

Kangaroo Flat region of the Northern Adelaide Plains Prescribed Wells Area T2 aquifer

2018 Groundwater level and salinity status
report



**Government
of South Australia**

Department for
Environment and Water

2018 Status summary

Northern Adelaide Plains PWA

T2 aquifer of the Kangaroo Flat Region



The T2 aquifer of the Kangaroo Flat region of the Northern Adelaide Plains (NAP) Prescribed Wells Area (PWA) has been assigned an **orange** status for 2018 because moderate adverse trends have been observed over the past five years.

The status is based on five-year trends: over the period 2014–18, all wells show declining groundwater levels and one well shows its lowest level on record.

The status is based on five-year trends. To view the *Kangaroo Flat region of the Northern Adelaide Plains PWA groundwater level and salinity status report 2009–10*, which includes long-term trends in rainfall, groundwater levels and salinity, please visit the [Water Resource Assessments](#) page on WaterConnect. To download the full record of groundwater level and salinity data for the Northern Adelaide Plains PWA, please visit the *Groundwater Data* page on [WaterConnect](#).

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, but occur through separate processes such as prescription and water allocation planning.

Rainfall

See Figures 1 and 2

Rainfall station	Gawler Bureau of Meteorology (BoM) rainfall station, number 23078, is located immediately south-east of the Kangaroo Flat region.
Annual total ¹	350 mm
	81 mm (19%) less than the five-year average of 431 mm
	94 mm (21%) less than the long-term (1900–2018) average of 444 mm

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

Groundwater extraction

See Figure 3

Allocated volume ^{1,2}	2689 ML
Licensed groundwater extractions ^{1,3}	876 ML
Extraction volume comparison	50% greater than the previous year 7% less than the five-year average

Groundwater level

See Figure 4

Five-year trend: 2014–18	All 4 wells show declining trends of 0.11–0.35 m/y (median of 0.14 m/y) 1 of these wells also shows its lowest level on record
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Groundwater salinity

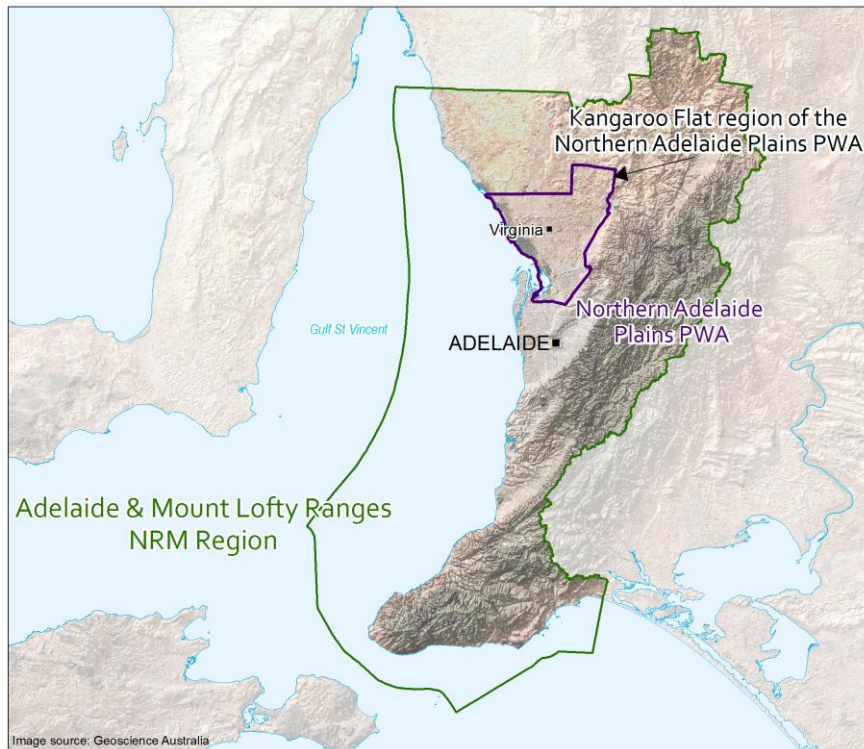
See Figures 5 and 6

2018 salinity	1114–4257 mg/L (15 wells; median of 1552 mg/L)
Five-year trend: 2014–18	All 3 wells are stable

² Allocated volume does not include rollover, carry over or recharge allocations

³ Total licensed extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)

Regional setting



The Kangaroo Flat region is located in the north-east area of the NAP PWA, within the Adelaide and Mount Lofty Ranges Natural Resources Management Region. It encompasses an area of around 80 km². Groundwater use in the Kangaroo Flat region was restricted in 2000 and the area was prescribed in 2004—as an addition to the NAP PWA—under South Australia's *Natural Resources Management Act 2004*. A water allocation plan provides for sustainable management of the groundwater resources.

The status of the Kangaroo Flat region's groundwater resources is reported here independently of the Northern Adelaide Plains PWA T2 aquifer 2018 Groundwater level and salinity status report.

The Kangaroo Flat region contains Quaternary and Tertiary sediments that extend to a depth of around 100 m below ground surface. These sediments can be broadly divided into four regional hydrogeological units: the Hindmarsh Clay aquitard, the Carisbrooke Sand (Q4) aquifer, a semi-confining layer consisting of weathered Quaternary and Tertiary sediments, and the confined T2 aquifer. The T2 aquifer comprises limestones and sands of the lower Port Willunga Formation, and is directly overlain by the Q4 aquifer and the Hindmarsh Clay aquitard. In the Kangaroo Flat region, groundwater is extracted only from the T2 aquifer, which is the focus of this report.

The two main sources of groundwater recharge to the T2 aquifer are thought to be lateral inflow from the adjacent fractured rock aquifers of the Mount Lofty Ranges and the infiltration of surface water from streams that flow onto the plains from the ranges. Outflows from the groundwater system occur through groundwater extraction and discharge to Gulf St Vincent.

A localised cone of depression in the T2 aquifer, centred in the south-western corner of the region, has been observed since 2011 on a seasonal basis as the result of the intensive spring/early-summer extraction regime.

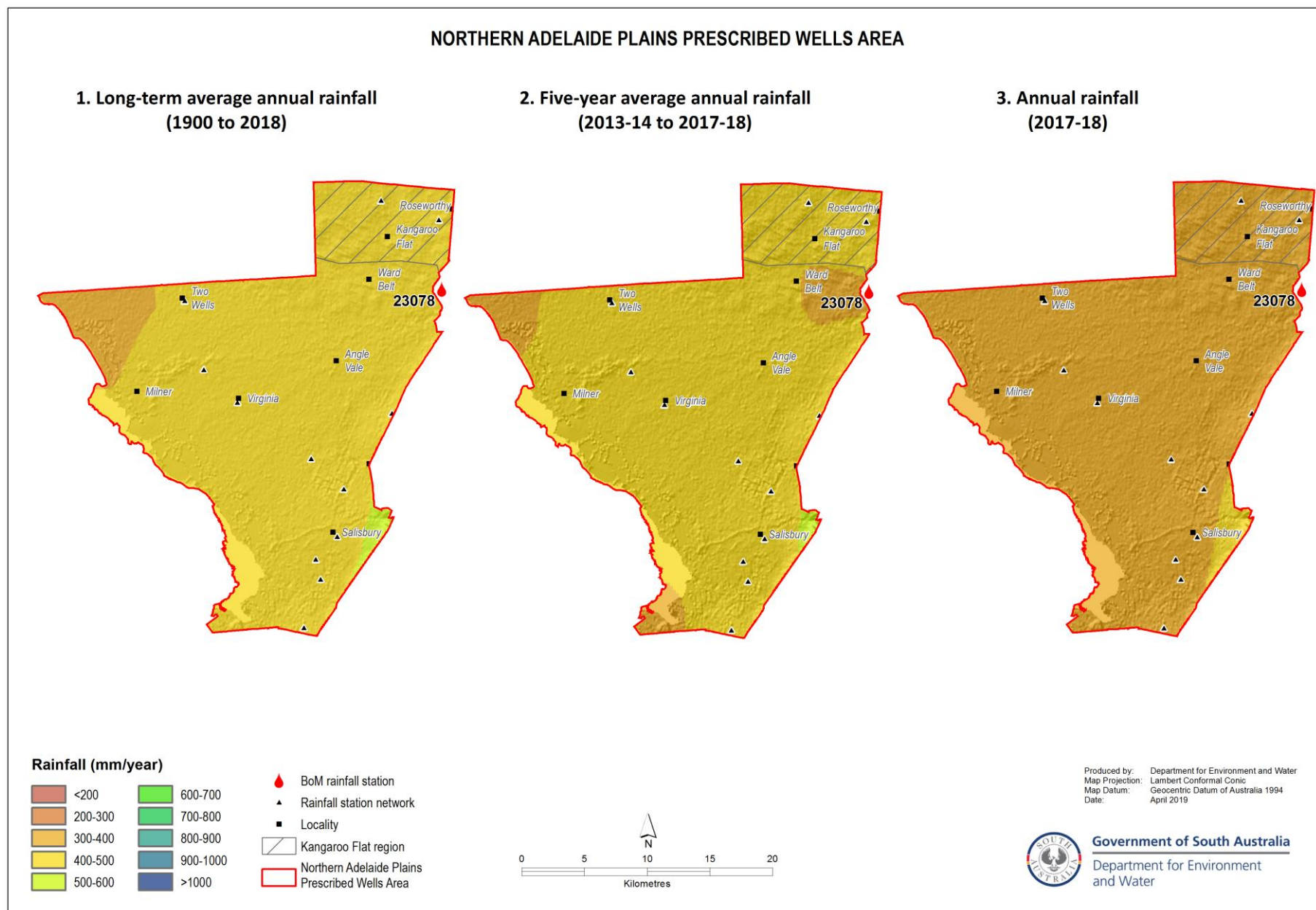


Figure 1. Spatial distribution of (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall⁴

⁴ Data sources: SILO interpolated point and gridded datasets, available at <https://legacy.longpaddock.qld.gov.au/silo/> – see [More information](#)

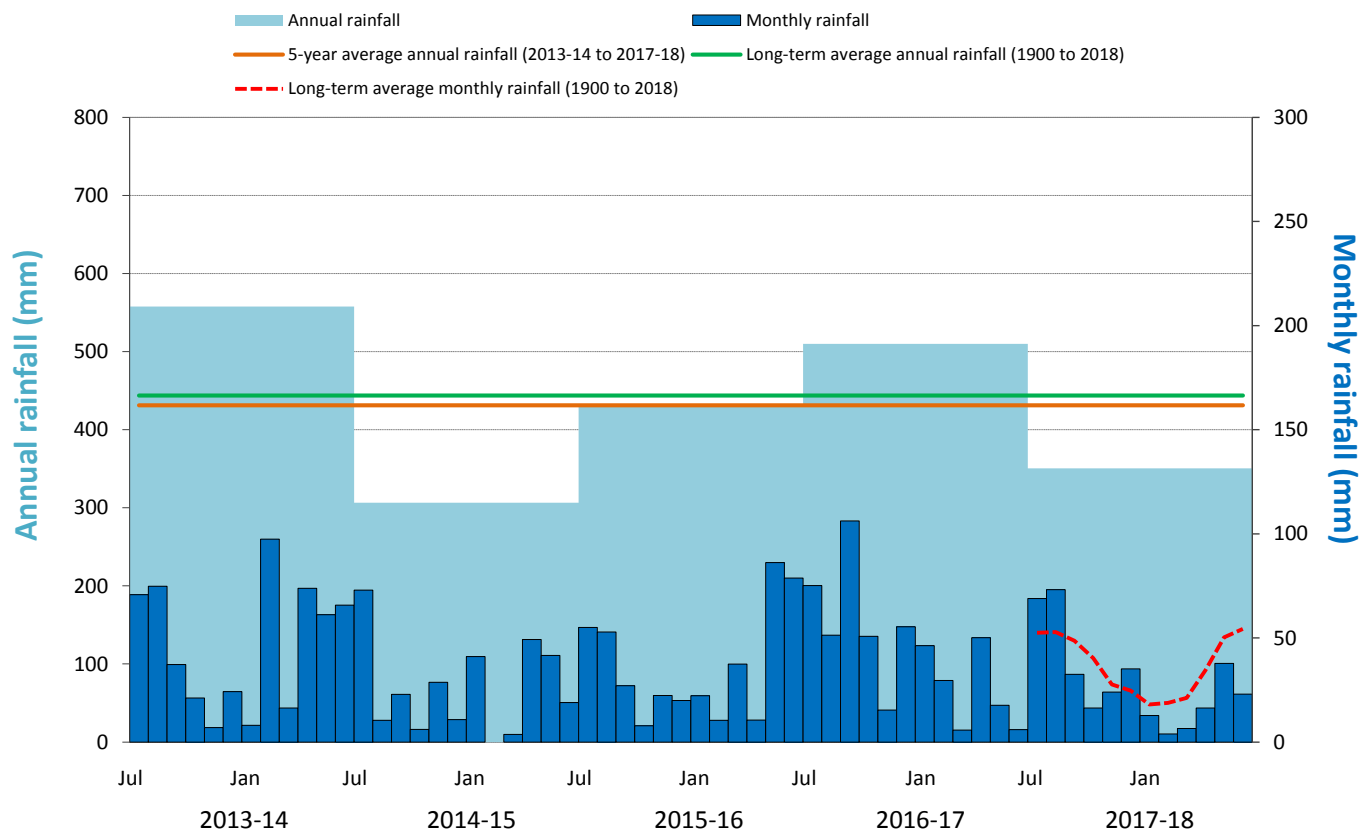


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Gawler (BoM Station 23078) ⁵

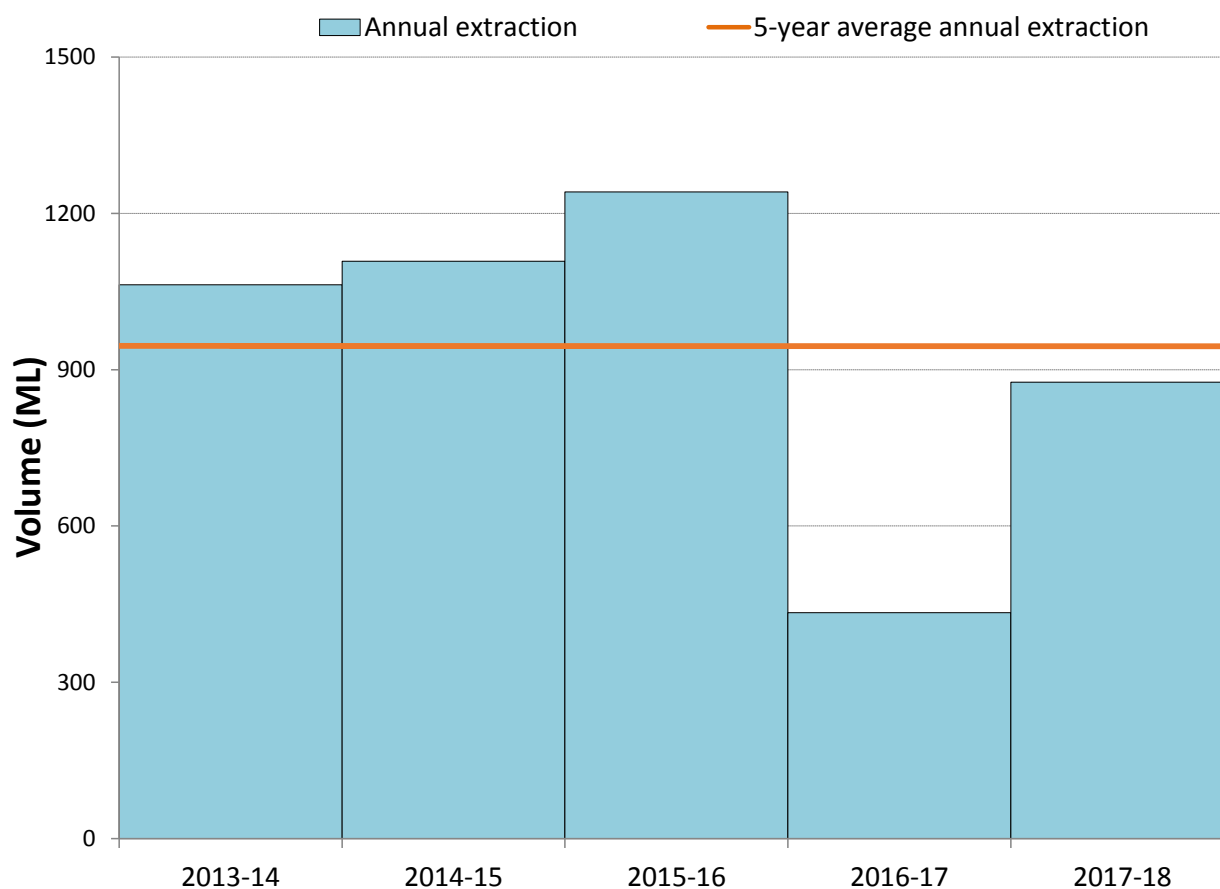


Figure 3. Licensed groundwater extraction volumes⁶ for the past five water-use years

⁵ Data source: SILO Patched Point Dataset, available <https://legacy.longpaddock.qld.gov.au/silo> – see [More information](#)

⁶ Total licensed extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)

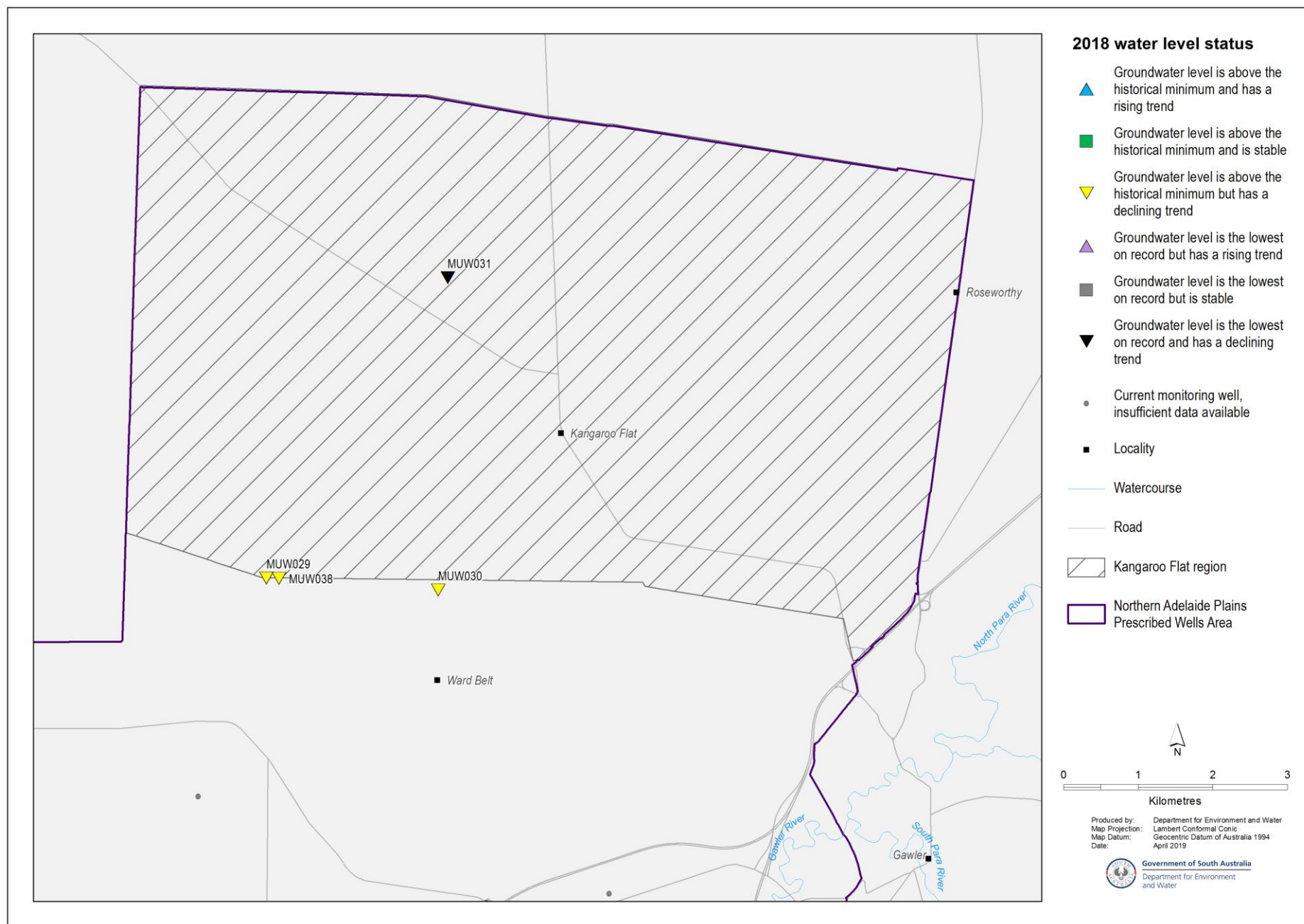


Figure 4. Five-year trends (2014–18) in groundwater levels: T2 aquifer

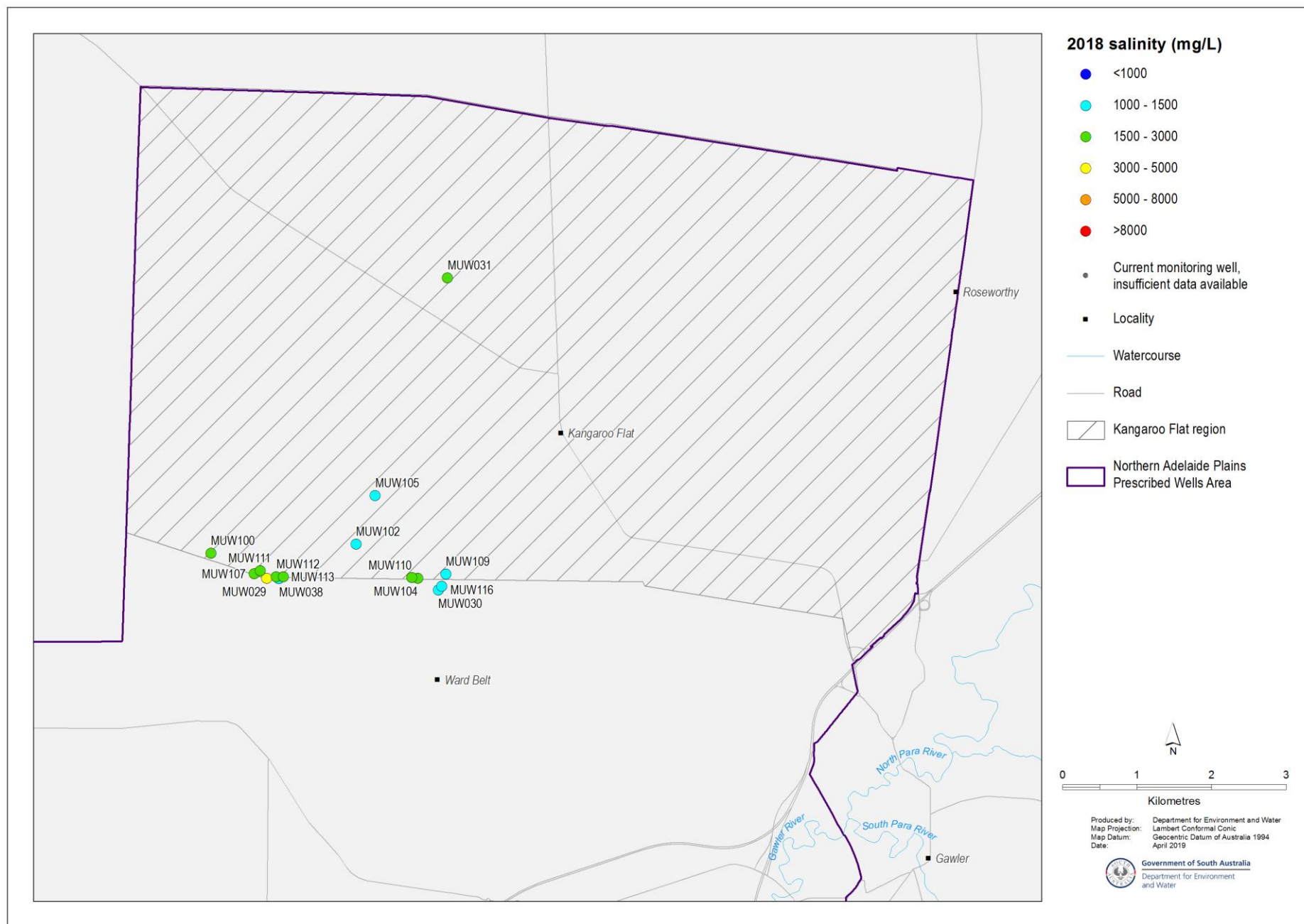


Figure 5. 2018 groundwater salinities: T2 aquifer

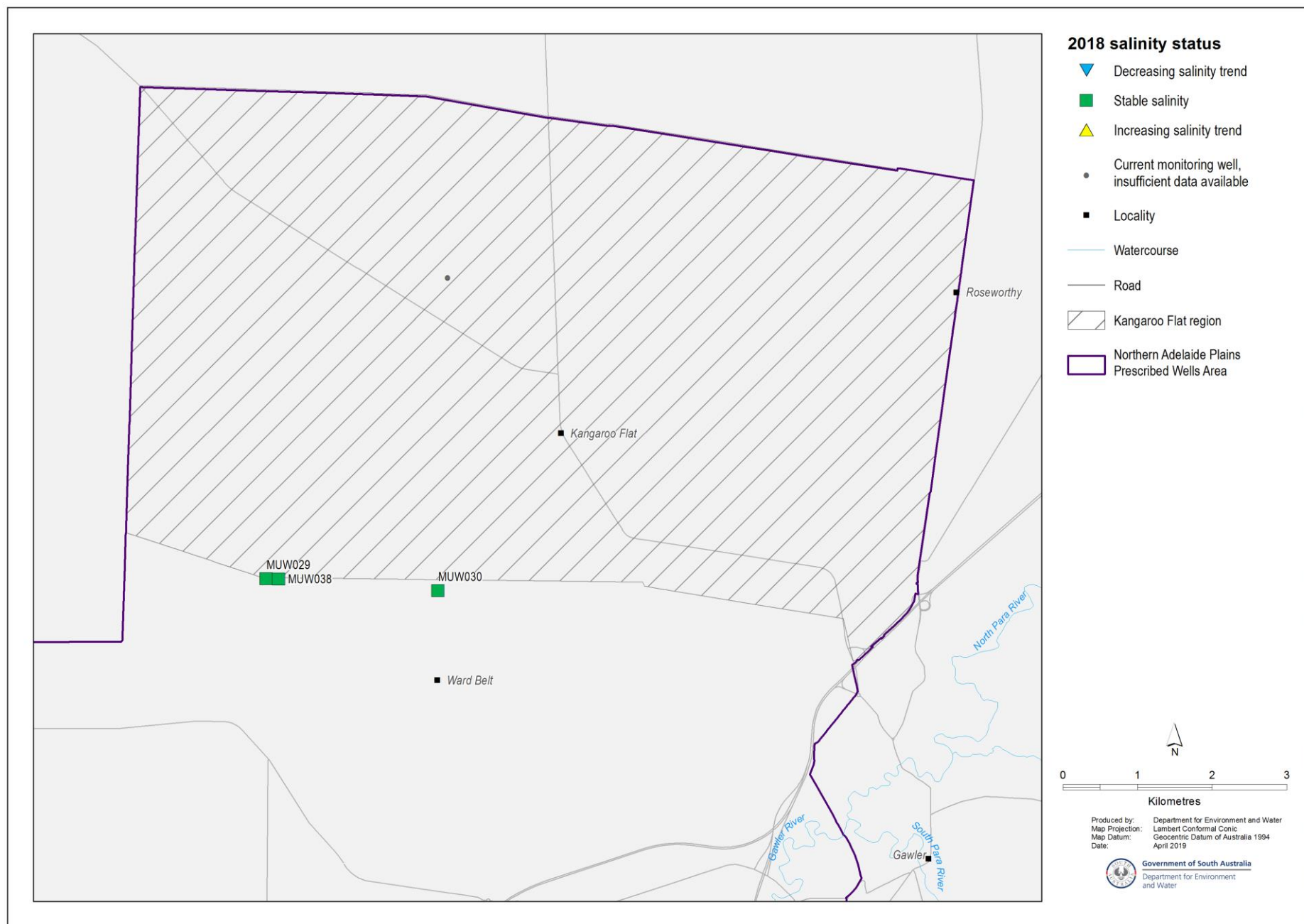


Figure 6. Five-year trends (2014–18) in groundwater salinities: T2 aquifer

More information

To determine the status of the T2 aquifer in the Kangaroo Flat region for 2018, the trends in groundwater levels and salinities over the past five years (2014 to 2018, inclusive) were analysed, in contrast to the year-to-year assessments that have been used in *Groundwater level and salinity status reports* published prior to 2015. Please visit the [Frequently Asked Questions](#) on the *Water Resource Assessments* page on WaterConnect for more detail on the current method of evaluating the status of groundwater resources.

To view descriptions for all status symbols, please visit the *Water Resource Assessments* page on [WaterConnect](#).

For additional information related to monitoring wells nomenclature, please refer to the *Well Details* page on [WaterConnect](#).

The licensed groundwater extraction for the 2017–18 water-use year is based on the best data available as of February 2019 and could be subject to change, as some extraction volumes may be in the process of being verified.

For information completeness and consistency across all the groundwater and salinity status reports, the legend on each map herein shows the full range of water level and salinity status that could possibly be reported. However, the measured data that appear on each map may not span this full range.

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

To view the *Kangaroo Flat region of the Northern Adelaide Plains PWA groundwater level and salinity status report 2011*, which includes background information on hydrogeology, rainfall and relevant groundwater-dependent ecosystems, please visit [WaterConnect](#). To view all past published *Groundwater level and salinity status reports*, please visit the [Water Resource Assessments](#) page on WaterConnect.

To download groundwater level and salinity data from monitoring wells within the Kangaroo Flat region, please visit the *Groundwater Data* page under the Data Systems tab on [WaterConnect](#).

For further details about the Northern Adelaide Plains PWA, please see the *Water Allocation Plan for the Northern Adelaide Plains Prescribed Wells Area* on the Natural Resources Adelaide and Mount Lofty Ranges [website](#).

Units of Measurement

mm	millimetre
ML	megalitre
m/y	metres per year
mg/L	milligrams per litre
mg/L/y	milligrams per litre per year
mm/y	millimetres per year

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