

Lower Limestone Coast and Morambro Creek prescribed areas

2020–21 Surface water and groundwater status overview



Lower Limestone Coast PWA	Confined aquifer	○
	Unconfined aquifer	○
Morambro PA	Highlands	●
	Lowlands	○
	Surface water	●
	Morambro Creek	●

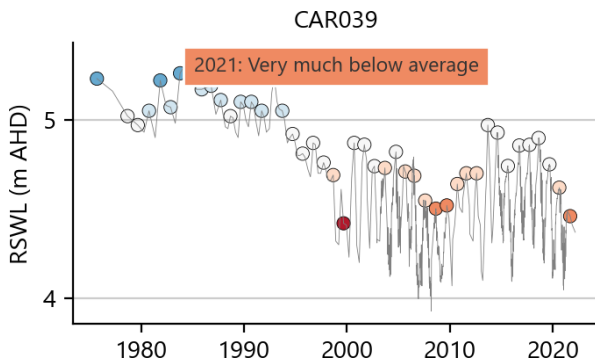
LEGEND

- Highest on record
- Very much above average
- Above average
- Average
- Below average
- Very much below average
- Lowest on record
- Long-term trend

Groundwater levels

In the coastal plains areas in 2021, water levels in the majority of wells in the unconfined aquifer are classified 'Average' or 'Below-average', while in the highlands the majority of wells are classified 'Below average' or lower.

- Water levels in unconfined aquifer wells in the coastal plains are classified mainly at 'Average' or 'Below-average', when compared to their respective historical record.
- In the eastern highlands area, unconfined water levels are classified mostly 'Below average' or lower (96%).
- Five-year trends (2017 to 2021) show water levels are declining in 82% of wells in the coastal plains and declining in 95% of wells in the highlands.
- Observation well CAR39 (below) shows groundwater levels in an area of intensive irrigation for dairy, located south of Mount Gambier.



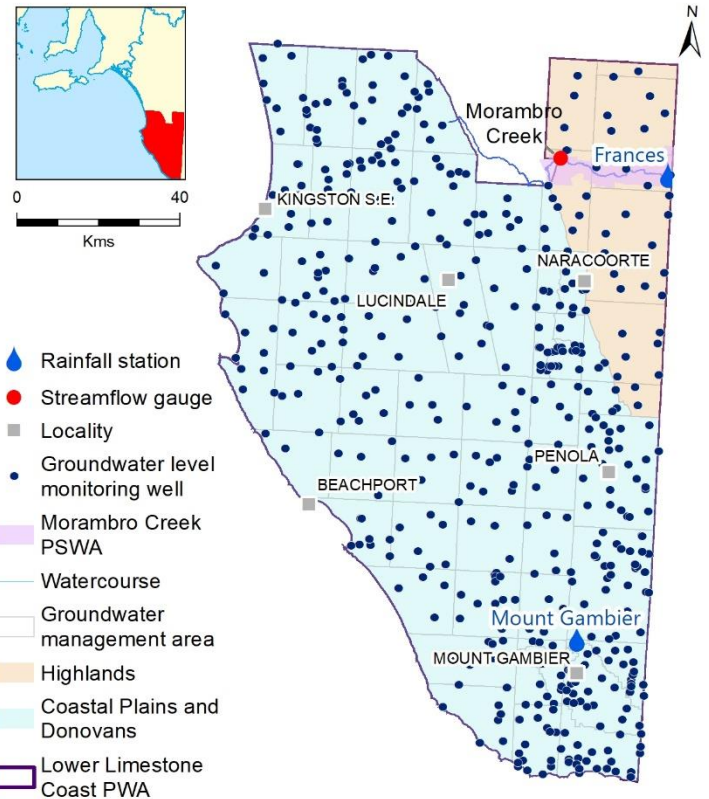
Water levels in the confined aquifer are mainly classified 'Average' in 2021.

- In the confined aquifer, after winter recovery of pressure levels, 40% of wells are classified 'Below average' or lower, when compared to their respective historical record.
- Five-year trends (2017 to 2021) show pressure levels are declining in 69% of wells.

Streamflow

Streamflow is classified 'Lowest on record' with no flow observed in Morambro Creek during 2020–21.

- The data show a declining trend in streamflow for 1979 to 2021.



Regional context

The Lower Limestone Coast Prescribed Wells Area (PWA), Morambro Creek and Nyroca Channel Prescribed Watercourses (PWC), and Morambro Creek Prescribed Surface Water Area (PSWA) are located within the Limestone Coast Landscape region. The Lower Limestone Coast PWA, which is located between Kingston SE, Naracoorte and Mount Gambier, spans an area of around 14,500 km². Two water allocation plans facilitate management of the prescribed resources.

Groundwater resources in the region occur in the shallower unconfined Quaternary and Tertiary limestone aquifers and also in the deeper Tertiary confined sand aquifer. Resource assessment areas for the unconfined aquifer are divided into coastal plains and highlands areas, based on differences in each area's groundwater hydrology.

The Morambro Creek and Nyroca PWCs and Morambro Creek PSWA cover surface water resources in an area approximately 20 km south-east of Padthaway, extending to the border with Victoria, and are managed under the Morambro Creek water allocation plan. 70–90% of the flows in the creek originate from its catchment that extends eastward into Victoria.

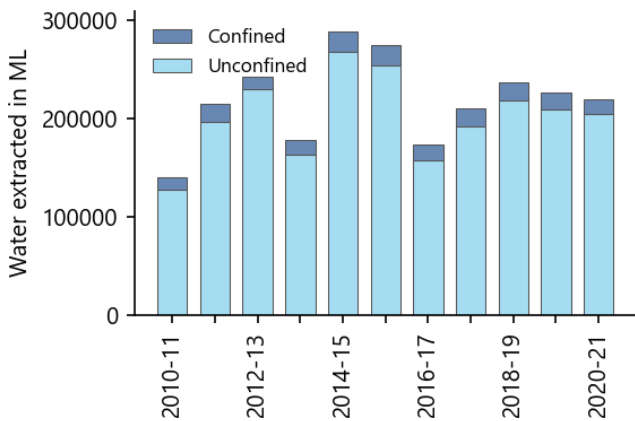


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Water use

In 2020–21, licensed groundwater extractions from the Lower Limestone Coast PWA are 219,868 ML.

- Groundwater is the main source of water for irrigation, industry, stock and domestic uses, and town water supplies.
- Rates of extraction are strongly influenced by total annual rainfall (see Climate section).
- Groundwater extraction from the unconfined aquifer is 204,711 ML, a 2% decrease compared to 2019–20.
- Groundwater extraction from the confined aquifer is 15,157 ML, a 13% decrease compared to 2019–20.



- While not shown above, plantation forest water use is estimated at around 240,000 ML
- In 2020–21, no extraction was possible from surface water sources in Morambro Creek due to lack of flow.

Salinity

In 2021, the median groundwater salinity in the unconfined aquifer in the coastal plains and highlands assessment areas is 674 mg/L and 1,376 mg/L, respectively.

- Salinity is below 1,000 mg/L in 75% of unconfined aquifer wells in the coastal plains; the majority of these wells are located towards the south of the PWA.
- Ten-year trends show decreasing salinity in more than half of wells (53%) across the coastal plains, varying from a decrease of 18.3% per year to an increase of 5.4% per year, with a median rate of 0.1% decrease per year.
- Ten-year trends show increasing salinity in the majority of wells (57%) in the highlands, varying from a decrease of 3.5% per year to an increase of 3.8% per year, with a median rate of 0.2% increase per year.
- In 2021, the salinity ranged from 543 mg/L to 1,300 mg/L in the confined aquifer (median 687 mg/L). The majority of wells (86%) have a salinity of less than 800 mg/L. The 10-year salinity trends vary from a decrease of 0.6% per year to an increase of 0.9% per year, with a median rate of 0.3% increase per year.

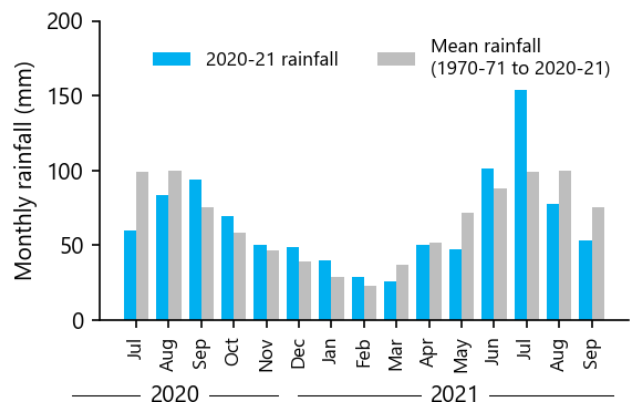
Climate

Surface water and groundwater resources in the prescribed areas of the Limestone Coast Landscape region are highly dependent on rainfall. Below-average winter rainfall results in a reduction in annual streamflow volumes. Below-average summer rainfall can increase the need for irrigation and therefore lead to higher water extraction. These can in turn lead to an increase in streamflow salinity. Conversely, increased rainfall results in increased surface water availability, decreased irrigation extractions, and potentially a decrease in salinity.

Below-average rainfall also results in reduced recharge to the unconfined aquifer and that, coupled with increased water extractions, can cause groundwater levels to decline. Conversely, above-average rainfall can cause increased recharge and lower water extraction, resulting in potential increases in water levels. These changes are often more pronounced in the plains areas where the watertable is relatively shallow. Water levels in deeper confined aquifers are not directly governed by rainfall but can show similar trends to unconfined aquifers during drier or wetter periods due to variations in rates of extraction.

Total annual rainfall in 2020-21 is near the 1970 to 2021 long-term annual average.

- Annual rainfall in the Limestone Coast Landscape region ranges from approximately 750 mm in the southern coastal areas to greater than 400 mm to the north.
- Annual rainfall at 4 of the 5 rainfall stations in the region is below the respective 1970 to 2021 long-term annual average.
- Above-average monthly rainfall occurred during spring 2020 and winter 2021 at most rainfall stations (data for Mount Gambier is presented below).
- The 1970 to 2021 long-term trend in annual rainfall is stable at Mount Gambier but declining at the remaining stations.



More Information

This fact sheet is a high level summary of information provided in the 2020–21 Water Resources Assessment for the prescribed areas of the Limestone Coast. Full details of the assessment can be found at: <https://www.waterconnect.sa.gov.au>

