

Anglesea borefield – Groundwater level and trigger update May 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 is planned to 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. 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 two key bores – P8 and P19.
- Monthly reports and extraction rates for the Anglesea borefield are available via the web page: www.yoursay.barwonwater.vic.gov.au/anglesea-borefield

May activities and observations

During May, we extracted 141 ML from the LEVF aquifer.

- This is in line with our intention to extract at levels 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 May, 2022.

- The groundwater level trigger is made up of two components - observation bores P8 and P19.
- These bores measure groundwater levels in the Perched Water Table (PWT) in the Anglesea swamp (P8) and in the Upper Eastern View Formation (UEVF) (P19), which overlay the Lower Eastern View Formation (LEVF).
- For the trigger to be exceeded, groundwater levels at both bores need to fall below a certain threshold level (also known as a 'trigger') for the month.
- For the month of May, the P8 component of the trigger was not exceeded (groundwater levels remained above the threshold set for the month); P19 was exceeded (groundwater levels fell below the threshold).
- While the groundwater levels in the UEVF (P19) declined, our investigations showed the groundwater levels in the PWT (P8) increasing at the same time. There was no drawdown in the PWT.

- This means the reduced water level in the UEVF is not having an impact on the PWT or groundwater dependent ecosystems.
- Given the current trend we do not anticipate exceeding the trigger, and will continue to progress with the remaining two months of the pumping test.
- We are continuing to monitor P19 and the surrounding areas closely.

It is reassuring to see the trigger level working.

- The P8 and P19 components of the trigger are designed to identify changes in groundwater levels, and provide an early alert to investigate, closely monitor and respond, if required. This ensures the ongoing protection of environmental values and groundwater dependent ecosystems.

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.

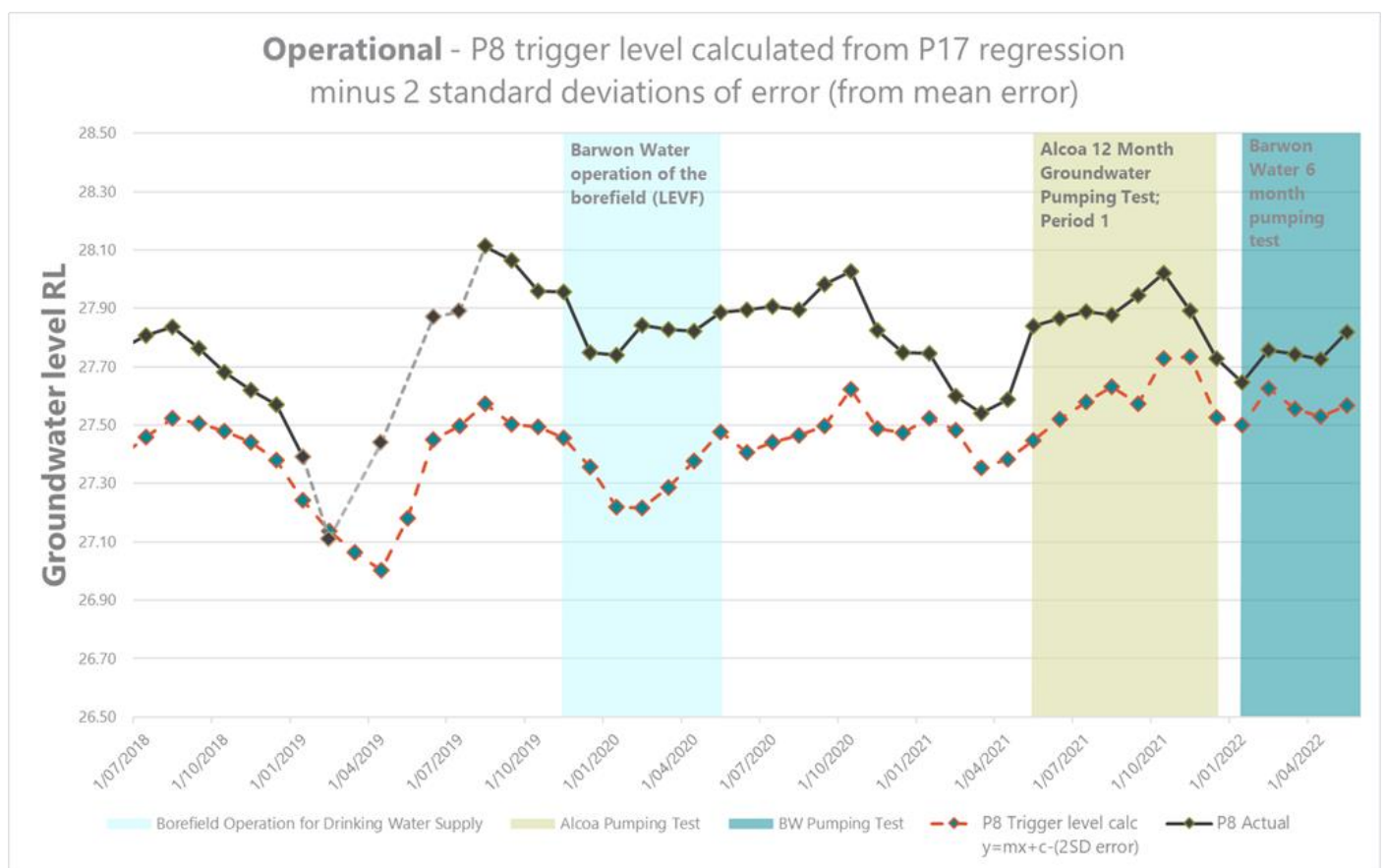


Figure 1. Groundwater level and the trigger level for P8 in the perched water table.

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

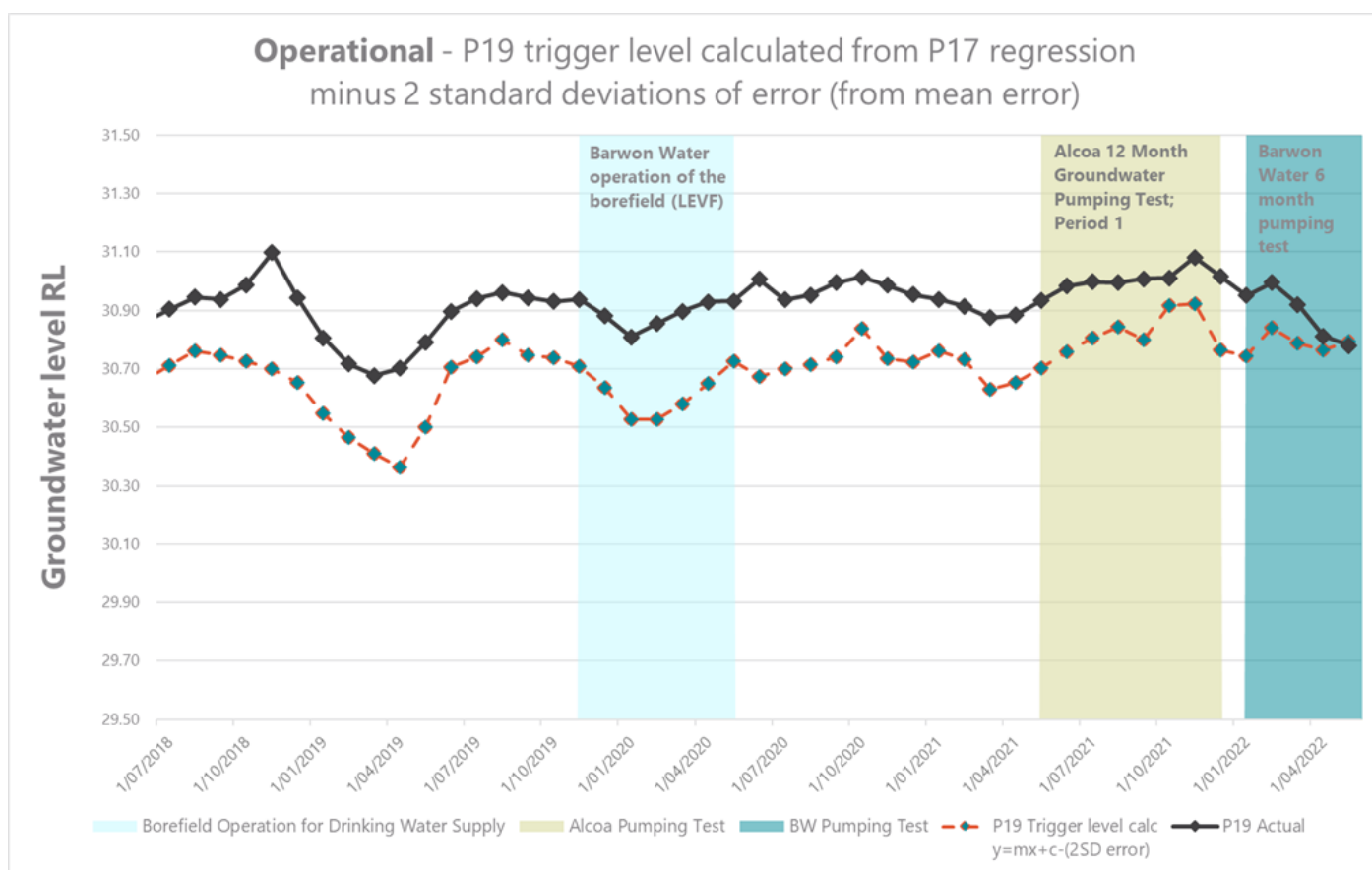


Figure 2. Groundwater level and the trigger level for P19 in the upper eastern view formation.

Figures 1 and 2 show that for the month of May 2022, P8 was not exceeded (remained within expected groundwater levels), however P19 was exceeded (fell below expected groundwater levels).

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 exceeded. This followed the warmest January (2019) on record for Victoria, coupled with below average rainfall across the state, with some areas like Aireys Inlet recording its lowest January rainfall on record.

In contrast to this, significant rainfall can also lead to components of the trigger being exceeded – with or without pumping. This provides confidence that the trigger components are identifying changes in groundwater levels to provide an early alert to investigate.

Figure 1 shows that groundwater levels in the perched water table continue to demonstrate a strong correlation with rainfall and seasonal changes.

More information on our 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 precautionary low level to ensure we receive an early alert, prior to any potential damage occurring.

Stay up to date

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

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