

Morambro Creek and Nyroca Channel Prescribed Watercourses and Morambro Creek Prescribed Surface Water Area

2018 Surface water status report



Government
of South Australia

Department for
Environment and Water

2018 Status summary

Morambro Creek and Nyroca Channel PWCs and Morambro Creek PSWA

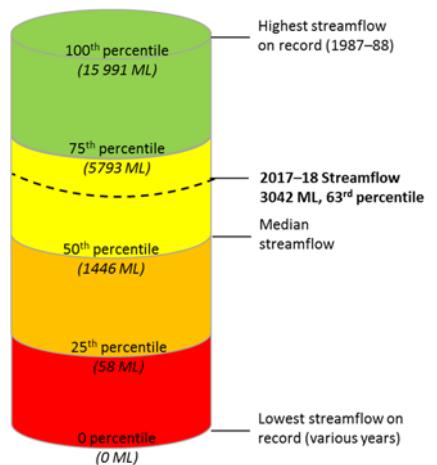
The Morambro Creek and Nyroca Channel Prescribed Watercourses (PWC) and Morambro Creek Prescribed Surface Water Area (PSWA) are referred to collectively as the Prescribed Area (PA). This status is determined for Morambro Creek at a whole of PA scale.



Morambro Creek at a whole of PA scale is assigned a **yellow** surface water status for 2018, with streamflow being higher than the average (median) observed for the region.

Yellow status means that the total annual streamflow was between the 50th and 75th percentile¹ for the period of data availability.

The status presented is based on the streamflow recorded at the Morambro Creek gauging station.



This status report does not seek to evaluate the sustainable limits of the resource. Nor does it make any recommendations on management or monitoring of the resource. These actions are important and occur through separate processes such as prescription and water allocation planning.

¹ The nth percentile of a set of data is the value at which n% of the data is less than this value. For example, if the 75th percentile annual flow is 100 ML, 75% of the years on record had annual flow of less than 100 ML. Median streamflow: 50% of the records were above this value and 50% below.

Rainfall

Figures 1 and 3

Rainfall station	Frances rainfall station (M026007) Reporting period: 1979–80 to 2017–18, in line with streamflow data availability
Annual total ²	576 mm This was 68 mm above the average annual rainfall of 508 mm (1979–80 to 2017–18).
Monthly rainfall summary	July, August, November and December 2016 and May 2017 had above the average monthly rainfall, while the remaining months recorded below the monthly average. The driest months were between January and April 2018. Rainfall between July and December 2017 accounted for almost 70% of the annual rainfall for 2017–18. In November 2017 there was more than twice the average monthly rainfall (81 mm compared to 33 mm).
Spatial distribution	The spatial rainfall distribution for the average annual, five-year average (2013–14 to 2017–18) and 2017–18 are all consistent with rainfall between 400 and 600 mm. The five year average rainfall indicates lower rainfall in the western part of prescribed area.
Rainfall trend	Long-term trend – Annual rainfall volumes recorded at the Frances rainfall station indicate a decreasing long-term trend. Short-term trend – The last five years of rainfall indicate an increasing trend.

Streamflow

Figures 2 and 4

Streamflow gauging stations	Morambro Creek gauging station (A2390531) at Bordertown–Naracoorte Road Bridge is the sole streamflow gauging station located within the PA. Streamflow data availability: 1979–80 to 2017–18 Streamflow was historically recorded at Cockatoo Lake, 15 km downstream of Morambro Creek gauging station, but this site has been decommissioned. Data from this site is not presented in this report.
Annual total ²	The Morambro Creek gauging station annual streamflow: 3042 ML, just below the average (mean) annual streamflow of 3415 ML (1979–80 to 2017–18). Total volume reported is an underestimation, as there is a period of missing data between early July and early August 2018.

² For the water-use year 1 July 2017 to 30 June 2018

Monthly streamflow summary	<p>Historically, the majority of streamflow in the Morambro Creek PA occurs between June and October and typically accounts for over 90% of the total annual flow in any given year.</p> <p>Streamflow in August 2017 was much higher than average (2757 ML compared to 940 ML).</p> <p>Morambro Creek is an ephemeral system and flows are not typically recorded between December and May. In 2017–18, no flow was recorded in July and November 2017 and in January to June 2018.</p>
Streamflow trend	<p>Long-term trend – Annual streamflow volumes recorded at the Morambro Creek gauging station (1979–80 to 2017–18) indicate a declining long-term trend.</p> <p>Short-term trend – The last five years of streamflow indicate an increasing trend primarily due to much higher-than-average rainfall in 2016–17.</p>

Water extraction

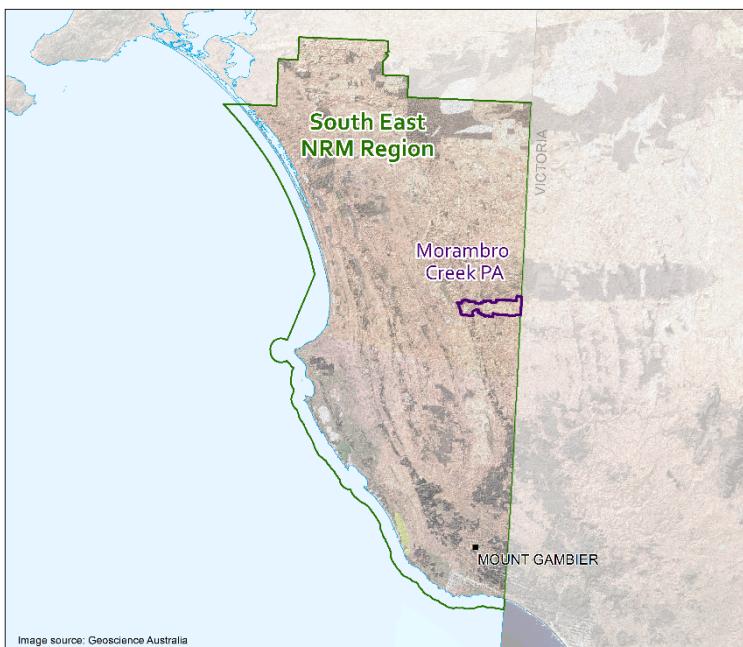
Surface water licences	<p>Low reliability of streamflow in Morambro Creek has meant there has been no systematic development of the surface water resource.</p> <p>Licensees are limited to a rate of take once specific flow thresholds are reached.</p> <p>Currently there are four licences to take and/or divert water within the PA.</p>
Surface water extraction ²	<p>Flow was recorded in Morambro Creek in 2017–18 and this enabled extraction for irrigation. Extraction+ from licensed surface water sources was 152 ML (43% of the allocated volume of 354 ML).</p>
Resource volume ²	<p>Total resource volume is 3195 ML:</p> <ul style="list-style-type: none"> • Streamflow recorded at the Morambro Creek gauging station: 3042 ML • Surface water extraction: 152 ML. <p>Surface water extraction was approximately 5% of the total resource volume.</p>

Surface water salinity

Salinity monitoring	Morambro Creek gauging station (A2390531) – data available from 2007
General observations	<p>Salinity increases during sustained summer events while decreasing throughout the winter months as a result of higher dilution capacity as flow volumes increase.</p> <p>Due to the ephemeral nature of Morambro Creek, at times the stream is dry and salinity cannot be recorded.</p>
Salinity: 2017–18 water-use year	Highest salinity recorded at Morambro Creek: 268 mg/L in late-October 2017
Salinity: 2006–7 to 2017–18	The majority of the record is less than 250 mg/L, indicating a very fresh section of watercourse. Note that the data record has not been represented graphically as the ephemerality of the system has led to an interrupted record.

² For the water-use year 1 July 2017 to 30 June 2018

Regional setting



The Morambro Creek and Nyroca Channel Prescribed Watercourses (PWC) and Morambro Creek Prescribed Surface Water Area (PSWA), referred to collectively as the Prescribed Area (PA), is located approximately 280 km south-east of Adelaide, with its eastern boundary along the Victoria border and covering an area of 225 km².

Surface water and watercourses in the PA have been prescribed under South Australia's Water Resources Act 1997. A water allocation plan (WAP) adopted in 2006 provides for sustainable management of these water resources.

The topography of the PA is predominantly characterised by flat plains with slight variations in elevation occurring in the western-most section. The main watercourse within the PA is the Morambro Creek, an ephemeral system with headwaters originating in the Wimmera region of western Victoria, travelling east to west through the PA, before terminating in Cockatoo Lake. From here, a spillway allows water to enter the Nyroca Channel, flowing for approximately 30 km in a north-westerly direction before discharging into the Marcollat watercourse. The status of surface water resources in the Morambro Creek PA is highly dependent on rainfall, with trends in streamflow and salinity primarily climate driven.

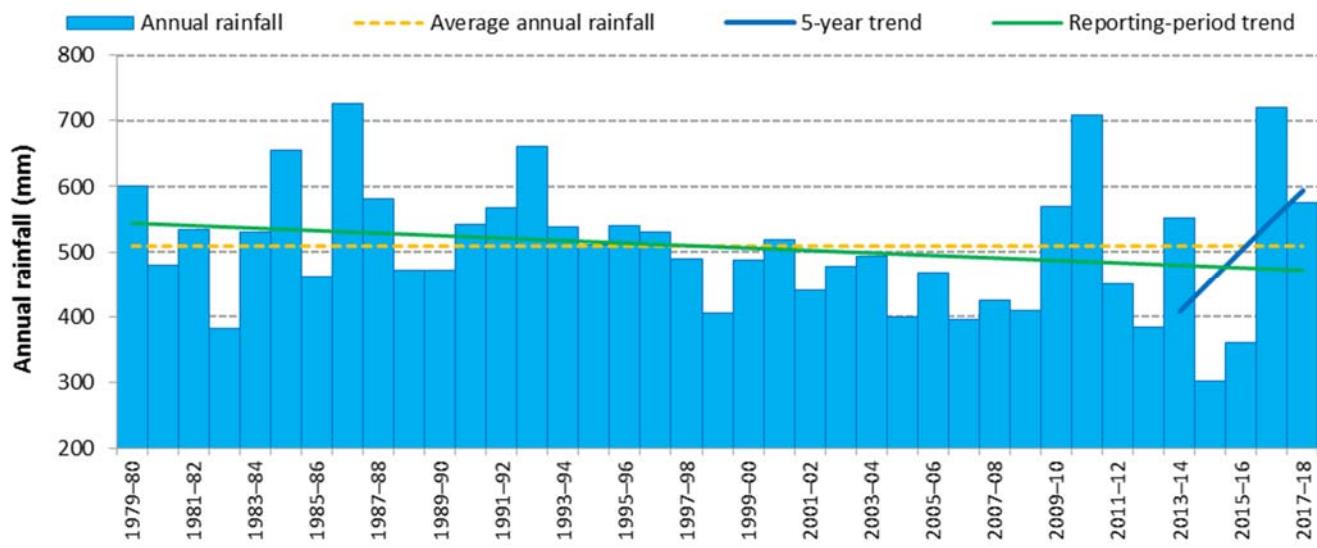


Figure 1. Annual rainfall for 1979–80 to 2017–18 at Frances rainfall station (M026007)

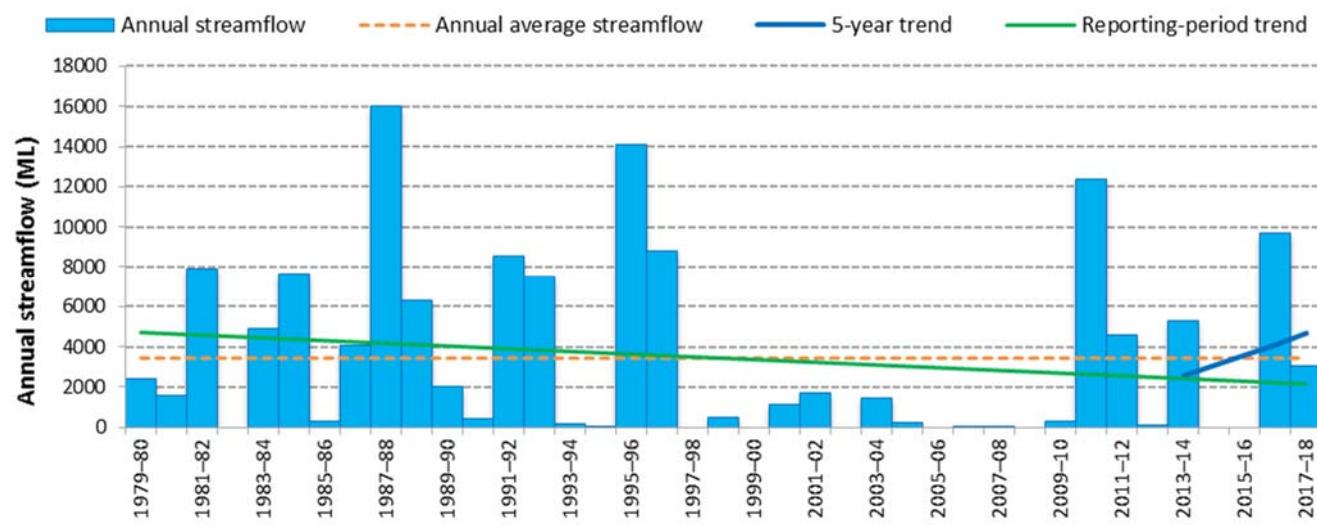


Figure 2. Annual streamflow for 1979–80 to 2017–18 at Morambro Creek gauging station (A2390531)

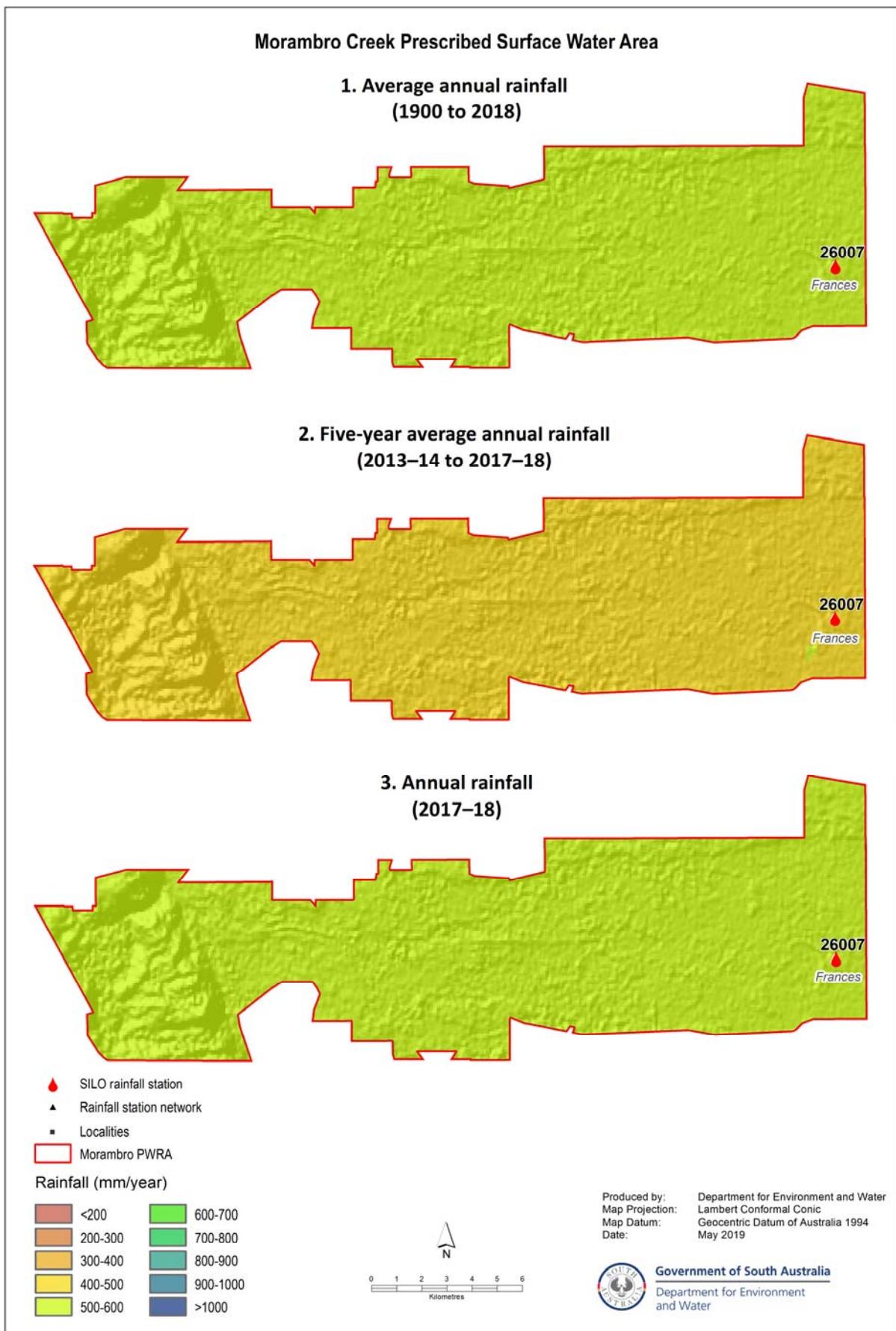


Figure 3. (1) Annual average rainfall (2) five-year average annual rainfall and (3) annual rainfall for 2017–18 in the Morambro Creek PA³

³ Data sources: SILO interpolated point and gridded datasets, available at <https://legacy.longpaddock.qld.gov.au/silo/>.

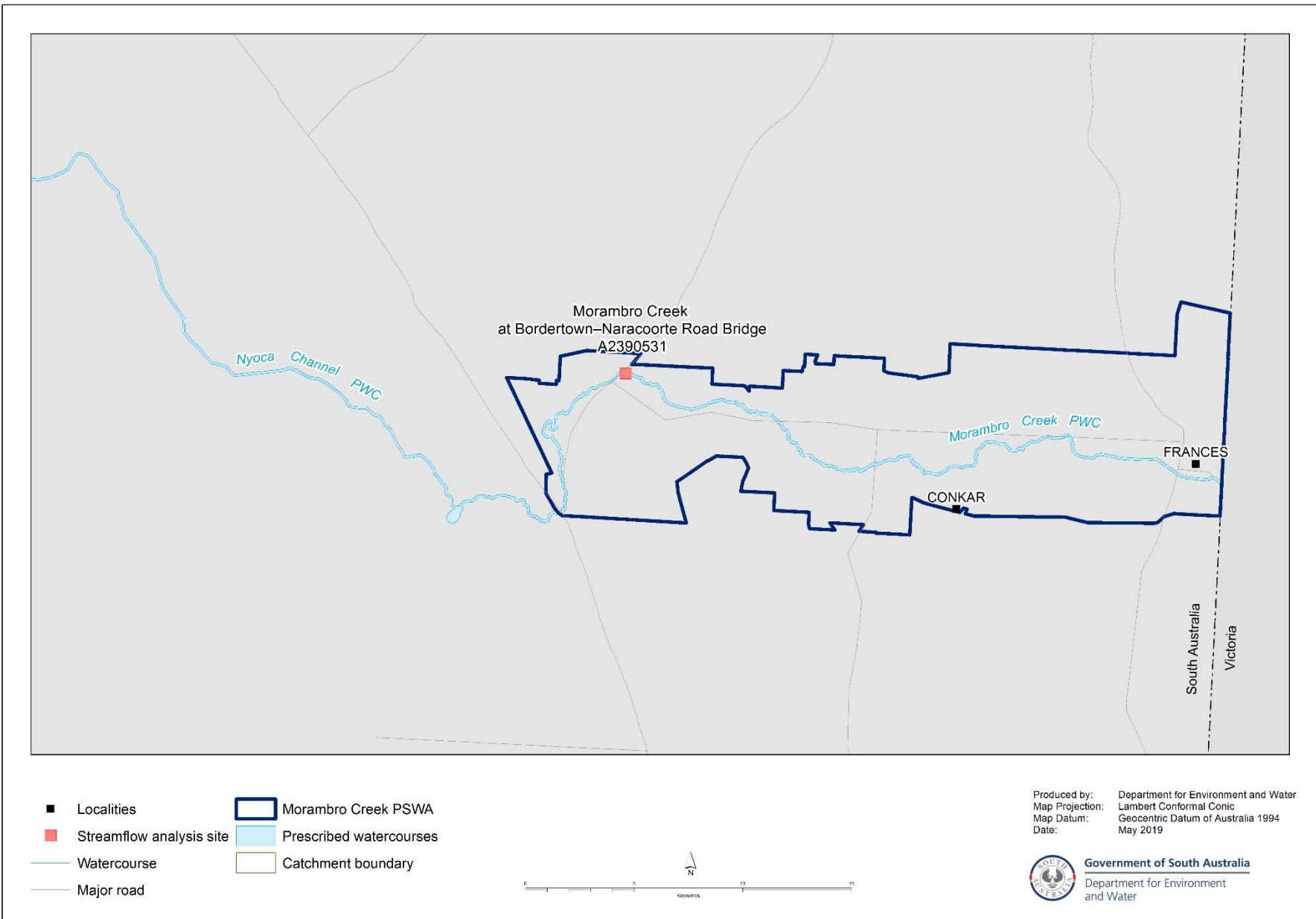


Figure 4. Streamflow gauging station in the Morambro Creek PA

More information

The status of the Morambro Creek PA was determined by expressing the annual Morambro Creek streamflow for 2017–18 as a percentile of the total annual streamflow for the period (1979–80 to 2017–18).

The 2017–18 streamflow was ranked as the 63rd percentile or 15th largest flow in the 39 years of streamflow data. This is based on the recorded streamflow of 3042 ML, (which includes a period of missing data between early July to early August 2017).

To view descriptions for all status symbols, and to review the full historical record of the gauging stations (streamflow and salinity), please visit the *Water Resource Assessments* page at www.waterconnect.sa.gov.au.

Further information may be found among the [Frequently Asked Questions](#) on the *Water Resource Assessments* page of www.waterconnect.sa.gov.au.

Rainfall data used in this report are sourced from the SILO interpolated point and gridded datasets, which are calculated from Bureau of Meteorology daily and monthly rainfall measurements and are available online at <https://legacy.longpaddock.qld.gov.au/silo/>.

To view the *Morambro Creek and Nyoica Channel PWCs and Morambro Creek PSWA Surface water status report 2010–11*, which includes background information on rainfall, streamflow, salinity, water extraction and relevant water-dependent ecosystems, please visit the *Water Resource Assessments* page on www.waterconnect.sa.gov.au.

Streamflow and salinity data are available via WaterConnect at <http://www.waterconnect.sa.gov.au>.

For further details about the *Morambro Creek and Nyoica Channel PWCs and Morambro Creek PSWA*, please see the *Water Allocation Plan for the Morambro Creek and Nyoica Channel Prescribed Watercourses including Cockatoo Lake and the Prescribed Surface Water Area* on the Natural Resources South East site at <https://www.naturalresources.sa.gov.au/southeast/home>.

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