

Prescribed Wells Area of the South East Confined aquifer

2018 Groundwater level and salinity status
report



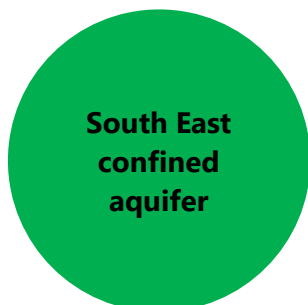
**Government
of South Australia**

Department for
Environment and Water

2018 Status summary

South East PWAs

South East confined aquifer



The South East confined aquifer of the South East Prescribed Wells Areas (PWAs) has been assigned a **green** status for 2018 because positive trends have been observed over the past five years.

The status is based on five-year trends: over the period 2014–18, 82% of wells show rising or stable groundwater levels and all wells show stable salinities.

The status is based on five-year trends. For long-term trends in rainfall, groundwater levels and salinity, please visit the [Water Resource Assessments](#) page on WaterConnect to view each of the Tintinara–Coonalpyn, Tatiara, Lower Limestone Coast and Padthaway PWA’s groundwater level and salinity status reports (2009-10). To download the full record of groundwater level and salinity data for all of the South East’s 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, 2 and 3

Rainfall station	Mount Gambier Aerodrome Bureau of Meteorology (BoM) rainfall station, number 26021, is located approximately 8 km north of Mt Gambier in the Lower Limestone Coast PWA.
Annual total ¹	793 mm 28 mm (4%) greater than the five-year average of 765 mm 71 mm (10%) greater than the long-term (1900–2018) average of 722 mm
Rainfall station	Keith BoM rainfall station, number 25507, is located near the township of Keith in the western part of the Tatiara PWA.
Annual total ¹	432 mm 12 mm (3%) greater than the five-year average of 420 mm 31 mm (7%) less than the long-term (1900–2018) average of 463 mm

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

Groundwater extraction

See Figure 4

Allocated volume ^{2,3}	60 715 ML
Licensed groundwater extractions ^{2,4,5}	24 138 ML Lower Limestone Coast, Tatiara and Tintinara–Coonalpyn PWAs totalled 17 856 ML (74%), 368 ML (2%) and 5913 ML (24%), respectively
Extraction volume comparison	15% greater than the previous year 1% less than the five-year average

Groundwater level

See Figure 5

Five-year trend: 2014–18	
Lower Limestone Coast PWA	67 out of 99 wells (68%) show rising trends, at rates of 0.02–1.1 m/y (median of 0.12 m/y) 22 wells (22%) are stable 10 wells (10%) show declining trends, at rates of 0.02–0.51 m/y (median of 0.04 m/y); 2 of these wells show their lowest level on record
Tintinara–Coonalpyn PWA	19 out of 34 wells (56%) show rising trends, at rates of 0.07–0.63 m/y (median of 0.21 m/y) 3 wells (9%) are stable 12 wells (35%) show declining trends, at rates of 0.08–1.0 m/y (median of 0.45 m/y); 4 of these wells show their lowest level on record
Padthaway PWA	All 3 wells show a rising trend, at rates of 0.19, 0.21 and 0.22 m/y
Tatiara PWA	3 out of 5 wells (60%) show declining trends, at rates of 0.02, 0.03 and 0.04 m/y; 2 of these wells show their lowest level on record 1 well (20%) is stable 1 well (20%) shows a rising trend, at a rate of 0.05 m/y

Groundwater salinity

See Figures 6 and 7

2018 salinity	639–4008 mg/L (40 wells; median of 764 mg/L)
Five-year trend: 2014–18	All 30 wells are stable

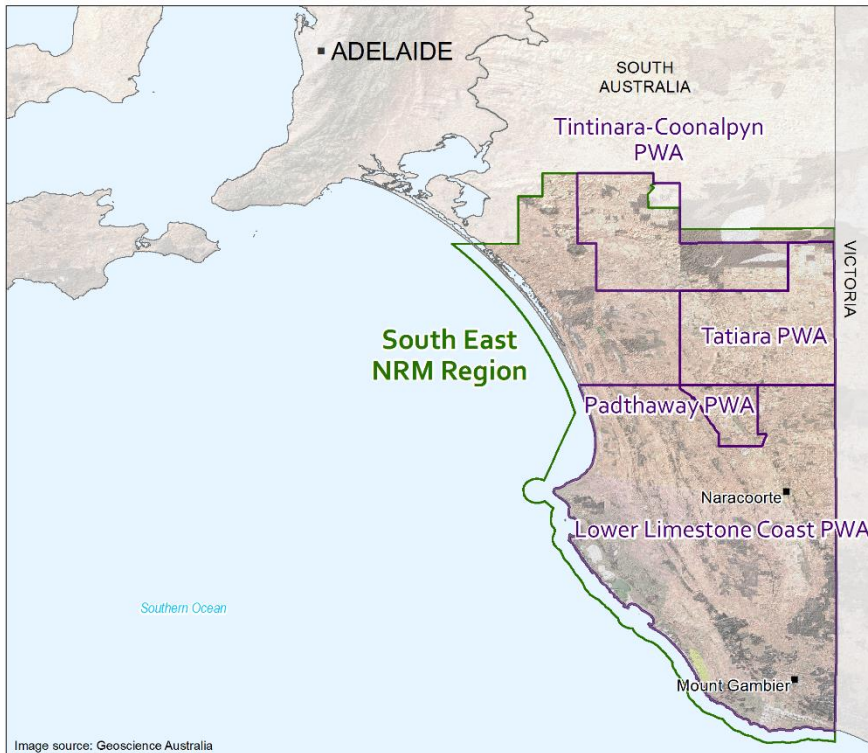
² For the water-use year 1 July 2017 to 30 June 2018

³ Allocated volume does not include rollover, carry over or recharge allocations

⁴ Total licensed extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)

⁵ There are no licensed extractions for the confined aquifer of the Padthaway PWA

Regional setting



There are four PWAs in the South East Natural Resources Management Region: Tintinara–Coonalpyn, Tatiara, Padthaway and Lower Limestone Coast. It is a groundwater resource that is prescribed under South Australia’s *Natural Resources Management Act 2004* and water allocation plans provide for their sustainable management.

The PWAs of the South East are underlain by sediments of the Murray and Gambier Basins that form: (1) an unconfined aquifer comprising various Quaternary and Tertiary calcareous sandstones and limestones; and (2) an underlying confined Tertiary aquifer comprising non-calcareous quartz sand. In the Tintinara–Coonalpyn PWA, the confined aquifer consists of Murray Basin sediments—the fossiliferous limestone and marl of the Buccleuch Formation on the coastal plain, and the Renmark Group in the highlands. Across the Tatiara PWA, the confined aquifer primarily consists of the Renmark Group, as the Buccleuch Formation is relatively thin. In the Lower Limestone Coast PWA, the confined aquifer is comprised of the Dilwyn Formation of the Gambier Basin, which is the equivalent of the Renmark Group in the Murray Basin. The Dilwyn Formation is generally thin or absent in the Padthaway PWA.

Groundwater in the confined aquifer is recharged around the topographic highs of the Dundas Plateau in Victoria (Fig. 5). From there, the groundwater flows radially westward and southward to the coast and northward. Artesian conditions exist in the west and along the southern coast.

Although the confined aquifer does not receive direct recharge from local rainfall, the intensity and timing of rainfall and related variations in rates of groundwater extraction may have an effect on groundwater levels in the confined aquifer. For example, if the South East Natural Resources Management Region experiences above-average rainfall during the irrigation season, this may result in less groundwater being extracted from the confined aquifer, and therefore groundwater levels may rise. Conversely, below-average rainfall may result in increased rates of groundwater extraction and groundwater levels may decline.

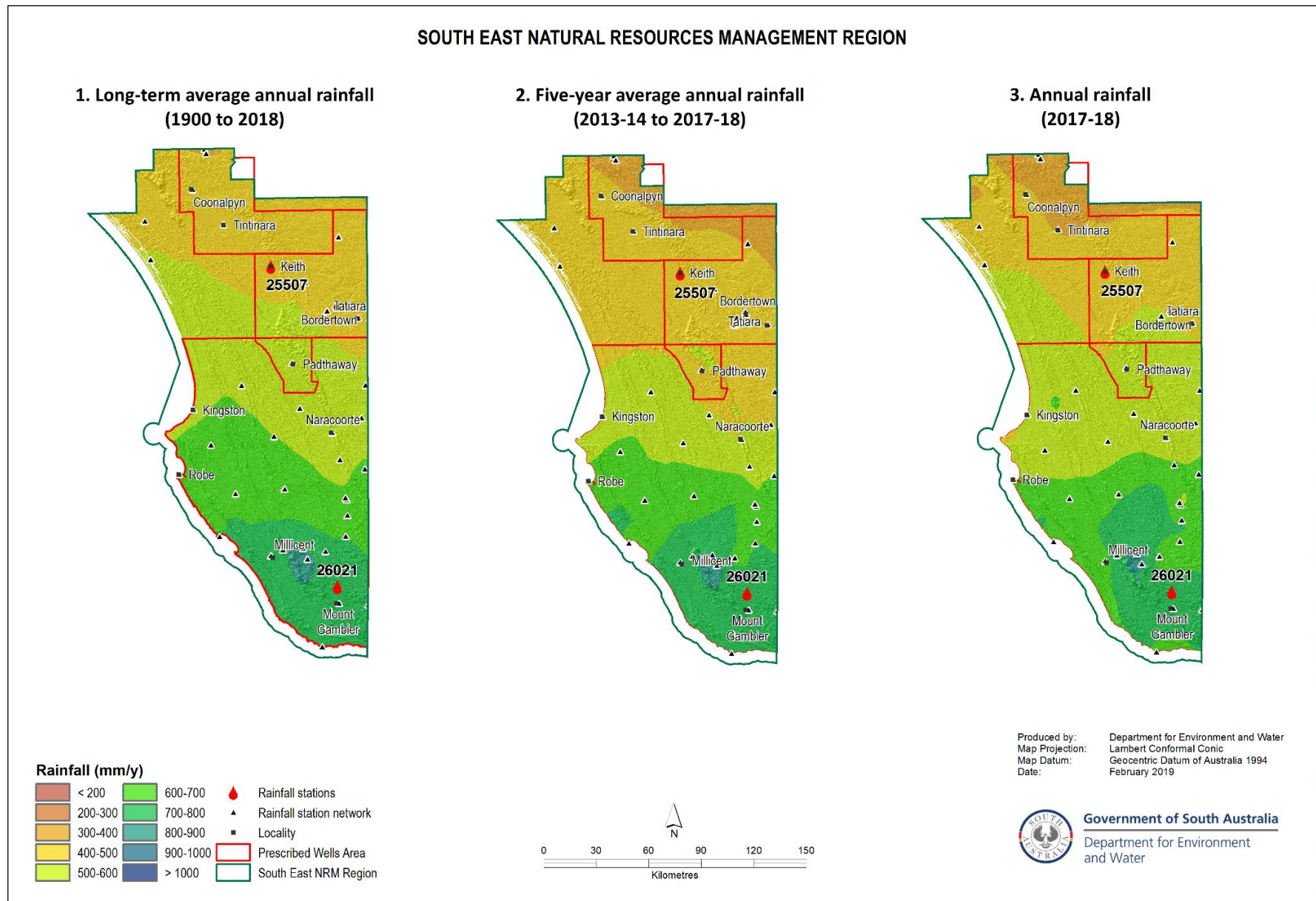


Figure 1. Spatial distribution of (1) long-term and (2) five-year average annual rainfall, and (3) annual rainfall⁶

⁶ Data sources: SILO interpolated point and gridded datasets, available at <https://legacy.longpaddock.qld.gov.au/silo/> – see [More information](#)

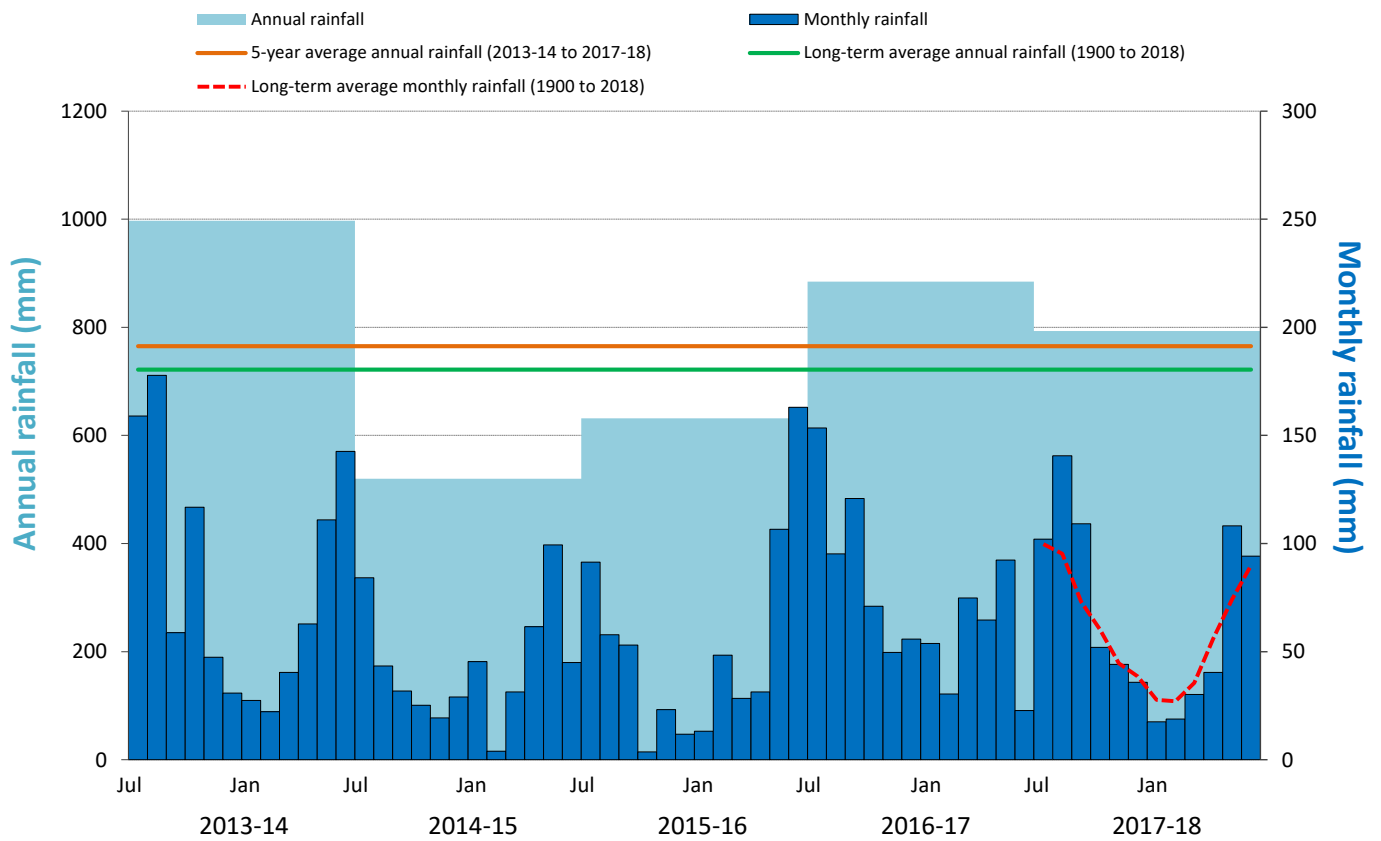


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Mount Gambier (BoM Station 26021)⁷

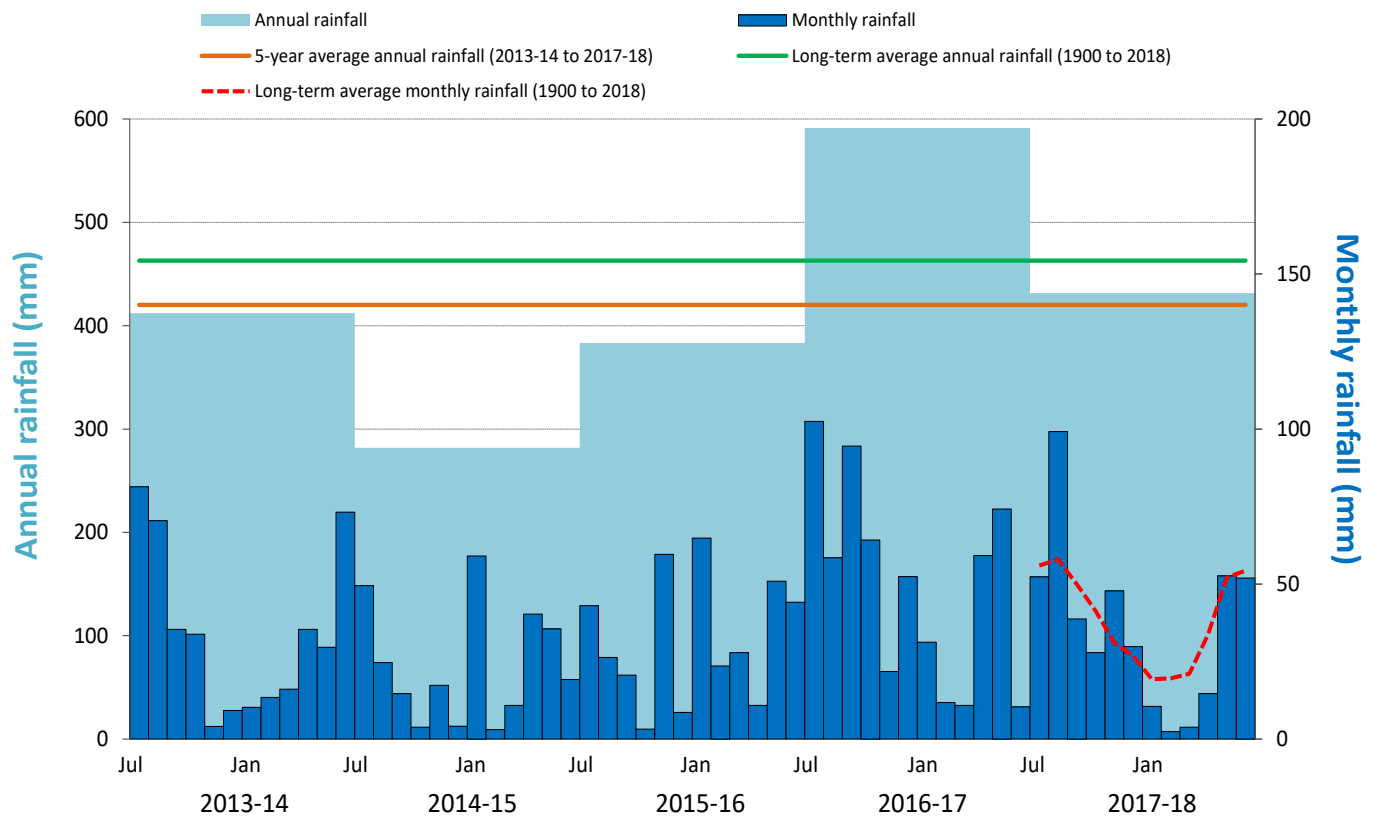


Figure 3. Annual and monthly rainfall for the past five water-use years recorded at Keith (BoM Station 25507)⁴

⁷ Data source: SILO Patched Point Dataset, available at <https://legacy.longpaddock.qld.gov.au/silo/> – see [More information](#)

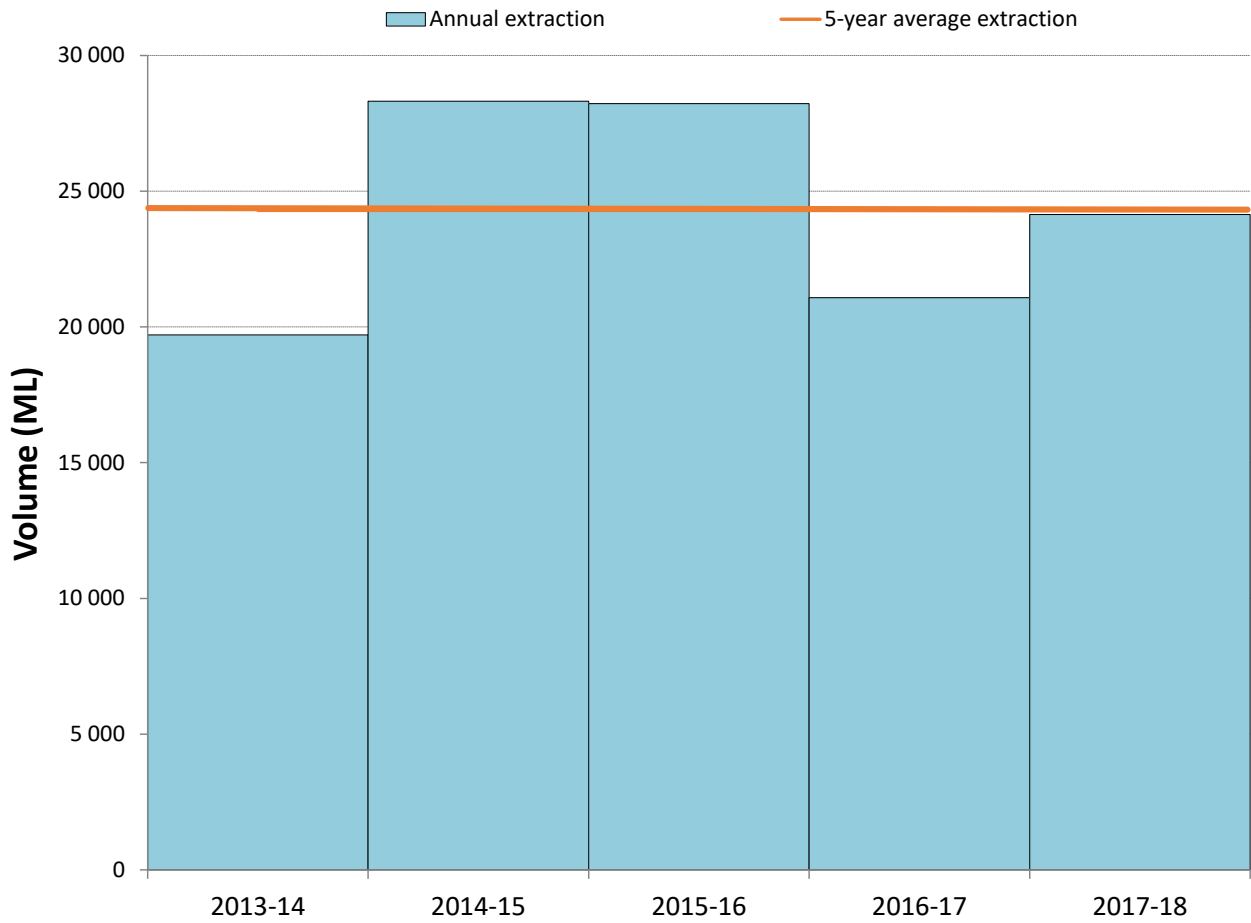
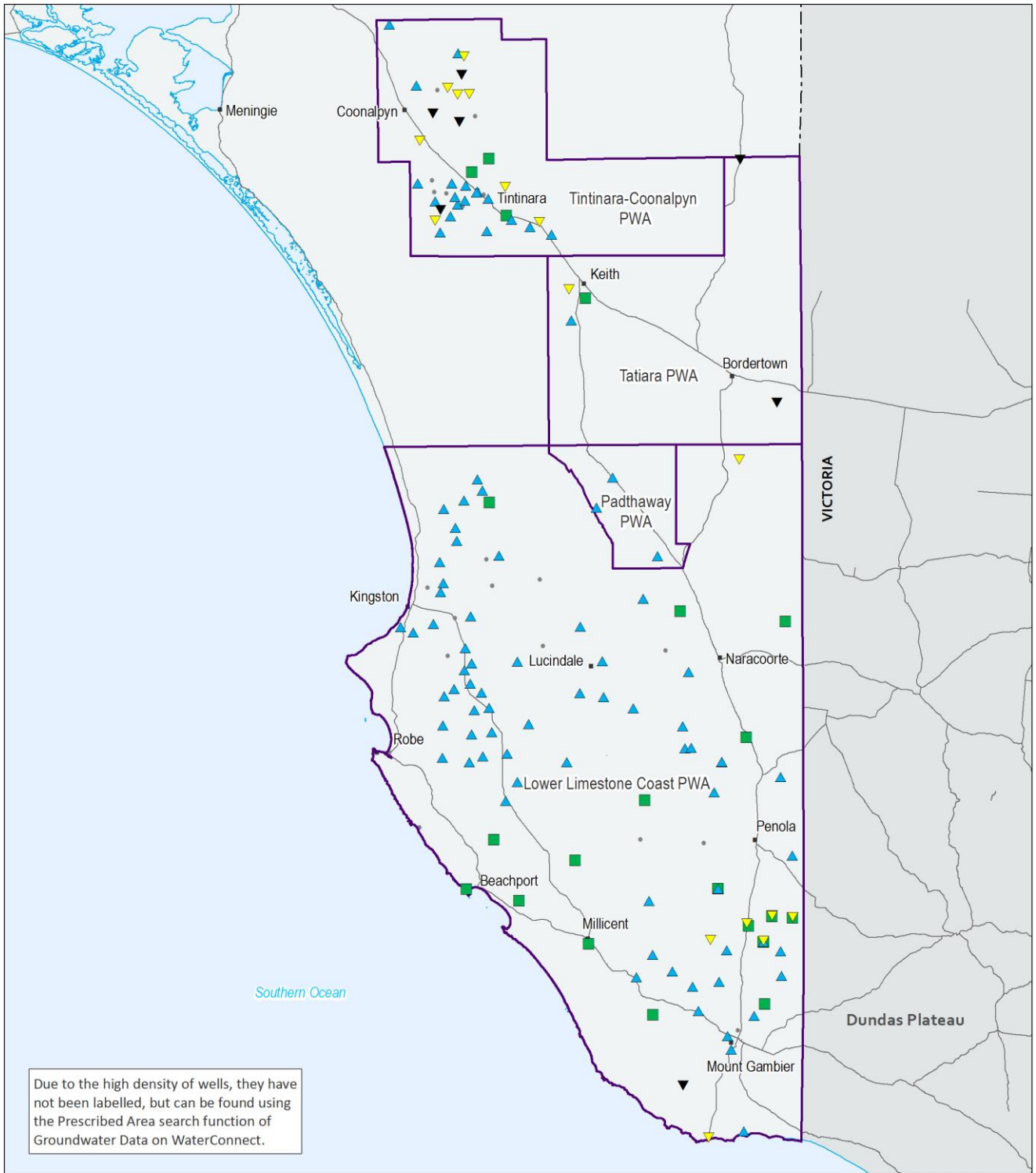


Figure 4. Licensed groundwater extraction volumes⁸ for the past five water-use years

⁸ Total licensed extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)

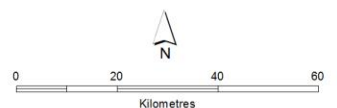


Due to the high density of wells, they have not been labelled, but can be found using the Prescribed Area search function of Groundwater Data on WaterConnect.

2018 water level status

- ▲ Groundwater level is above the historical minimum and has a rising trend
- Groundwater level is above the historical minimum and is stable
- ▼ Groundwater level is above the historical minimum but has a declining trend
- ▲ Groundwater level is the lowest on record but has a rising trend
- Groundwater level is the lowest on record and is stable
- ▼ Groundwater level is the lowest on record and has a declining trend

- Current monitoring well, insufficient data available
- Locality
- Road
- ▭ South East Prescribed Wells Areas



Produced by: Department for Environment and Water
 Map Projection: Transverse Mercator Zone 54
 Map Datum: Geocentric Datum of Australia 1994
 Date: March 2019



Government of South Australia
 Department for Environment and Water

Figure 5. Five-year trends (2014–18) in groundwater levels: South East confined aquifer

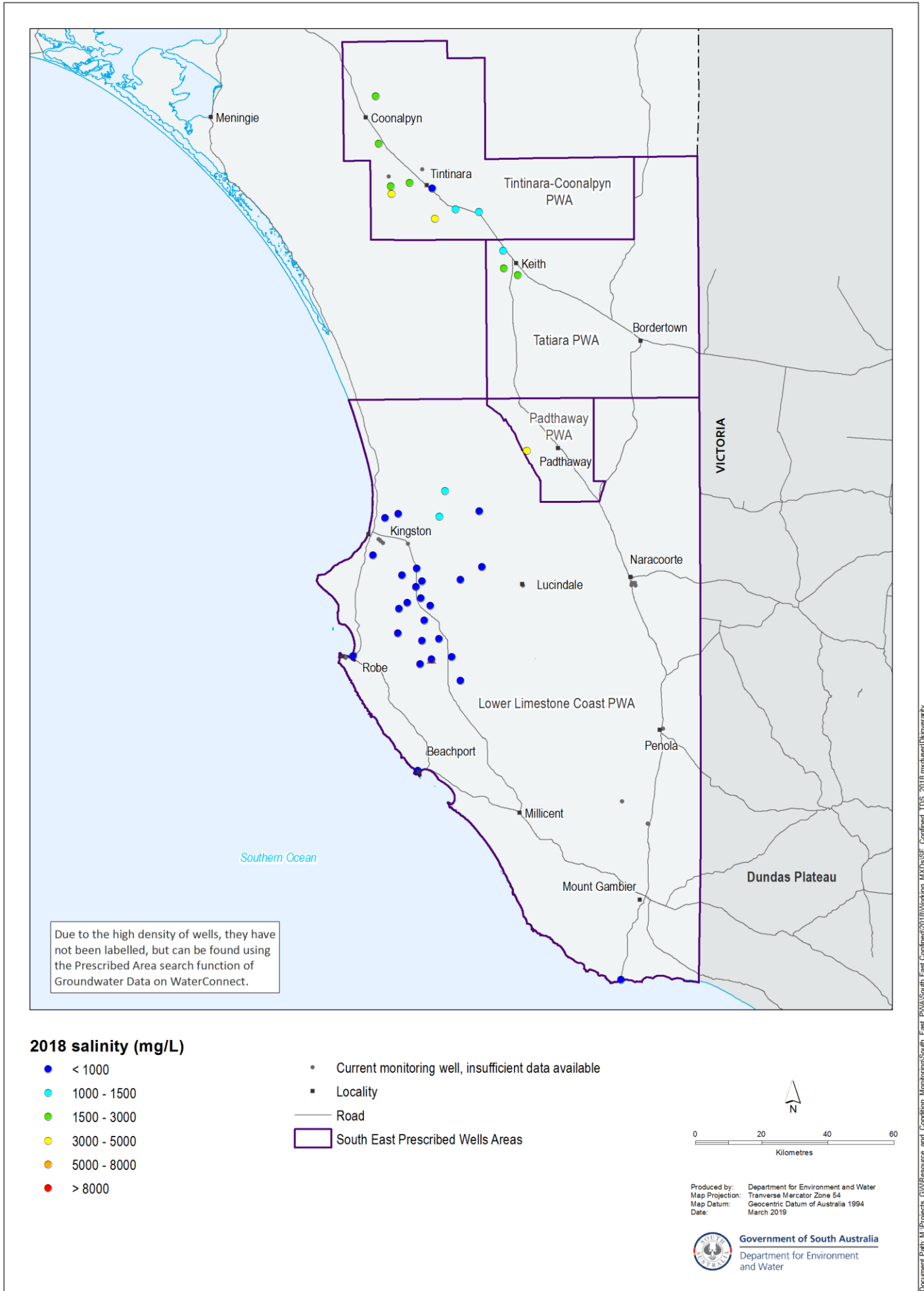


Figure 6. 2018 groundwater salinities: South East confined aquifer

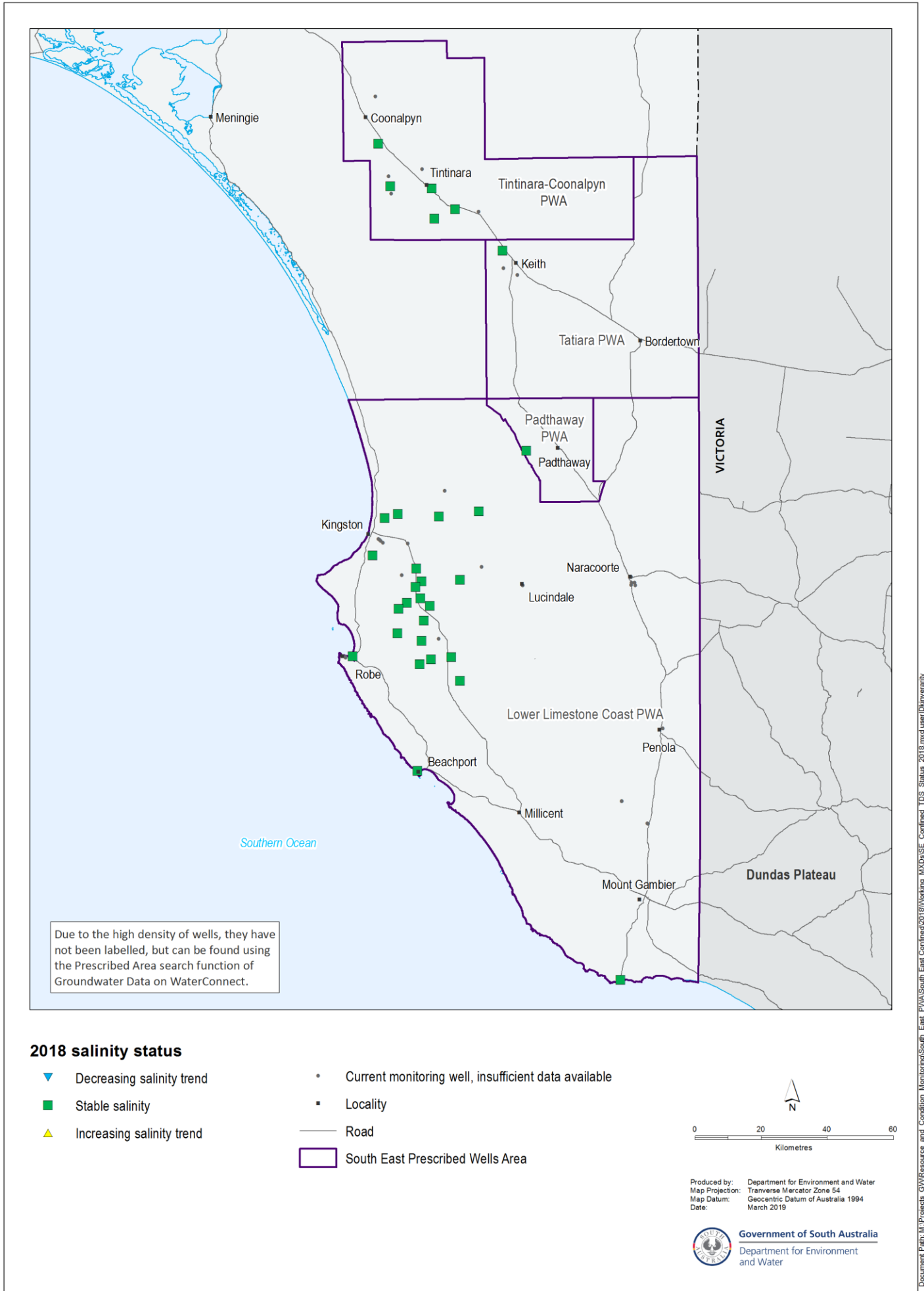


Figure 7. Five-year trends (2014–18) in groundwater salinities: South East confined aquifer

More information

To determine the status of the South East confined aquifer 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 and unique code, 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 April 2019 and could be subject to change, as some extraction volumes may be in the process of verification.

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 Tintinara–Coonalpyn, Tatiara, Lower Limestone Coast and Padthaway PWA groundwater level and salinity status reports 2009-10, all of which includes background information on hydrogeology, rainfall and relevant groundwater-dependent ecosystems, please visit [WaterConnect](#).

To download groundwater level and salinity data from monitoring wells within the South East PWAs, please visit the *Groundwater Data* page under the Data Systems tab on [WaterConnect](#). To view all past published *Groundwater level and salinity status reports*, including those for the unconfined aquifer in the Tintinara-Coonalpyn, Tatiara, Lower Limestone Coast and Padthaway PWAs, please visit the [Water Resource Assessments](#) page on WaterConnect.

For further details on the South East PWAs, please see the relevant *Water Allocation Plans* available on the Natural Resources South East [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

Published by the Department for Environment and Water.
Government of South Australia
16 July 2019

Head Office
81-95 Waymouth St
ADELAIDE SA 5000

Telephone +61 (8) 8463 6946
Facsimile +61 (8) 8463 6999

ABN 36702093234
ISBN 978-1-925805-91-8

Report prepared by:
Department for Environment and Water
Water Science and Monitoring Branch
Strategy, Science and Corporate Services Directorate

www.environment.sa.gov.au

Disclaimer

The Department for Environment and Water and its employees do not warrant or make any representation regarding the use, or results of the use, of the information contained herein as regards to its correctness, accuracy, reliability, currency or otherwise. The Department for Environment and Water and its employees expressly disclaims all liability or responsibility to any person using the information or advice. Information contained in this document is correct at the time of writing.



With the exception of the Piping Shrike emblem, other material or devices protected by Aboriginal rights or a trademark, and subject to review by the Government of South Australia at all times, the content of this document is licensed under the Creative Commons Attribution 4.0 Licence. All other rights are reserved.

Preferred way to cite this publication

DEW 2019. *Prescribed Wells Areas of the South East confined aquifer 2018 groundwater level and salinity status report*, Government of South Australia, Department for Environment and Water, Adelaide.

Download this document at www.waterconnect.sa.gov.au

© Crown in right of the State of South Australia | 2019



**Government
of South Australia**

Department for
Environment and Water