted 175 ML from the LEVF aquifer.
- This is in line with our intention to extract at levels well below the permissible monthly total set out in the bulk entitlement (1,120 ML).
- The Anglesea borefield groundwater level trigger was not exceeded for the month of February.
- Although the P8 component of our trigger was met in February, the overall trigger was not exceeded as the P19 component of our trigger was not met. For the trigger to be exceeded, both trigger components must be met.
- The P8 component of the trigger was met due to an increase in groundwater levels in the Perched Water table in February that was caused by significant rainfall and was not related to the commencement of the pumping test.
- Any potential impact from Barwon Water's pumping test would show a decreasing water level from drawdown through both the PWT and UEVF.
- Climate influences the trigger components as they monitor variation in groundwater levels. This means extreme weather – wet or dry – can lead to components of the trigger being met, with or without pumping.
- These components are important to us as they can help pick up both positive and negative variations in groundwater levels, providing an early alert to investigate and reassess pumping levels if required.

Summary

- The increase in groundwater levels in the Perched Water table is not related to the commencement of Barwon Water's pumping test.
- It is reassuring to see the trigger levels are working. They are identifying changes in groundwater levels, which provides an early alert to investigate and ensures the ongoing protection of groundwater-dependent ecosystems.

Monthly reports and extraction rates for the Anglesea borefield are available via the web page:

www.yoursay.barwonwater.vic.gov.au/anglesea-borefield





Monitoring bores and trigger levels

As part of our comprehensive monitoring and assessment program, we have 42 observation bores that monitor groundwater levels across the Anglesea catchment. These observation bores are located at different depths to monitor groundwater levels in different geological formations – in the Perched Water Table (PWT), Upper Eastern View Formation (UEVF) and Lower Eastern View Formation (LEVF). Barwon Water holds a bulk entitlement to extract groundwater from the LEVF.

Groundwater levels are recorded daily to ensure levels remain within the likely range of natural variation. This provides confidence that operation of the Anglesea borefield is not threatening groundwater dependent ecosystems.

Of the 42 observation bores, there are two key bores that are critical to ensuring groundwater levels can continue to support groundwater dependent ecosystems.

These bores measure groundwater levels in the PWT (P8) in the Anglesea swamp and in the UEVF (P19), overlying the LEVF. It is the combination of groundwater levels in both of these bores that is important. If groundwater levels in both bores fall below a certain threshold level, then action must be taken – including reducing or ceasing pumping – to prevent any potential damage to groundwater dependent ecosystems.

The threshold level (also known as a “trigger”) is determined by comparison to a control bore, to account for climatic influences on groundwater levels. The control bore (P17) is located in the Salt Creek swampland which is deemed outside the area of influence from operation of the Anglesea borefield. This means the control bore provides a useful comparison of the natural variation in groundwater levels due to seasonal conditions.

Triggers have been set at a conservatively low level to ensure we receive an early alert, prior to any potential damage occurring.

Latest observations

Following 18 months of being in standby mode, we reactivated the Anglesea borefield to commence a pumping test on 27 January 2022. As part of the six month pumping test, we will continue to closely monitor groundwater levels and extraction rates, as well conduct all ongoing monitoring required under the comprehensive monitoring and assessment program.

Figures 1 and 2 below present the trigger levels observed each month.

They also highlight the Alcoa groundwater pumping test, which commenced on 13 May 2021 from the Upper Eastern View Formation (UEVF). Stage one of the test was completed on 8 December 2021.

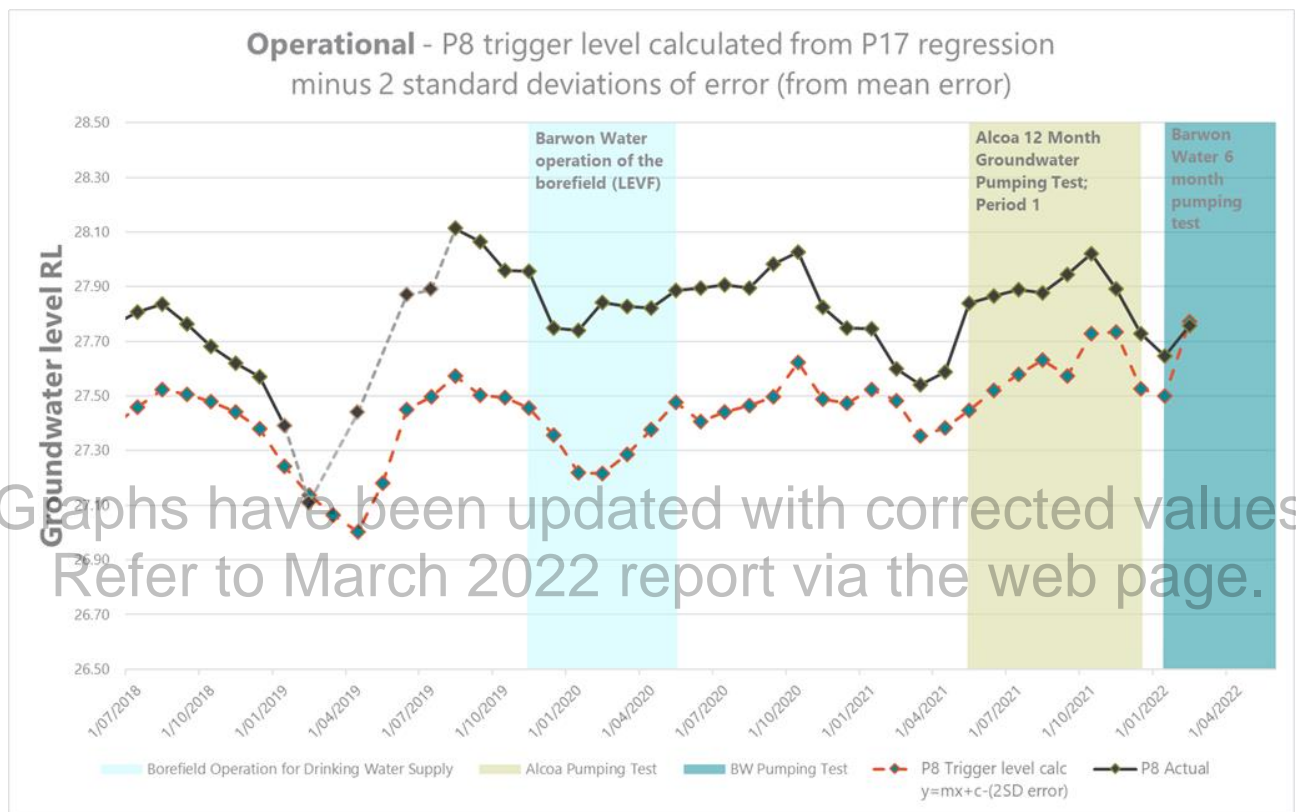


Figure 1. Groundwater level and the trigger level for P8 in the perched water table.

Note: From February to August 2019, the groundwater level data for P8 was collected by manual reads.

The trigger components are designed to account for moderate climate variability to help monitor variations in groundwater levels, but can be strongly influenced by extreme weather events. This can include hot, dry days or significant rainfall events.

An example of this was during February 2019, when Barwon Water was not extracting water, the P8 component of the trigger was met. This followed the warmest January (2019) on record for Victoria, coupled with below average rainfalls across the state, with some areas like Aireys Inlet recording its lowest January rainfall on record.

In contrast to this, significant rainfall can lead to components of the trigger being exceeded – with or without pumping. During February 2022, the P8 component was met and we also saw a rise in groundwater level at P19 (UEVF). This was as a result of rapidly increasing groundwater levels as a result of rainfall received in the month of January - 160mm was recorded compared to the monthly average of 50mm. Trigger components can be met as a result of extreme wet (or dry) periods. This provides confidence that the trigger components are identifying changes in groundwater levels to provide an early alert to investigate.



Figure 1 shows the groundwater level in the perched water table continues to demonstrate a strong correlation with rainfall and seasonal change.

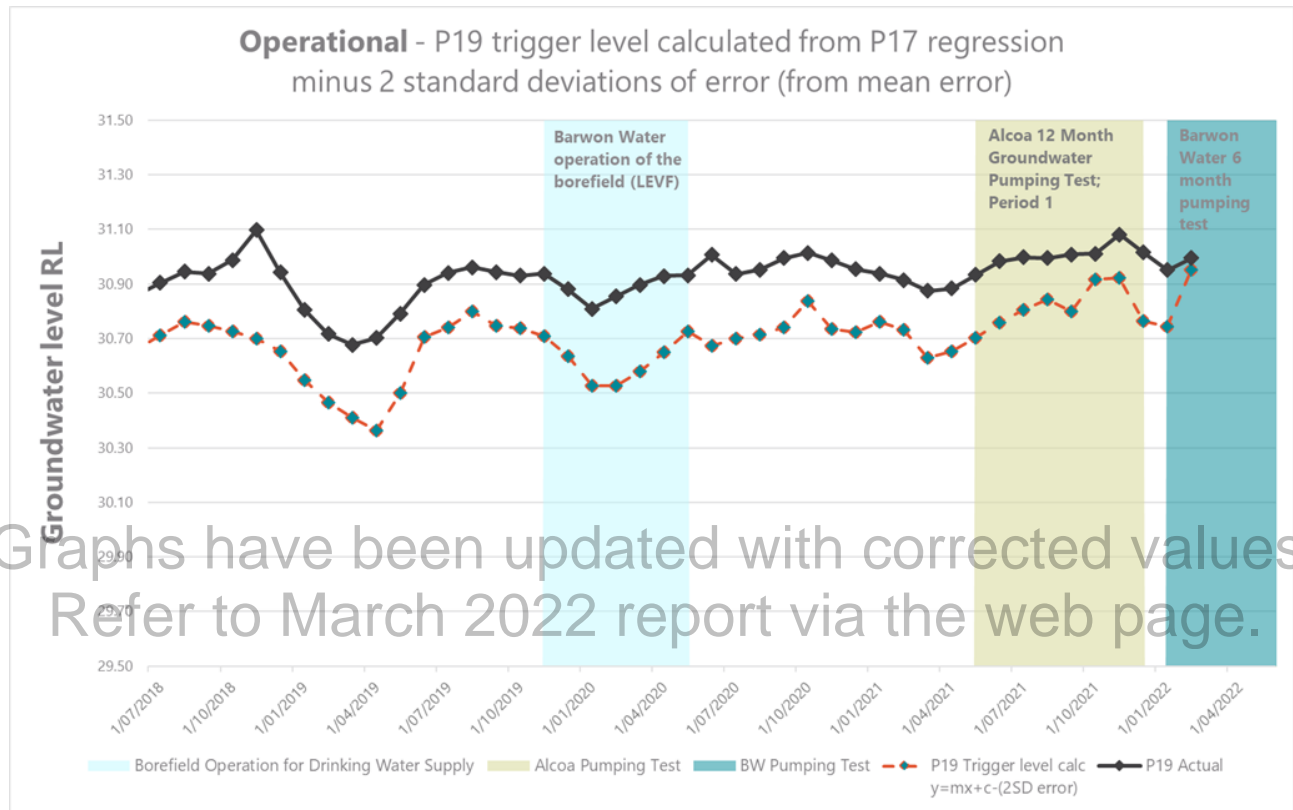


Figure 2. Groundwater level and the trigger level for P19 in the upper eastern view formation.

Figures 1 and 2 show that the P8 component of our trigger was met in February, while the P19 component of our trigger was not met during the reporting period.

For more information and ongoing updates, please visit the Anglesea borefield web page:

www.yoursay.barwonwater.vic.gov.au/anglesea-borefield