

Lower Limestone Coast & Morambro Creek Prescribed Areas

2018–19 surface water and groundwater status overview

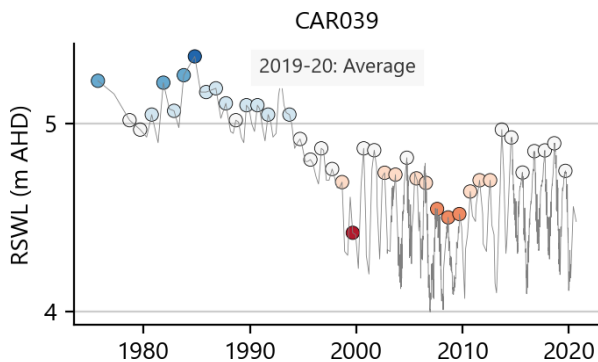


Lower Limestone Coast PWA	Confined aquifer		LEGEND		
	Unconfined aquifer	Highlands		● Highest on record	○ Below average
Morambro PA		Lowlands		● Very much above average	○ Very much below average
	Surface water	Morambro Creek		○ Above average	● Lowest on record
				○ Average	— Long-term trend

Groundwater level

Water levels in the majority of wells in the unconfined aquifer are lower than 'average' in 2019 in both the coastal plains and highlands areas

- Water levels in unconfined aquifer wells in the coastal plains are mainly at 'below-average' or lower levels (52%) or at 'average' levels (46%) compared to their historic record
- In the eastern highlands area, unconfined aquifer wells are mostly at 'below-average' or lower levels (75%) with the remainder (25%) at 'average' levels
- Water level trends from 2015–19 are rising in 71% of wells in the coastal plains, while in the highlands trends are more variable, with 39% of wells showing a rising trend and 45% of wells showing declining trends
- The figure below shows groundwater levels in an area of intensive irrigation for dairy, south of Mt Gambier.



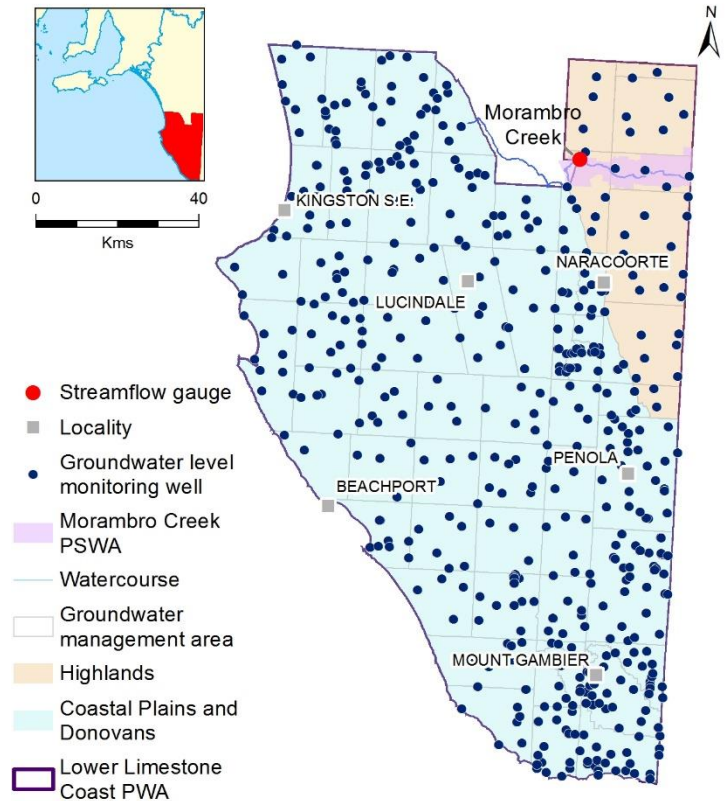
Water levels in the confined aquifer are mainly at 'average' levels in 2019

- In the confined aquifer, pressure levels are mainly at 'average' levels (46%) with some wells at 'above-average' (25%) or 'below-average' (15%) levels compared to their historic record
- Water level trends from 2015–19 are rising in 76% of wells.

Streamflow

Streamflow was 'average' for the Morambro Creek gauging station in 2018–19

- The streamflow was very close to the long-term average annual streamflow, with an annual total of 3310 ML
- Long-term data trends show a decline in streamflow.



Regional context

The Lower Limestone Coast Prescribed Wells Area (PWA) and Morambro Creek are located within the Limestone Coast Landscape Region. The Lower Limestone Coast PWA covers an area of approximately 13 300 km² between Kingston SE, Naracoorte and Mount Gambier and is managed under the Lower Limestone Coast PWA water allocation plan.

Groundwater resources in the region occur in the shallower unconfined Quaternary and Tertiary limestone aquifer and also in the deeper Tertiary confined sand aquifer. Management areas for the unconfined aquifer are separated here into coastal plains and highlands areas based on differing hydrogeological characteristics.

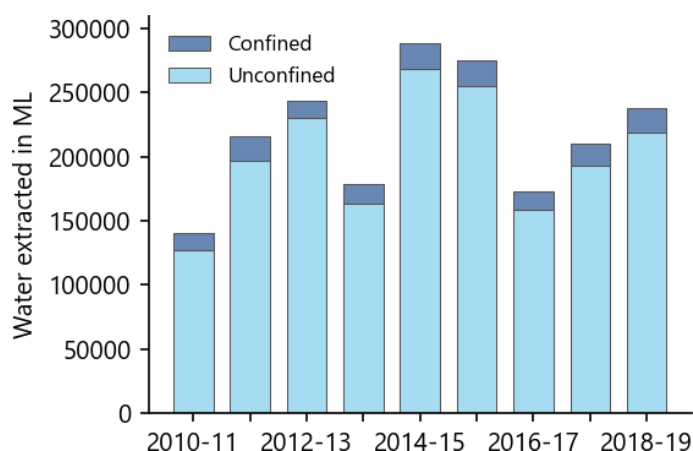
The Morambro Creek and Nyroca Channel Prescribed Watercourses (PWC) and Morambro Creek Prescribed Surface Water Area (PSWA) cover surface water resources in an area approximately 20 km southeast of Padthaway, extending to the border with Victoria, and is managed under the Morambro Creek water allocation plan. 70–90% of the flows in the creek originate from its catchment in Victoria.



Water use

In 2018–19, licensed groundwater extractions from the unconfined aquifer were 218 499 ML

- Groundwater is used widely for irrigation, industry, stock and domestic uses and town water supplies, with small volumes of surface water also diverted from Morambro Creek
- Groundwater extraction from the unconfined aquifer increased by 13% compared to 2017–18, which is likely caused by a reduction in rainfall. The volume of extraction tends to be driven by whether the rainfall was low or high
- Groundwater extraction from the confined aquifer was 18 895 ML in 2018–19, a 6% increase from 2017–18
- In 2018–19, 176 ML was extracted from surface water sources in Morambro Creek.



Salinity

In 2019, the median groundwater salinity in the unconfined aquifer in the coastal plains and highlands was 697 mg/L and 1075 mg/L, respectively

- 72% of unconfined aquifer wells in the coastal plains had salinities below 1000 mg/L, with the majority located in the southern part of the PWA
- Five-year trends in salinity are stable (68% of wells) or decreasing (21% of wells) for the majority of wells in the coastal plains, with only 11% of wells showing rising salinity trends. For the latter, the median rate of increase is 22% over the last five years. The median rate of change for all wells is a decrease in salinity of 2% over the last five years
- In the highlands, the unconfined aquifer salinity ranged from about 350 mg/L to 2000 mg/L. The majority of wells had stable trends from 2015 to 2019 (82% of wells)
- In 2019, the salinity ranged from 614 mg/L to 1166 mg/L in the confined aquifer (median 687 mg/L). The majority of wells (81%) 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-driven trends in water resources

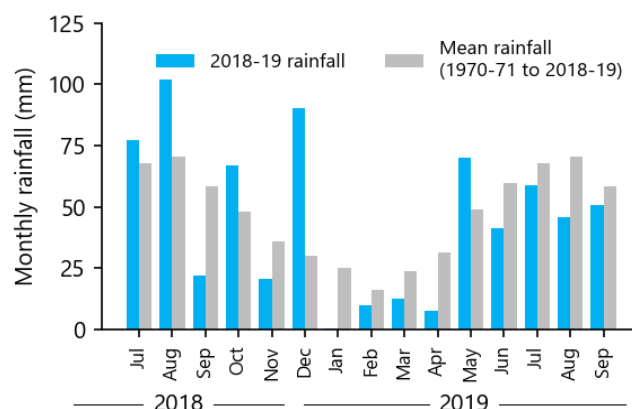
Climate is one of the primary drivers of trends in the local water resources. Surface water and groundwater resources in the prescribed areas of the South East are highly dependent on rainfall.

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. This can in turn lead to an increase in salinity. Conversely, increased rainfall results in increased surface water availability, decreased irrigation extractions, with potential decline or stabilisation of salinity.

Below-average rainfall also results in reduced recharge to the unconfined aquifer. This coupled with increased water extractions can cause groundwater levels to decline even in deeper confined aquifers. Conversely, higher than average rainfall can cause increased recharge and lower irrigation extraction, resulting in potential groundwater level increase. These changes are more pronounced in the plains areas where the watertable is relatively shallow.

Rainfall was lower than average for 2018-19

- Rainfall at Mount Gambier (727 mm) and Frances (521 mm) was 1-2% above average (1970–71 to present)
- Above-average monthly rainfall was recorded in July, August and December 2018 and May 2019 at most rainfall sites, while below-average monthly rainfall was recorded from January to April 2019 for all rainfall stations
- Long-term data trends indicate a decline in rainfall except for areas near Mount Gambier, which show stable trends
- The figure below shows monthly rainfall at Frances in blue for July 2018 to September 2019 compared to monthly averages in grey:



More Information

This fact sheet is a high level summary of information provided in the 2018-19 Water Resources Assessment for the prescribed areas of the South East. Full details of the assessment can be found at: <https://www.waterconnect.sa.gov.au>