



Government of **Western Australia**
Department of **Water and Environmental Regulation**

Frequently Asked Questions - Gelorup Local Groundwater Supply Concerns April 2024

Since January 2024, the Department of Water and Environmental Regulation (DWER) and the Shire of Capel have been advised of cases of unusually low water pressure, a lack of water supply and changes in water quality of groundwater in shallow residential bores and soaks in the Gelorup area. Since mid-February 2024, the local community has also raised concerns around tree decline in the Gelorup and Stratham areas.

The following Frequently Asked Questions (FAQs) have been developed by DWER to provide the community with additional information around key queries.

What is causing the drying of bores in the Gelorup area?

Investigations undertaken by DWER to date indicate that declines in groundwater levels in shallow bores in the Gelorup area is likely caused by a combination of factors relating to climate. The lowest rainfall on record for this area was recorded between the months of October to December 2023. Rainfall over the last two summer periods have also been the lowest on record. Lower aquifer water levels combined with early cessation of rainfall in September 2023 and hot conditions are likely to have led to earlier and higher irrigation demands and less recharge to the underlying aquifer.

Is the Bunbury Outer Ring Road (BORR) having an impact on shallow groundwater bores in the Gelorup area?

Water level monitoring data supplied to DWER by South West Gateway Alliance (contracted by Main Roads WA) since the commencement of abstraction to early-March 2024, indicates that groundwater abstraction from the Yarragadee aquifer for the BORR is showing no evidence of impacting shallow bores. This suggests there is a confining layer between the Yarragadee aquifer supplying the deeper abstraction bores and the shallow aquifer where the monitoring bores are situated. This confining layer restricts connection between the two aquifers. The shallow monitoring bores that are situated near the BORR production bores are not showing drawdown impacts other than the expected seasonal variation.

How is DWER investigating the concerns being raised in the community?

DWER is reviewing groundwater monitoring data from 22 DWER regional bores of varying depths within a 7.5km radius of the two main licensed BORR production bores. DWER is also reviewing monitoring data from five monitoring bores associated with the BORR licence. Main Roads has three production bores at Jilley Road, Lilydale Road and Bussel Highway, as well as three shallow aquifer and two deeper Yarragadee monitoring bores. These

monitoring bores are located close to the production bores to readily identify changes to the shallow aquifer. Flow meters are in place to measure the volume of water taken from production bores and data loggers are installed to continuously measure water level changes in the monitoring bores. This data is provided to DWER.

DWER is also working with the Department of Biodiversity, Conservation and Attractions (DBCA) to investigate reports of tree deaths in the Gelorup area. DWER and DBCA teams have undertaken vegetation condition assessments in the Gelorup area and are currently using satellite imagery and groundwater data to assess potential causes of tree decline.

Additionally, DWER is proactively working with the Shire of Capel to record and identify where residents are experiencing bore issues. The Shire has developed a survey to capture this information. Information gained from the survey will be used to identify areas/issues where residential bores are being impacted. <https://www.capel.wa.gov.au/news/shire-of-capel-working-with-dwer-to-address-residential-water-bore-issues-in-gelorup/63>

What is the collected groundwater monitoring data showing?

Yarragadee monitoring bores associated with abstraction for the BORR up to early-March 2024 are showing a temporary decline in water levels of around 2.4 m in the deep monitoring bore near the Jilley Road production bore (PB11) and 0.5 m for the deep monitoring bore near the Bussell Highway production bore (PB14). In both cases, water levels recover after pumping ceases.

The shallow monitoring bores are not showing any evidence of impacts from abstraction associated with the BORR other than the expected summer decline, due to the absence of rainfall. This suggests that there is a confining layer, likely made of low permeable materials such as coffee rock, ironstone, clay, or basalt, between the deeper and shallower monitoring bores at this location, which is limiting interaction between the two aquifers.

DWER regional monitoring bores in the Gelorup area are showing a long-term declining trend in groundwater levels in some bores, whilst others are either declining in recent years or are stable. Of the 12 bores with long-term records, six recorded the lowest groundwater levels on record in February 2024. There was no correlation between the distance from the BORR production bores and recorded declines in the DWER monitoring bores, some of which are more than 7 kilometres apart.

Why are there reports of tree decline in Gelorup, and what is causing this?

Tree decline is a phenomenon across south-west WA with disease and dry conditions thought to be the primary cause. Tree decline in south-west tree species that occur around Gelorup including Jarrah, Tuart and WA Peppermint, have been reported over the last two decades.

DWER are investigating tree deaths in the Gelorup area with technical support from the Department of Biodiversity, Conservation and Attractions, to understand the potential causes further.

Why am I noticing changes with my groundwater bore this year compared to previous years?

The south-west of WA has experienced the driest October- December period on record from 2023-2024. In addition, groundwater monitoring has shown that some water levels in the aquifer around the Gelorup area were the lowest on record. Low rainfall in the last two years has also meant that the aquifer has not fully recharged. A consequence of this can be seen with the Five Mile Brook not flowing in 2023 and other low rainfall years. The abrupt end to winter and onset of early hot conditions has also meant that irrigation has occurred earlier and the starting water levels in the shallow aquifer are lower than in previous years.

There is also a high concentration of domestic bores in the Gelorup area accessing a shared water resource. When multiple users are pumping, the cumulative impact of abstraction can cause localised drawdown in aquifers, as water is removed from saturated sediments.

Pump and bore infrastructure may also be contributing to poor performance. Pumps set at shallow depths are more likely to experience problems with supply. Similarly, older bores are more prone to infrastructure problems including collapsed casings, blocked screens, or sands or other decomposing material being drawn into the bore and/or pump.

Some, or all these factors, may be contributing to a reduction in pressure and supply in some domestic bores in the Gelorup area. Individual circumstances will differ based on bore and pump depth and age, water use and the water use of neighbours.

Reported declines in water quality, including discoloration and sediments, are also likely to be the result of high aquifer use and low recharge. Ironstone formations common in the Gelorup area can result in bore and pump clogging and may be evident through brown staining common in the area.

What are the options to assist water supply from my bore?

The following actions may assist in addressing or buffering impacts to water supply and pressure on residential bores in a drying climate:

- Check your bore and pump infrastructure for obstructions, sediment, or clogging.
- Drop your pump or intake deeper into your bore, where depth allows.
- Discuss with an accredited driller or irrigation supplier for options to access deeper aquifer profiles to improve longer term security of supply.
- Automate irrigation pumping to be pre-dawn timing.
- Coordinate with neighbours to stagger your irrigation pumping demands.
- Reduce the frequency and duration of your irrigation.
- Adhere to sprinkler regulations by only irrigating between 1 September to 31 May once a day before 9am or after 6pm.

These FAQ's will be updated as new information becomes available. Please contact the Department of Water and Environmental Regulation's Bunbury office on (08) 9726 4111 with further enquiries.