

# Technical information supporting the 2018 Inland Waters – Water management: water allocation planning Trend and Condition Report Card

Department for Environment and Water

August, 2018

DEW Technical note 2018/10



Department for Environment and Water

GPO Box 1047, Adelaide SA 5001

*Telephone*            National (08) 8463 6946  
                                 International +61 8 8463 6946

*Fax*                     National (08) 8463 6999  
                                 International +61 8 8463 6999

*Website*              [www.environment.sa.gov.au](http://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.



This work is licensed under the Creative Commons Attribution 4.0 International License.

To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

ISBN 978-1-925668-53-7

#### *Preferred way to cite this publication*

The Department for Environment and Water (2018). Technical note supporting the 2018 Inland Waters – Water management: water allocation planning Trend and Condition Report Card. DEW Technical note 2018/10, Government of South Australia, Department for Environment and Water, Adelaide.

Download this document at <https://data.environment.sa.gov.au>

# Consultation and acknowledgements

The author would like to acknowledge the contributions that have enabled this report and associated report card possible. Consultation for this report has taken place with relevant DEW staff within the Science and Information Group including Principal Hydrogeologists, Principal Hydrologist, Manager Groundwater, Manager Surface Water, Manager Water Science and Director Water Science and Monitoring and with the relevant staff in the Water Group including Principal Policy Officers and Manager State and National Water Policy.

# Contents

<b>Consultation and acknowledgements</b>	<b>iii</b>
<b>Contents</b>	<b>iv</b>
<b>Summary</b>	<b>v</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Water management and water allocation planning	1
1.2 Environmental trend and condition reporting	1
1.2.1 Trend and condition report card continual improvement	1
<b>2 Methods</b>	<b>3</b>
2.1 Indicator	3
2.2 Data sources	3
2.3 Analysis	3
2.3.1 Trend	3
2.3.2 Condition	3
2.3.3 Reliability	4
<b>3 Results</b>	<b>6</b>
3.1 Trend	6
3.2 Condition	9
3.3 Reliability	9
<b>4 References</b>	<b>10</b>

## List of tables

Table 2.1.	Definition of trend classes	3
Table 2.2.	Definition of condition classes	4
Table 2.3.	Guides for applying information currency	4
Table 2.4.	Guides for applying information applicability	5
Table 2.5.	Guides for applying spatial representation of information (sampling design)	5
Table 2.6.	Guides for applying accuracy information	5
Table 3.1.	The percentage change in the number of actively managed resources with WAPs in the period 2007–17	6
Table 3.2.	Prescribed resources with WAPs showing dates of prescription and adoption	6
Table 3.3	Information reliability scores for water management	9

# Summary

This document describes the indicators, data sources, analysis methods and results used to develop the 2018 report card "*Water management: Water allocation planning*". The reliability of information used to prepare the report card are also described.

# 1 Introduction

## 1.1 Water management and water allocation planning

Water planning and management is fundamental to ensuring there is sufficient water resources for environmental, social and economic needs. Water planning and management can be defined as: 'Those activities that support or fulfil the requirements of the *Natural Resources Management Act 2004* (the Act) in the preparation, maintenance, and implementation of water allocation plans, water affecting activity policies in regional NRM plans, and actions undertaken by the Minister in the management of water resources.

## 1.2 Environmental trend and condition reporting

The Minister for Environment and Water under the Act is required 'to keep the state and condition of the natural resources of the State under review'. Environmental trend and condition report cards are produced as the primary means for the Minister to undertake this review. Previous environmental trend and condition report card releases reported against the targets in the South Australian natural resources management plan (Government of South Australia 2012b) using the broad process outlined in the NRM State and Condition Reporting Framework (Government of South Australia 2012a).

As the South Australian Natural Resources Management Plan is currently under review, SA trend and condition report cards in early 2018 will instead inform the next South Australian State of the Environment Report (SOE) due out in mid-2018. Again, there is a legislative driver to guide the development of SOE reporting. The *Environment Protection Act 1993*, which is the legislative driver to guide the development of SOE reporting, states that the SOE must:

- Include an assessment of the condition of the major environmental resources of South Australia 112(3(a))
- Include a specific assessment of the state of the River Murray, especially taking into account the Objectives for a Healthy River Murray under the *River Murray Act 2003* 112(3(ab))
- Identify significant trends in environmental quality based on an analysis of indicators of environmental quality 112(3(b)).

Trend and condition report cards will be used as the primary means to address these SOE requirements.

### 1.2.1 Trend and condition report card continual improvement

Key documents guiding the content of South Australian environmental trend and condition report cards are:

- Trend and condition report cards summary paper (DEWNR 2017)
- NRM State and Condition Reporting Framework (Government of South Australia 2012a).

Both of these documents reference a process of continual improvement in the way environmental trend and condition report cards are produced and communicated. A review based on key stakeholder feedback (O'Connor NRM 2015) indicated five key learnings (DEWNR 2017):

1. The trend and condition report cards are acknowledged as a useful communication tool. There is support for them to continue to be produced to highlight data gaps and reliability issues to a broad audience including: policy makers and investors; environmental managers; and the community.
2. There are issues with data availability, access, consistency and transparency, which will need to be addressed and improved over time in future trend and condition report cards.
3. The indicators or measures reported on were based on those outlined in the State NRM Plan. Not all of these are considered to be the most appropriate or relevant for those assets. These will be reviewed as part of the current State NRM Plan review and a set of agreed measures will be determined for future Trend and Condition Report Cards.
4. Greater alignment of reporting relevant to project, regional, state, program and SOE is seen as imperative.
5. Better clarity is needed around target evaluation reporting, which should measure the impact or outcome of an investment at a project, regional, state or program scale. However the trend and condition reporting reflects the status of an environmental resource and its change based on impacts that affect its condition. In some cases, the same reporting can be used for both (e.g. soil erosion), and in others it cannot (e.g. threatened species).

As the process by which the trend and condition report cards are produced evolves, there is an increased emphasis, in keeping with the Premier's digital by default declaration, on the use of open data and reproducibility. This is one key response to help address the second key learning outlined above. The report cards being produced to inform the 2018 State of the Environment Report are at varying stages along this route to open data and reproducibility.

## 2 Methods

### 2.1 Indicator

The indicator used for the *Water management: Water allocation planning* report card is the percentage of prescribed areas which are managed by water allocation plans (WAPs).

### 2.2 Data sources

Water allocation plans and Regional Natural Resource Management Plans produced by regional Natural Resource Management Boards on behalf of the Minister for Environment and Water.

### 2.3 Analysis

#### 2.3.1 Trend

The trend in water management across the state was determined using the change in the indicator (Sect. 2.1) over the past ten years.

**Table 2.1. Definition of trend classes**

Trend	Description
Getting better	Over a scale relevant to tracking change in the indicator it is improving in status with good confidence
Stable	Over a scale relevant to tracking change in the indicator it is neither improving or declining in status
Getting worse	Over a scale relevant to tracking change in the indicator it is declining in status with good confidence
Unknown	Data are not available, or are not available at relevant temporal scales, to determine any trend in the status of this resource
Not applicable	This indicator of the natural resource does not lend itself to being classified into one of the above trend classes

#### 2.3.2 Condition

The condition classifications used in DEW's trend and condition report cards are given in Table 2.2. Condition categories are based on the percentage of prescribed water resources that have water allocation plans, in the current reporting year (2017).

**Table 2.2. Definition of condition classes**

Condition	Condition definition	Threshold
Very good	The natural resource is in a state that meets all environmental, economic and social expectations, based on this indicator. Thus, desirable function can be expected for all processes/services expected of this resource, now and into the future, even during times of stress (e.g. prolonged drought)	>90 per cent of prescribed water resource areas have Water Allocation Plans
Good	The natural resource is in a state that meets most environmental, economic and social expectations, based on this indicator. Thus, desirable function can be expected for only some processes/services expected of this resource, now and into the future, even during times of stress (e.g. prolonged drought)	60-80 per cent of prescribed water resource areas have Water Allocation Plans
Fair	The natural resource is in a state that does not meet some environmental, economic and social expectations, based on this indicator. Thus, desirable function cannot be expected from many processes/services expected of this resource, now and into the future, particularly during times of stress (e.g. prolonged drought)	30-60 per cent of prescribed water resource areas have Water Allocation Plans
Poor	The natural resource is in a state that does not meet most environmental, economic and social expectations, based on this indicator. Thus, desirable function cannot be expected from most processes/services expected of this resource, now and into the future, particularly during times of stress (e.g. prolonged drought)	<30 per cent of prescribed water resource areas have Water Allocation Plans
Unknown	Data are not available to determine the state of this natural resource, based on this indicator	
Not applicable	This indicator of the natural resource does not lend itself to being classified into one of the above condition classes	

### 2.3.3 Reliability

Information is scored for reliability based on the average of subjective scores (1 [worst] to 5 [best]) given for information currency, applicability, level of spatial representation and accuracy. Definitions guiding the application of these scores are provided in Table 2.3 for currency, Table 2.4 for applicability, Table 2.5 for spatial representation and Table 2.6 for accuracy.

**Table 2.3. Guides for applying information currency**

Currency score	Criteria
1	Most recent information >10 years old
2	Most recent information up to 10 years old
3	Most recent information up to 7 years old
4	Most recent information up to 5 years old
5	Most recent information up to 3 years old

**Table 2.4. Guides for applying information applicability**

Applicability score	Criteria
1	Data are based on expert opinion of the measure
2	All data based on indirect indicators of the measure
3	Most data based on indirect indicators of the measure
4	Most data based on direct indicators of the measure
5	All data based on direct indicators of the measure

**Table 2.5. Guides for applying spatial representation of information (sampling design)**

Spatial score	Criteria
1	From an area that represents less than 5% the spatial distribution of the asset within the region/state or spatial representation unknown
2	From an area that represents less than 25% the spatial distribution of the asset within the region/state
3	From an area that represents less than half the spatial distribution of the asset within the region/state
4	From across the whole region/state (or whole distribution of asset within the region/state) using a sampling design that is not stratified
5	From across the whole region/state (or whole distribution of asset within the region/state) using a stratified sampling design

**Table 2.6. Guides for applying accuracy information**

Reliability	Criteria
1	Better than could be expected by chance
2	> 60% better than could be expected by chance
3	> 70 % better than could be expected by chance
4	> 80 % better than could be expected by chance
5	> 90 % better than could be expected by chance

# 3 Results

## 3.1 Trend

The total number of prescribed areas which are managed by water allocation plans has increased over the past 10 years, in 2007 only 51% of prescribed resources were managed by WAPs in comparison to 79% managed by WAPs in 2017 (Table 3.1). WAPs for Central Adelaide and Dry Creek are currently being drafted.

**Table 3.1. The percentage change in the number of actively managed resources with WAPs in the period 2007–17**

Year	Number actively managed resources	Number of resources with a WAP newly adopted	Total number of resources with WAP	Percentage of resources with WAPs
2007	35	0	18	51
2008	38	0	18	47
2009	38	1	19	50
2010	38	3	22	58
2011	38	1	23	61
2012	38	0	23	61
2013	38	7	30	79
2014	38	0	30	79
2015	38	0	30	79
2016	38	0	30	79
2017	38	0	30	79

**Table 3.2. Prescribed resources with WAPs showing dates of prescription and adoption**

Natural Resources Management Board	Prescribed resource name	Resources prescribed	Adoption dates of WAP	10-year review completed/due
Adelaide and Mount Lofty Ranges	Barossa Prescribed Water Resources Area	Groundwater Watercourses Surface Water	First plan: 22 December 2000 Second plan: 18 June 2009	Due June 2019
	Central Adelaide Prescribed Wells Area	Groundwater	No plan yet. Water planning process has commenced.	N/A
	Dry Creek Prescribed Wells Area	Groundwater	No plan. Water planning process has commenced	N/A
	Little Para Prescribed Watercourse	Watercourse	17 September 2013.	Due September 2023

Natural Resources Management Board	Prescribed resource name	Resources prescribed	Adoption dates of WAP	10-year review completed/due
	McLaren Vale Prescribed Wells Area	Groundwater	First plan: 6 November 2000 Second plan: 17 February 2007	Due September 2023
	Salt Creek and Unnamed Creek (Middle Beach Intakes) Prescribed Watercourses	Watercourses	No plan.	N/A
	Northern Adelaide Plains Prescribed Wells Area	Groundwater	22 December 2000	To be included in Adelaide Plains WAP
	Swan Creek (Northern Intake) Prescribed Watercourse	Watercourses	No plan	N/A
	Western Mount Lofty Ranges Prescribed Water Resources Area	Groundwater Watercourses Surface Water	17 September 2013	Due September 2023
Eyre Peninsula	Musgrave Prescribed Wells Area	Groundwater	First Plan: 2 January 2001 Second Plan: 28 June 2016	Due June 2026
	Southern Basins Prescribed Wells Area	Groundwater	First Plan: 31 December 2000 Second Plan: 28 June 2016	Due June 2026
Northern and Yorke	Baroota Prescribed Water Resources Area	Groundwater Watercourses Surface Water	No plan yet. Process underway	N/A
	Clare Valley Prescribed Water Resources Area	Groundwater Watercourses Surface Water	First Plan: 22 December 2000 Second Plan: 4 May 2009	Due May 2019

Natural Resources Management Board	Prescribed resource name	Resources prescribed	Adoption dates of WAP	10-year review completed/due
	Chapmans Creek Prescribed Watercourse	Watercourse	No plan	N/A
South Australian Arid Lands	Far North Prescribed Wells Area	Groundwater	19 February 2009	Due February 2019
South Australian Murray-Darling Basin	Angas Bremer Prescribed Wells Area	Groundwater	Now managed under the Eastern Mount Lofty Ranges plan	N/A
	Eastern Mount Lofty Ranges Prescribed Water Resources Area	Groundwater Watercourses Surface Water	17 December 2013	Will undergo minor amendments in 2018
	Mallee Prescribed Wells Area	Groundwater	First Plan: 21 December 2000 Second Plan: 2 May 2012	Minor amendments in 2017
	Marne Saunders Prescribed Water Resources Area	Groundwater Watercourses Surface Water	18 January 2010	Will undergo minor amendments in 2018
	Peake, Roby and Sherlock Prescribed Wells Area	Groundwater	2 March 2011	Reviewed in 2017
	River Murray Prescribed Watercourse	Watercourses	First Plan: 1 July 2002 Second Plan: 15 July 2009 Third Plan: 3 October 2017	Will be reviewed as part of the SA River Murray Water Resource Plan due in 2019
South East	Lower Limestone Coast Prescribed Wells Area	Groundwater	26 November 2013	Due November 2023
	Morambro Creek Prescribed Watercourse	Watercourses	13 January 2006	Due January 2021
	Padthaway Prescribed Wells Area	Groundwater	First Plan: 29 June 2001	Due April 2019

Natural Resources Management Board	Prescribed resource name	Resources prescribed	Adoption dates of WAP	10-year review completed/due
			Second Plan: 26 April 2009	
	Tatiara Prescribed Wells Area	Groundwater	First Plan: 29 June 2001 Second Plan: 7 June 2010	Due June 2020
	Tintinara-Coonalpyn Prescribed Wells Area	Groundwater	First Plan: 22 January 2003 Second Plan: 23 April 2012	Due April 2022

### 3.2 Condition

79% (30 out of 38) of South Australia's actively managed water resources have WAPs in place. Based on the condition thresholds set out in section 2 (Table 2.2), the condition of water management at the statewide-scale was allocated the score of 'good'.

### 3.3 Reliability

The overall reliability score for this report card is **5** (Table 3.3). The methodology used to determine the reliability score is provided in section 2.4.3.

Table 3.3 Information reliability scores for water management

Indicator	Applicability	Currency	Spatial	Accuracy	Reliability
The areal extent of water resources management undertaken through regional NRM plans	5	5	5	5	5
The number of vulnerable or at-risk surface water and groundwater resources that are being managed by water allocation plans	5	5	5	5	5

## 4 References

DEWNR (2017). Trend and Condition Report Cards for South Australia's Environment and Natural Resources. Report. Department of Environment, Water and Natural Resources, Government of South Australia, Adelaide. Available at: [https://data.environment.sa.gov.au/NRM-Report-Cards/Documents/Trend\\_Condition\\_Report\\_Cards\\_2017.pdf](https://data.environment.sa.gov.au/NRM-Report-Cards/Documents/Trend_Condition_Report_Cards_2017.pdf)

Government of South Australia (2012a). Natural Resource Management State and Condition Reporting Framework SA. Report. Adelaide. Available at: <https://www.waterconnect.sa.gov.au/Content/Publications/DEWNR/91913%20NRM%20Reporting%20Framework%202012%20Final%20Draft%20v7.pdf>

Government of South Australia (2012b). Our Place. Our Future. State Natural Resources Management Plan South Australia 2012 – 2017. Report. Adelaide. Available at: <https://www.environment.sa.gov.au/files/sharedassets/public/nrm/nrm-gen-statenrmplan.pdf>

O'Connor NRM (2015). Review of the project NRM Reporting Framework. Report. O'Connor NRM Pty Ltd, Stepney, South Australia. Available at: [https://data.environment.sa.gov.au/NRM-Report-Cards/Documents/Stakeholder\\_review\\_of\\_the\\_Trend\\_and\\_Condition\\_Reporting\\_Framework.pdf](https://data.environment.sa.gov.au/NRM-Report-Cards/Documents/Stakeholder_review_of_the_Trend_and_Condition_Reporting_Framework.pdf)