

Tracking changes in South Australia's environment

Trend and condition report cards overview 2023



Government
of South Australia
Department for
Environment and Water

Contents

Introduction.....	1
Our approach to trend and condition report cards in 2023	2
Benefits of trend and condition report cards ...	3
What is new in 2023?	4
Report card themes, subthemes and indicators	6
2023 reporting themes and trend and condition report cards	8
Climate theme	9
Climate subtheme	10
Biodiversity theme	12
Terrestrial subtheme	14
Coastal and marine subtheme	15
Inland waters subtheme.....	16
Inland waters subtheme.....	17
Water theme	18
Surface water subtheme	19
Groundwater subtheme	20
Land theme	22
Agricultural land subtheme	23
Liveability theme	24
Urban and rural subtheme	25
Air quality subtheme.....	26

Acknowledgment of country

We acknowledge and respect the Traditional Custodians whose ancestral lands we live and work upon and we pay our respects to their Elders past and present. We acknowledge and respect their deep spiritual connection and the relationship that Aboriginal and Torres Strait Islanders people have to Country.

We also pay our respects to the cultural authority of Aboriginal and Torres Strait Islander people and their nations in South Australia, as well as those across Australia.

A vertical photograph on the left side of the page shows a person standing on a stone path that leads from a dark cave opening into a bright, sunlit forest. The path is made of large, flat stones and is bordered by a low stone wall. The forest is lush with green trees and foliage, and the sunlight creates a warm, golden glow. The cave's interior is dark and rocky, with some water visible on the walls.

Introduction

South Australia's economic prosperity and the wellbeing of its communities are deeply intertwined with the sustainable management of its natural environment. As stewards of this invaluable natural heritage, we are often confronted with complex challenges that require a strong evidence-base.

Led by the Department for Environment and Water (DEW), South Australia's trend and condition report cards assess and summarise the current condition of South Australia's environment, track trends over time, and evaluate the reliability of the underpinning data and information.

Organised under five key themes—Climate, Biodiversity, Water, Land, and Liveability—each report card provides a snapshot of an environmental indicator, supported by detailed technical information.

Report cards provide a crucial 'point in time' assessment, highlighting state-scale patterns, insights into past responses, and gaps in our knowledge. They offer not only retrospective insights but also forecasting of future trends and emerging challenges, such as the increasing risk of bushfire danger weather associated with climate change.

In 2023, DEW has increased its focus on biodiversity reporting, introducing a dedicated biodiversity theme, employing new data-driven approaches to fauna and flora trends, and showcasing positive achievements in biodiversity conservation through case studies.

The 2023 report cards follow the 'Pressure-state-response' model, differentiating between indicators that report on assets or natural values (state), driving factors that impact assets (pressures), or management interventions aimed at improving the condition of our assets (response).

Key partners in the development of the 2023 trend and condition report cards include the Department for Energy and Mining, Department of Primary Industries and Regions, Environment Protection Authority, Green Industries SA, Green Adelaide, and the Bureau of Meteorology.

South Australia's report cards provide the state with a robust and comprehensive assessment of our changing environment and are invaluable tools for informed decision-making, guiding efforts to protect and conserve South Australia's natural assets for the benefit of current and future generations.

image: Michael Waterhouse, Adelaide Hills

Our approach to trend and condition report cards in 2023

South Australia's report cards are one in a suite of environmental and sustainability reports that are produced at national, state and territory levels to fulfil both Australian and international reporting requirements.

Our report cards assess and summarise the current condition of the environment in South Australia, the trend or change in condition over time, as well as the reliability of the information.

Each one-page report card is a succinct summary of an environmental indicator under one of 5 themes: Climate, Biodiversity, Water, Land, and Liveability. Each report card is supported by a technical document describing the underpinning data and analyses.

The information used to develop our report cards is compiled from South Australia's environmental data sets. These data sets can comprise a combination of data and information gathered from across government agencies, non-government organisations, universities, field naturalists, and industry.

Development of report cards is led by the Department for Environment and Water in partnership with Department for Energy and Mining, Department of Primary Industries and Regions, Environment Protection Authority, Green Industries SA, Green Adelaide, and Bureau of Meteorology.

The importance of reporting change

Although both trend and condition are important, the report cards give particular emphasis to trend. Trend shows us how the environment has responded to past pressures, drivers, decisions, and management actions, and is what we seek to influence through future responses. Our report cards show trend, condition, and information reliability at a glance through the use of icons. These report cards can be used on their own or grouped to tell a more complete story.

The difference between 'condition' and 'trend'

Condition: the state of the environment at a single point in time.

Trend: the trajectory of change in condition over multiple points in time.

Benefits of trend and condition report cards

Report cards provide an important snapshot in time

South Australia's approach to environmental reporting provides a 'point in time' assessment of the natural assets we care about, as well as the pressures that act on these assets.

The full suite of report cards captures patterns in trend and condition at a state scale and gives insight to changes in a particular asset over time. The report cards highlight gaps in our knowledge on priority assets that impede our ability to make evidence-based decisions.

This reporting enables us to look back as well as forecast likely future trends and look across our important natural resources and highlight where we need to pay particular attention.

Our report cards give insight to assets over time, for example, the improvement in the protection of agricultural land from soil erosion. They also give insight to emerging challenges, such as the forecast for drier and warmer conditions and the increasing likelihood of bushfire danger weather associated with climate change.

Benefits of trend and condition report cards

- provide insight into our environment by tracking its change over time
- interpret complex information in a simple and accessible format
- provide a transparent and open evidence base for decision-making
- provide consistent messages on the trend and condition of the environment in South Australia
- highlight critical knowledge gaps in our understanding of South Australia's environment
- support alignment of environmental reporting.

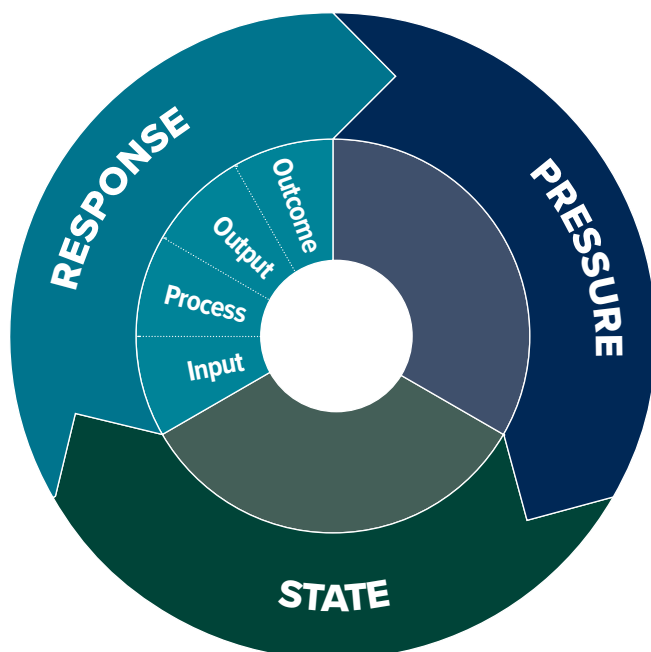
What is new in 2023?

Significant changes have been made for the 2023 release of trend and condition report cards. This is in response to a recommendation of the **2018 State of the Environment Report for South Australia** to review environmental reporting in the state, including a review of the themes and measures (indicators) of the trend and condition report cards. The changes improve reporting and strengthen links between reporting and environmental management.

Pressure-State-Response model

As is occurring elsewhere, environmental reporting in South Australia is moving towards a 'Pressure-State-Response model'. This approach discriminates between themes and indicators that describe a natural value or asset (state), those that drive changes in those values (pressures), and management interventions aimed at improving the condition of the assets (response).

The Pressure-State-Response model provides a way to describe relationships between pressures or drivers, asset trend and condition, and management responses. This will enable South Australia to determine what is driving decline in environmental values, and the effectiveness of our responses in arresting this decline.



New themes, subthemes, and indicators

Trend and condition reporting themes have changed significantly, and sub-themes have been introduced. New report cards have been added to the suite for the 2023 release and some indicators have been refined.

Climate theme



Climate

Biodiversity theme



Terrestrial



Coastal and marine



Inland waters

Water theme



Surface water



Groundwater

Land theme



Agricultural land

Liveability theme



Urban



Urban and rural



Air quality



Report card themes, subthemes and indicators

Climate

Climate

STATE (ASSET) INDICATORS

Rainfall

Projected rainfall

Temperature

Projected temperature

Sea level

Projected sea level

Fire danger weather

PRESSURE INDICATORS

Greenhouse gas emissions **NEW**

RESPONSE INDICATORS

Renewable energy **NEW**

Biodiversity

Terrestrial

STATE (ASSET) INDICATORS

Native vegetation: percentage cover

Native flora: percentage declining

Native fauna: percentage declining

PRESSURE INDICATORS

Established invasive species abundance and distribution

New incursions of invasive species **NEW**

RESPONSE INDICATORS

Terrestrial protected areas: landscapes adequately protected

Coastal and Marine

STATE (ASSET) INDICATORS

Mangrove vegetation: percentage cover

Coastal saltmarsh: percentage cover

Seagrass: cover within sampling sites

Subtidal macroalgae: percentage cover

Native flora: percentage declining

Native fauna: percentage declining

Proportion of fish stocks sustainable

PRESSURE INDICATORS

Established invasive species abundance and distribution

New incursions of invasive species

RESPONSE INDICATORS

Marine protected areas

Inland Water

STATE (ASSET) INDICATORS

Wetlands:
percentage cover

Aquatic ecosystem
condition: EPA condition
assessments

Native flora:
percentage declining

Native fauna:
percentage declining

Lower Lakes aquatic
and littoral vegetation

Coorong waterbirds
populations

Coorong, Lower
Lakes and Murray
Mouth diadromous
fish recruitment

River Murray flow-
dependent fish
populations

River Murray floodplain
trees condition

PRESSURE INDICATORS

Established invasive
species abundance
and distribution

New incursions of
invasive species

Water

Surface Water

STATE (ASSET) INDICATORS

River Murray: salinity

Murray Mouth barrage
outflow and dredging

Streamflow

Flow regime
(zero flow days) **NEW**

Groundwater

STATE (ASSET) INDICATORS

Water level and salinity

Land

Agricultural land

STATE (ASSET) INDICATORS

Days at risk of soil erosion

Soil acidity

RESPONSE INDICATORS

Soil protection:
adoption of no-till **NEW**

Liveability

Urban

STATE (ASSET) INDICATORS

Urban heat **NEW**

Air quality

STATE (ASSET) INDICATORS

Particles (PM₁₀)

Particles (PM_{2.5})

Nitrogen dioxide (NO₂)

Sulfur dioxide (SO₂) **NEW**

Ground-level ozone (O₃) **NEW**

Urban and rural

RESPONSE INDICATORS

Circular economy:
resource recovery **NEW**

2023 reporting themes and trend and condition report cards



Climate theme

Climate change is a pressing issue affecting South Australia, driven primarily by human-induced greenhouse gas emissions. The state has witnessed significant changes in its climate, including rising temperatures, increased frequency of hot days, heightened fire danger weather conditions, declining rainfall, and rising sea levels. Projections based on climate models indicate that these changes will persist in the coming decades, necessitating effective planning and preparedness. The South Australian Government is actively involved in providing climate science information, promoting renewable energy and emissions reduction.

Importance of the theme

Understanding and addressing climate change in South Australia is of critical importance due to its wide-ranging impacts. The changing climate poses risks to communities, industries, infrastructure, and the environment. Rising temperatures and prolonged heatwaves can have detrimental effects on human health, agriculture, and ecosystems. Declining rainfall patterns affect water availability and agricultural productivity. In addition, increased fire danger weather conditions pose significant risks to lives, properties, and biodiversity. Trends indicate rising sea levels threaten coastal areas and infrastructure. Recognising the importance of this theme is crucial for developing strategies to mitigate and adapt to climate change impacts.

Pressures and drivers

The primary pressure driving climate change in South Australia is the accumulation of greenhouse gas emissions resulting from human activities, particularly from fossil fuel energy generation. These emissions contribute to long-term shifts in temperatures and weather patterns, impacting rainfall, temperature, sea levels, and fire risk. To address these pressures, reducing emissions and promoting carbon sequestration are essential. South Australia has made progress in decreasing greenhouse gas emissions, with notable reductions in agriculture, fugitive emissions, and stationary energy sources. However, emissions from transport, waste, and industrial processes have increased since 2005.

Changing trend and condition

South Australia has experienced a strong warming trend since the 1970s, with average temperatures currently 1.1°C warmer than in the 1970s.

The frequency of days reaching 40°C in Adelaide in the past decade has been three times the average frequency of the preceding four decades.

Climate projections forecast further temperature increases and more days above 40°C by 2050. Rainfall trends vary across the state, with summer rainfall increasing in the north.

Fire danger weather conditions have become more frequent and severe since the late 1970s, particularly in eastern parts of the state.

Sea levels along the coast of South Australia have been rising at an average rate of approximately 2 mm/year between 1966 and 2022.

Actions and management

The South Australian Government has taken significant actions to address climate change and manage its impacts. It has set ambitious targets, aiming for 100% net renewable energy by 2030, a reduction of over 50% in net greenhouse gas emissions below 2005 levels by 2030, and achieving net zero emissions by 2050. These targets align with global efforts to limit global warming and mitigate climate change.

By providing accessible and high-quality climate information, the South Australian Government aims to assist governments, businesses, and communities in making informed decisions and taking proactive measures.

Climate theme

Climate subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
Rainfall	 Getting worse	 Fair	 Good	Rainfall is declining in April to October in South Australia's southern agricultural areas and increasing in November to March in the north-west.
Projected rainfall	 Getting worse	 Not applicable	 Fair	Annual and spring rainfall across South Australia is projected to decline significantly by 2050.
Temperature	 Getting worse	 Fair	 Good	Average annual temperatures have increased across South Australia, particularly in the arid north-east.
Projected temperature	 Getting worse	 Not applicable	 Good	Higher maximum temperatures and more days of 40°C or more are projected for South Australia.
Sea level	 Getting worse	 Fair	 Good	Sea levels along South Australia's coast are rising, and the rate of rise is increasing.
Projected sea level	 Getting worse	 Not applicable	 Good	Sea levels along South Australia's coast are rising, and the rate of rise is projected to increase in the future.
Fire danger weather	 Getting worse	 Fair	 Good	Fire danger weather has increased in occurrence and severity across most of the state since the 1970s.
Greenhouse gas emissions	 Getting better	 Good	 Good	South Australia's greenhouse gas emissions decreased by 42% between 2004–05 and 2020–21.
Renewable energy	 Getting better	 Very good	 Very good	South Australia has transformed its energy system from 1% to over 69% renewable energy in just over 20 years.



Biodiversity theme

South Australia's native biodiversity is globally unique, with a large number of species and ecosystems found nowhere else on Earth. This unique biological diversity forms an integral part of our cultural heritage and identity. Despite this importance, South Australia's native species and ecosystems have undergone dramatic decline, reflecting national and global trends, with little indication of widespread recovery. The maintenance and restoration of South Australia's native ecosystems will ensure that South Australians continue to benefit from a healthy environment.

Importance of the theme

Biodiversity fundamentally underpins the wellbeing, quality of life, and economic prosperity of all South Australians. Healthy and robust ecosystems are the foundation of a strong economy. Our social and cultural identity are inherently linked to healthy native ecosystems and diverse natural landscapes. These functional ecosystems provide the foundation for accessing food, clean water, and resilience against climate change.

Reporting on trend and condition

Summarising the trend and condition of South Australia's biodiversity can be challenging due to the complex nature of biodiversity. Trend and condition assessments diverge across spatial dimensions, hierarchical levels (e.g. species, ecosystems, landscapes), and taxonomic groups (e.g. flora versus fauna). Broadly summarised:

- The trend and condition of terrestrial species and ecosystems appear to be getting worse. 42% of terrestrial native plant species, and 44% of terrestrial native animal species, are declining, with these proportions increasing.
- Coastal and marine species and ecosystems present variable trends and conditions. 23% of coastal and marine fauna are declining, and this proportion of species is stable; whereas 49% of coastal and marine flora are declining, and this proportion is getting worse.
- Inland aquatic flora and fauna indicate an overall stable trend, yet the proportion of declining species is getting worse across many regions. Aquatic ecosystem condition is showing evidence of recovery following the Millennium Drought, notably in the South Australian Murray–Darling Basin and the foothills of the Green Adelaide landscape region.

In general, our ability to report on the trend and condition of biodiversity is constrained by data availability and interpretation. Though exceptions exist, our ability to monitor biodiversity remains compromised due to technological shifts (e.g. satellite-based remote sensing for tracking vegetation) and data gaps due to a lack of current and comprehensive data collection (e.g. species trends). The South Australian Government is currently pioneering new analytical tools to establish a unified interpretation of historical and contemporary biodiversity data.

Pressures and drivers

The key pressures and drivers impacting South Australia's native biodiversity largely align with national and global biodiversity assessments, namely:

- land use change (including habitat loss)
- water resource development
- invasive species (e.g. introduced predators, herbivores, and invasive plants)
- pollution (e.g. plastics, pesticides, nutrients)
- resource harvesting (e.g. overfishing)
- climate change.

These pressures and drivers affect different elements of native biodiversity in different ways. For instance, shifting distributions of introduced predators (feral cats, red foxes) significantly impact terrestrial fauna, often displacing species to predator-free zones. To effectively counter these drivers, conservation actions should reflect their precise impacts on the targeted species and ecosystems in each landscape (e.g. managing foxes may benefit some small vertebrate fauna, but will have no benefit to threatened flora).

Crucially, interactions among different threats can intensify the impacts of any individual threat. For example, inappropriate fire regimes can amplify the risk of cat predation to vulnerable fauna. Pressures that erode species populations or ecosystem resilience leave them more vulnerable to the impacts of other pressures, like climate change. This reinforces the need to manage biodiversity threats holistically, recognising their interconnected effects.

Actions and management

The Department for Environment and Water adopts a collaborative approach to biodiversity conservation, partnering with regional landscape boards, the Australian Government, non-government organisations (NGOs), traditional owners, researchers, and the wider South Australian community. For instance:

- collaborating with traditional owners and NGOs on efforts to expand the parks and reserves estate
- ongoing refinement of South Australia's environmental laws to align them with contemporary legal frameworks, and capacity for climate adaptation
- partnering with landscape boards, the Australian Government and NGOs on landscape-scale conservation initiatives that span public and private land (e.g. Bounceback program)
- water management frameworks, including the Murray–Darling Basin Plan, are implemented to protect and restore water-dependent ecosystems, enhancing resilience against climate change and other pressures.



Biodiversity theme

Terrestrial subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
Native vegetation: percentage cover	 Getting worse	 Unknown	 Poor	In 2020, native vegetation percentage cover was 87.8% statewide and continues to decline.
Native flora: percentage declining	 Getting worse	 Unknown	 Poor	The percentage of terrestrial native flora species declining is getting worse, but this trend has poor reliability.
Native fauna: percentage declining	 Getting worse	 Unknown	 Poor	The percentage of terrestrial native fauna species declining is getting worse, but this trend has poor reliability.
Established invasive species abundance and distribution	 Stable	 Fair	 Poor	Abundance and distribution of established terrestrial invasive species is stable in South Australia.
New incursions of invasive species	 Unknown	 Unknown	 Fair	In 2022, 41 new incursions of terrestrial invasive species were reported, but there is insufficient information to determine a trend.
Landscapes adequately protected	 Getting better	 Fair	 Good	South Australia's landscape protection is getting better, with 30% adequately protected, and positive trends in some regions.

Biodiversity theme

Coastal and marine subtheme












Indicator	Trend	Condition	Information reliability	Summary of change
Mangrove vegetation: percentage cover	 Unknown	 Unknown	 Good	In 2020, mangrove percentage cover was 0.014% statewide, but there is insufficient information to determine a trend.
Coastal saltmarsh: percentage cover	 Unknown	 Unknown	 Good	In 2020, coastal saltmarsh percentage cover was 0.019% statewide, but there is insufficient information to determine a trend.
Seagrass: cover within sampling sites	 Stable	 Unknown	 Good	The statewide trend in seagrass cover within sampling sites is stable. However, seagrass cover is getting better in some areas and worse in others in response to local conditions.
Subtidal macroalgae: percentage cover	 Stable	 Good	 Fair	The percentage cover of macroalgae on subtidal reefs is stable, based on limited data along the Adelaide and Fleurieu Peninsula coastlines.
Native flora: percentage declining	 Getting worse	 Unknown	 Poor	The percentage of coastal and marine native flora species declining is getting worse, but this trend has poor reliability.
Native fauna: percentage declining	 Stable	 Unknown	 Poor	The percentage of coastal and marine native fauna species declining is stable, but this trend has poor reliability.
Established invasive species abundance and distribution	 Stable	 Good	 Poor	Abundance and distribution of established marine invasive species is stable in South Australia.
New incursions of invasive species	 Stable	 Good	 Poor	New incursions of marine invasive species are stable in South Australia.
Proportion of fish stocks sustainable	 Stable	 Good	 Very good	In South Australia, 79% of fishery stocks are classified as sustainable, and 12% are depleted.
Marine protected areas	 Stable	 Good	 Excellent	South Australia's marine park protection is stable, with 44.8% of our waters protected, including 6.2% highly protected.

Biodiversity theme

Inland waters subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
Wetlands: percentage cover	 Unknown	 Unknown	 Good	In 2020, wetlands percentage cover was 1.9% statewide, but there is insufficient information to determine a trend.
Aquatic ecosystem condition EPA condition assessments	 Getting better	 Unknown	 Poor	Aquatic ecosystems in South Australia are recovering from the Millennium Drought.
Native flora: percentage declining	 Stable	 Unknown	 Poor	The percentage of inland waters native flora species declining is stable, but this trend has poor reliability.
Native fauna: percentage declining	 Stable	 Unknown	 Poor	The percentage of inland waters native fauna species declining is stable, but this trend has poor reliability.
Established invasive species abundance and distribution	 Stable	 Poor	 Fair	Abundance and distribution of established invasive species in inland waters is stable in South Australia.
Inland waters New incursions of invasive species	 Unknown	 Unknown	 Poor	From 2019 to 2022, 9 new incursions of invasive species were reported in inland waters, but there is insufficient information to determine a trend.
Lower Lakes aquatic and littoral vegetation	 Getting better	 Good	 Very good	Aquatic and littoral vegetation condition in the Lower Lakes is generally good and getting better.
Coorong waterbirds populations	 Getting worse	 Poor	 Very good	Abundances of Coorong waterbird populations are getting worse, with some exceptions.

Indicator	Trend	Condition	Information reliability	Summary of change
CLLMM diadromous fish recruitment	 Getting better	 Fair	 Good	Recruitment of diadromous fish is getting better, due to improved connectivity.
River Murray flow-dependent fish populations	 Stable	 Poor	 Fair	Flow-dependent fish populations are in poor condition. Murray cod are improving, while golden perch are stable.
River Murray floodplain trees condition	 Getting better	 Poor	 Poor	Floodplain tree condition is rated poor, but is getting better.



Water theme

Water is a critical resource that supports communities, the economy, and the environment in South Australia. The sustainable management of surface water and groundwater is essential for ensuring long-term resource quantity and quality, as well as supporting water-dependent aquatic ecosystems. The River Murray, a vital natural resource in the region, caters to the needs of the community, industry, agriculture, and the environment. Additionally, catchments and aquifers within the state play a crucial role in meeting water demands, especially in areas not supplied by the River Murray.

Importance of the theme

The theme of water is of utmost importance to the state, community, and environment of South Australia. It encompasses aspects including inherent and environmental values, ecosystem services, social aspects, and economic considerations. Sustainable water management is necessary to maintain the resource's quantity and quality, supporting the wellbeing and prosperity of the region.

Reporting on trend and condition

Monitoring the quantity and quality of surface and groundwater resources is vital for assessing their ability to meet demands and determining the need for management changes. Trend and condition report cards, along with regular monitoring and evaluation activities, inform adaptive water resource management. The report cards highlight key findings such as stable or rising trends in groundwater levels, stable or decreasing salinity, and varying surface water salinity within historical ranges. However, declining streamflow trends and increasing zero flow days pose challenges, primarily due to climate variability and localised pressures from water resource development. River Murray flows to South Australia have reduced greatly from historic records, and necessitate the need to dredge the Murray Mouth during prolonged low flow conditions. Rainfall over the past few years has positively contributed to surface and groundwater resources across South Australian catchments, including increased River Murray flows.

Pressures and drivers

The state's water resources are influenced by climate, water resource development, and rainfall patterns. Climate variability presents challenges across the Murray–Darling Basin and South Australia, affecting water supply relative to demand. The quality and quantity of water resources depend on factors such as groundwater recharge, surface water runoff, and flushing flows. Climate change exacerbates these pressures, necessitating interventions like salt interception schemes to maintain supply quality.













Actions and management

The South Australian Government collaborates with national and international entities to address water management challenges. South Australia manages key surface and groundwater resources through Water Allocation Plans under the *Landscapes South Australia Act 2019*. These plans consider environmental, social, and economic demands and are regularly reviewed and updated. The Basin Plan facilitates coordinated water resource management in the Murray–Darling Basin and has enabled the recovery of substantial volumes of water for the environment. Regular monitoring of water resources informs adaptive management.

Water theme

Surface water subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
River Murray: salinity	 Getting better	 Good	 Very good	The average salinity of River Murray water in South Australia is getting better.
Murray Mouth barrage outflow and dredging	 Getting better	 Poor	 Very good	Flows through the Murray Mouth have improved, but dredging has remained necessary to keep the Murray Mouth open.
Streamflow	 Getting worse	 Good	 Fair	Streamflow is declining across South Australia. However, in 2021–22 the overall condition was considered good due to above-average rainfall across much of the state.
Flow regime (zero flow days)	 Getting worse	 Good	 Fair	Despite a long-term declining trend in flow regime, the overall condition was considered good in 2021–22 due to above-average rainfall across much of the state.



Water theme

Groundwater subtheme






Indicator	Trend	Condition	Information reliability	Summary of change
Water level and salinity	 Stable	 Good	 Good	The salinity of South Australia's groundwater resources is generally stable, and water level trends are variable.





Image: Nick Bellotti, Fleurieu Peninsula

Land theme

Agricultural land in South Australia spans around 12.9 million hectares and contributes \$17.3 billion annually to food production. The health of the soil is crucial for maintaining productivity, landscape function, environmental quality, climate regulation, and human health. Soil erosion and acidity are the primary threats to agricultural soils in South Australia.

Importance of the theme

Agricultural land is vital for food production and the economy of South Australia. Healthy soils are necessary for sustaining productivity, preserving the environment, and ensuring the wellbeing of both the agricultural industry and the population.

Reporting on trend and condition

Soil erosion risk in the agricultural zone has a fair condition with a worsening trend, primarily influenced by below-average rainfall. The trend and condition vary across districts based on rainfall levels. The adoption of no-till practices has a very good condition rating, with an adoption rate of approximately 80%, contributing to overall erosion risk reduction. Approximately 20% of agricultural land is affected by soil acidity, resulting in a production loss of \$88 million annually. While the area affected by soil acidity is increasing, increased lime use in the past five years shows an improving trend and fair condition, especially in districts with naturally acidic soils.

Pressures and drivers

Soil erosion and acidity pose significant challenges to maintaining the health and condition of South Australia's agricultural soils. Around 61% of agricultural soils are susceptible to wind erosion, while 32% are susceptible to water erosion. Factors such as insufficient plant growth, tilling the soil, bushfires, managed burns, and climate change predictions for warmer temperatures and reduced rainfall contribute to erosion risks. Acidification of soils is accelerated by food production, agricultural productivity, and nitrogen fertilizer use.

Actions and management










The Department for Environment and Water supports land managers in South Australia to achieve sustainable and environmentally sound soil and land management.

The Department for Environment and Water programs focus on promoting and facilitating the adoption of no-till methods, stubble retention, improved grazing management, and lime application targeting. Collaboration with the Department of Primary Industries and Regions SA (PIRSA) and the agricultural industry helps enhance the management of acidic soils. Technology, such as pH mapping, assists farmers in identifying soil acidity and implementing targeted lime application.

Land theme

Agricultural land subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
Days at risk of soil erosion	 Getting worse	 Fair	 Very good	The statewide trend of soil erosion risk on agricultural land is getting worse. Level of risk varies across agricultural districts.
Soil protection: adoption of no-till	 Stable	 Very good	 Poor	Agricultural crops are now mostly sown using no-till and adoption of this method has reached a stable level.
Soil acidity	 Getting better	 Fair	 Good	Soil acidity on agricultural land is fair overall and has started to improve with higher lime use.



Liveability theme

Liveability is a comprehensive concept that encompasses the conditions necessary for a good quality of life for all residents in cities, regions, and communities. It involves various aspects, including physical and mental wellbeing, sustainability impacts, air pollution exposure, public health, and economic development. Liveability also emphasises the importance of nature and the protection of its resources.

Importance of the theme

Liveability plays a crucial role in creating sustainable and thriving communities. It includes factors that contribute to peoples' physical and mental wellbeing, such as air quality, public health, economic development, and the preservation of natural resources. In South Australia, the government recognises the significance of liveability and monitors trends in air quality and resource management. Enhancing liveability not only improves the health and happiness of residents but also contributes to the long-term sustainability and resilience of cities and regions.

Pressures and drivers

The increasing population and higher density living exert pressure on liveability. The global population grew from 7 to 8 billion people between 2011 and 2022, leading to challenges in maintaining liveable conditions. Pressures on liveability result from various human-induced factors, including resource over-exploitation, emissions from transportation and industrial activities, the impacts of climate change and extreme events, and the demand for housing and public services.

Despite the challenges, there are positive drivers that contribute to enhancing liveability. Initiatives such as tree planting programs, public land initiatives, and efforts to address heat issues can positively impact liveability. These drivers aim to mitigate negative impacts, preserve natural resources, and promote sustainable practices that enhance the overall wellbeing of communities.

Reporting on trend and condition

The South Australian Government reports on liveability with new trend and condition report cards. While the concept of liveability is broader than what is covered in the new report cards, they specifically address air quality and circular economy. These report cards provide evidence for policy and practice, tracking the progress of liveability targets within the state. The trend and condition reports offer insights into whether liveability targets are being achieved and identify areas that require further management and improvement.

Actions and management

To improve liveability, the South Australian Government has implemented several actions and management strategies:

- establishing and maintaining a network of monitoring stations to measure pollutant levels and conduct targeted air quality studies
- implementing the National Clean Air Agreement, regulating industry, vehicle fuel quality, and engine emissions standards
- supporting the transition to a circular economy by developing waste strategies, phasing out single-use plastic products through legislation, and investing in infrastructure to divert materials from landfill.

Collaboration between all levels of government and sectors is emphasised to better understand and mitigate the risks associated with air pollution. Integrated thinking is crucial for designing and engineering solutions that enhance liveability while considering the specific conditions and needs of each city. By implementing these actions and fostering collaboration, South Australia aims to improve the overall liveability of its communities, creating sustainable and thriving environments for its residents.

Liveability theme

Urban subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
Urban heat	 Stable	 Fair	 Fair	Overall, urban heat in metropolitan Adelaide is stable but many localised areas are getting worse.



Liveability theme

Urban and rural subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
Circular economy: resource recovery	 Getting better	 Fair	 Good	South Australia's transition to a circular economy is getting better based on high diversion rates in the resource recovery sector.



Liveability theme

Air quality subtheme



Indicator	Trend	Condition	Information reliability	Summary of change
Particles (PM₁₀)	 Stable	 Fair	 Very good	Annual average PM ₁₀ particle concentrations have been stable over the long-term and meet the national standard.
Particles (PM_{2.5})	 Getting better	 Good	 Very good	Annual average PM _{2.5} particle concentrations have decreased since 2007 and meet the national standard.
Nitrogen dioxide (NO₂)	 Stable	 Good	 Very good	Annual average levels of nitrogen dioxide in South Australia are stable and meet the national standard.
Sulfur dioxide (SO₂)	 Getting better	 Very good	 Very good	Sulfur dioxide levels in Port Pirie have reduced in recent years and meet the reporting standard.
Ground-level ozone (O₃)	 Stable	 Very good	 Very good	Ground-level ozone concentrations in South Australia are stable and meet the national standard.









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.

Disclaimer: The Department for Environment and Water (DEW) 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 and currency or otherwise. DEW and its employees expressly disclaim all liability or responsibility to any person using the information or advice.

Cover image: Brad Griffin Photography, Eyre Peninsula

© Crown in right of the State of South Australia.

2024 | FIS 968966

