Lower Limestone Coast and Morambro Creek prescribed areas

2019–20 surface water and groundwater status overview

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

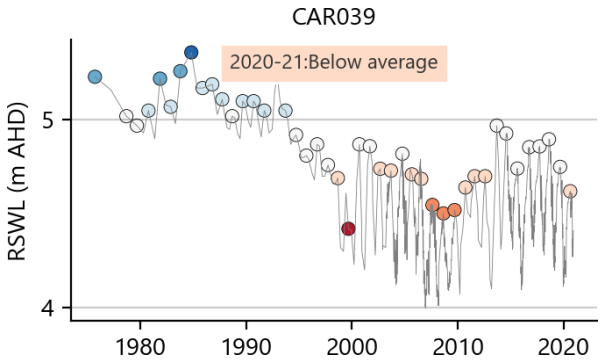
LEGEND

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

Groundwater level

In both the coastal plains and highlands areas in 2020, water levels in the majority of wells in the unconfined aquifer are classified 'Below average' or lower

- Water levels in unconfined aquifer wells in the coastal plains are classified mainly 'Below-average' or lower (60%), while 36% are classified 'Average', when compared to their respective historical record.
- In the eastern highlands area, unconfined water levels are classified mostly 'Below average' or lower (87%), while the remaining 13% are classified 'Average'.
- Five-year trends (2016–20) show water levels are declining in 78% of wells in the coastal plains and declining in 82% of wells in the highlands.
- Observation well CAR39 (below) shows groundwater levels in an area of intensive irrigation for dairy, located south of Mt Gambier.



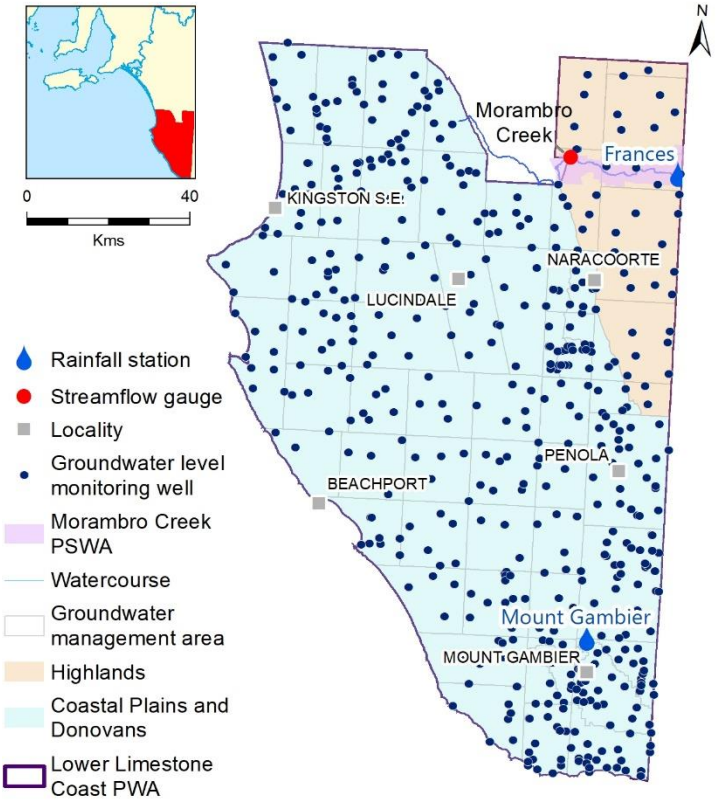
Water levels in the confined aquifer are mainly at average levels in 2020

- In the confined aquifer, winter recovery of pressure levels in 66% of wells are classified 'Average' or higher, when compared to their respective historical record.
- Five-year trends (2016–20) show pressure levels are declining in 51% of wells.

Streamflow

Streamflow was classified 'Lowest on record' for the Morambro Creek gauging station in 2019–20

- There was nil streamflow recorded at the Morambro Creek gauging station in 2019–20.
- Long-term data trends show a decline in streamflow.



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 km^2. 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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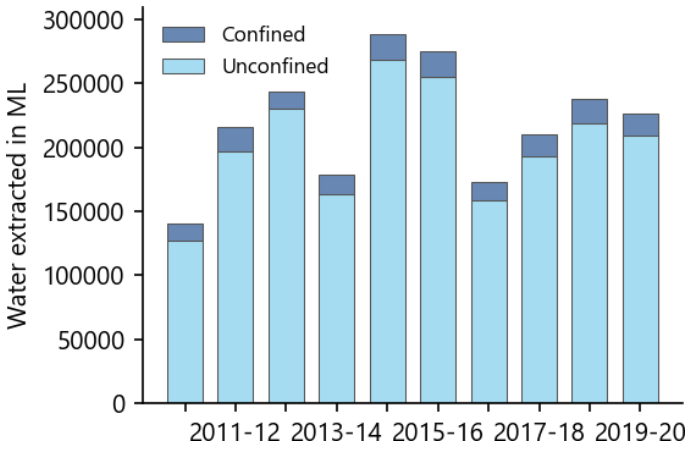
Water use

In 2019–20, licensed groundwater extractions from the unconfined aquifer are 208 965 ML

- Groundwater is used widely 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 208 965 ML, a 4% decrease compared to 2018–19.
- Groundwater extraction from the confined aquifer is 17 331 ML, an 8% increase compared to 2018–19.



- Small volumes of surface water also diverted from Morambro Creek.
- In 2019–20, no extraction was possible from surface water sources in Morambro Creek due to lack of flow.

Salinity

In 2020, the median groundwater salinity in the unconfined aquifer in the coastal plains and highlands assessment areas is 630 mg/L and 1295 mg/L, respectively

- Salinity is below 1000 mg/L in 79% 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 (52%) across the coastal plains, varying from a decrease of 19.84% per year to an increase of 5.75% per year (median rate of 0.07% increase per year).
- Ten-year trends show increasing salinity in the majority of wells (71%) in the highlands, varying from a decrease of 3.07% per year to an increase of 1.43% per year (median rate of 0.14% increase per year).
- In 2020, the salinity ranged from 543 mg/L to 1300 mg/L in the confined aquifer (median 703 mg/L). The majority of wells (67%) have a salinity of less than 800 mg/L. These are primarily around the area of intensive irrigation inland from Beachport and Kingston SE.

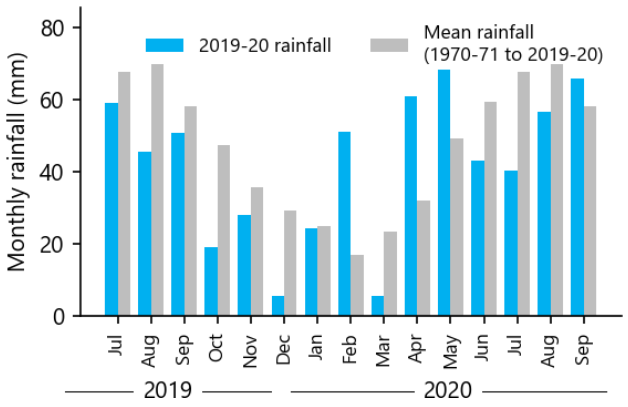
Climate

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 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 purely through variations in rates of extraction.

Total annual rainfall in 2019-20 was near the long-term average (1970-2020)

- Annual rainfall at Mount Gambier was 753 mm (5% above average) and at Frances was 461 mm (10% below-average).
- Above-average rainfall occurred in February and May 2020 at both stations.
- December 2019 and March 2020 were considerably below average at both rainfall stations.
- The long-term trend (1970–20) is stable at Mount Gambier.
- Recent rainfall at Frances is shown for July 2019 to September 2020 (see below) – monthly totals are shown in blue, compared to long-term monthly averages (1970–2020) in grey.



More Information

This fact sheet is a high level summary of information provided in the 2019–20 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

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