Murray-Darling Action Plan (MDAP)

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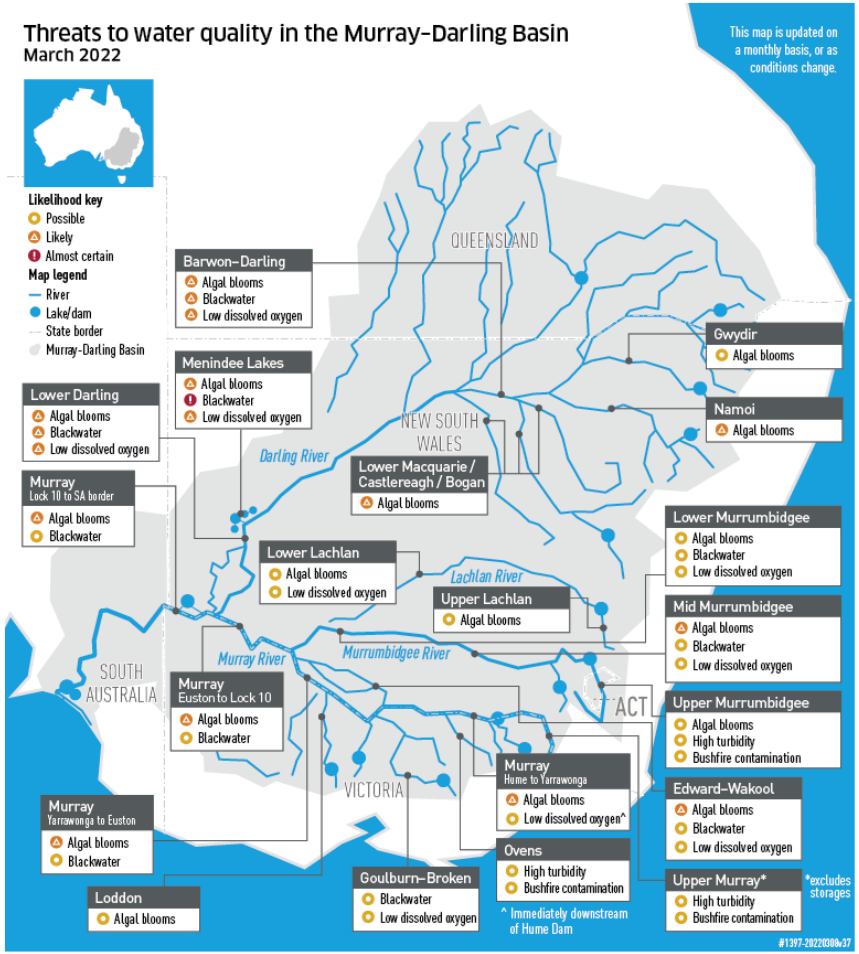
Map


SA
QLD
NSW
VIC
TAS
NORTHERN BASIN
SOUTHERN BASIN
Charleville
Roma
BRISBANE
Toowoomba
Cunnamulla
St George
Goondiwindi
Moree
Bourke
Narrabri
Tamworth
Broken Hill
Dubbo
Ivanhoe
Forbes
Orange
Cowra
SYDNEY
Renmark
Wentworth
Mildura
Griffith
ADELAIDE
Murray Bridge
Pinnaroo
Swan Hill
Deniliquin
Wagga Wagga
CANBERRA
ACT
Echuca
Albury
Shepparton
Horsham
Bendigo
Seymour
MELBOURNE
Capital city
Main town
Main rivers
State border
Murray–Darling Basin
Sources:
» Geoscience Australia
» Murray–Darling Basin Authority


Threats to water quality in the Murray–Darling Basin
March 2022
This map is updated on a monthly basis, or as conditions change.
Likelihood key
Possible
Likely
Almost certain
Map legend
River
Lake/dam
State border
Murray–Darling Basin
QUEENSLAND
NEW SOUTH WALES
VICTORIA
SOUTH AUSTRALIA
ACT
Darling River
Lachlan River
Murray River
Murrumbidgee River
Barwon–Darling
Algal blooms
Blackwater
Low dissolved oxygen
Menindee Lakes
Algal blooms
Blackwater
Low dissolved oxygen
Lower Darling
Algal blooms
Blackwater
Low dissolved oxygen
Murray
Lock 10 to SA border
Algal blooms
Blackwater
Gwydir
Algal blooms
Namoi
Algal blooms
Lower Macquarie / Castlereagh / Bogan
Algal blooms
Lower Lachlan
Algal blooms
Low dissolved oxygen
Upper Lachlan
Algal blooms
Lower Murrumbidgee
Algal blooms
Blackwater
Low dissolved oxygen
Mid Murrumbidgee
Algal blooms
Blackwater
Low dissolved oxygen
Upper Murrumbidgee
Algal blooms
High turbidity
Bushfire contamination
Murray
Euston to Lock 10
Algal blooms
Blackwater
Murray
Hume to Yarrawonga
Algal blooms
Low dissolved oxygen^
Edward–Wakool
Algal blooms
Blackwater
Low dissolved oxygen
Murray
Yarrawonga to Euston
Algal blooms
Blackwater
Ovens
High turbidity
Bushfire contamination
Upper Murray*
High turbidity
Bushfire contamination
*excludes storages
Goulburn–Broken
Blackwater
Low dissolved oxygen
Loddon
Algal blooms
^ Immediately downstream of Hume Dam
#1397-2022E09v37

Mission Statement

MDAP’s mission is to reverse the decreasing water quality of the Murray -Darling River Basin, and keep the water consistently usable for drinking and agricultural purposes by 2030.

Background

- Located in southeastern Australia
  - The Murray River, the primary river in the basin, flows for 1570 mi from the Snowy Mountains to the Indian Ocean
- Encompasses the drainage basin of the tributaries of the Murray River and the Darling River (the basin includes 6 of Australia's 7 longest rivers)
- Covers around one seventh of Australia's land mass, with the area being 409,835 sq mi (1,061,469 sq km) and has an annual discharge of 31 cubic feet per second.
- This area attributes more than 40% of Australia's national agricultural value

History

- The basin was originally home to many aboriginal people, the land was then taken by the europeans who settled there and the aboriginal people were driven out or killed.
- There is a great abundance of native species, many of which are now endangered.
- Historically fish provided a reliable food source but as the water quality decreased many of the fish species became extinct and there is a very low biodiversity
- The regions main exports include wine, sheep, cattle, grains, and fruit
- The river is highly used for irrigation which has lead to a huge problem with salinity

Summary of Current Water Laws

The Water Act (2007)

- The basis of protection and management of the Murray-Darling Basin
- Improve water security and optimises economic, social and environmental outcomes

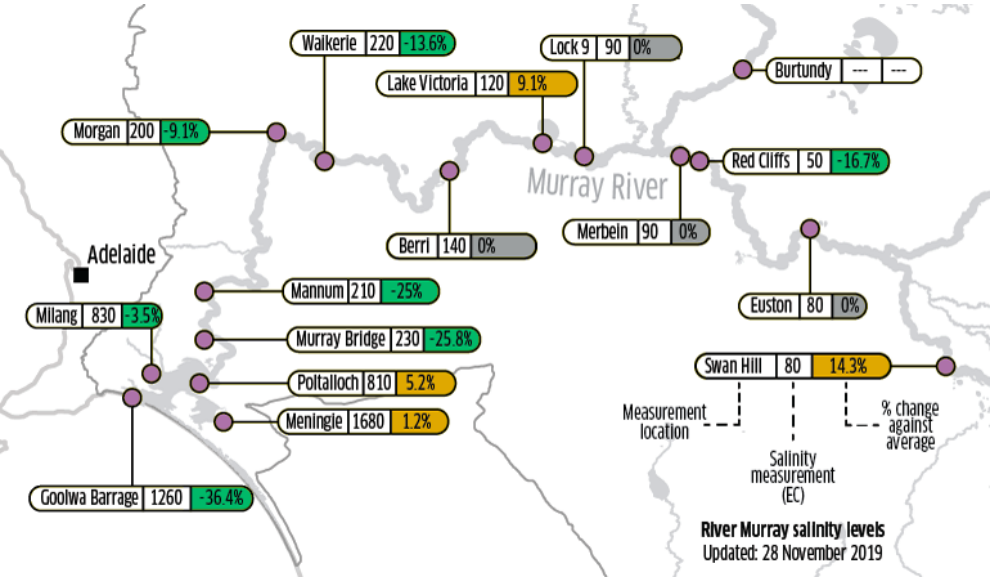
The Murray-Darling Basin Plan (2012)

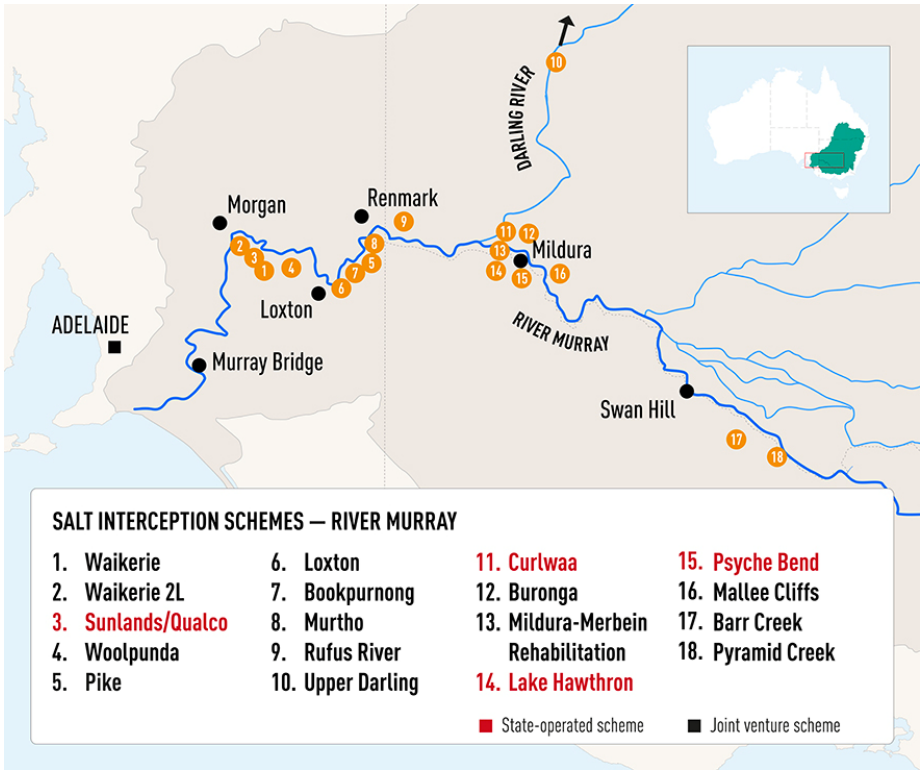
- Partnership between Australian Government, New South Wales, Queensland, etc
- Limits amount of water removed from the basin each year, as well as water quality and monitoring standards

Problem 1: Salinity

- Managing salinity is one of the biggest challenges
- water is used as a drinking water source as well to water crops, it is critical to keep salinity levels low
- More than one trillion tonnes of salt lies in the groundwater systems close to the Murray and Darling Rivers
- Affected by land clearing, irrigation, urban/industrial processes, drought, etc.

Goal 1: Decrease the salinity of the Darling -Murray Basin to be consistently usable for drinking water and farming sources.


Waikerie 220 -13.6%
Lock 9 90 0%
Burtundy --- ---
Lake Victoria 120 9.1%
Morgan 200 -9.1%
Red Cliffs 50 -16.7%
Murray River
Berri 140 0%
Merbein 90 0%
Adelaide
Euston 80 0%
Mannum 210 -25%
Milang 830 -3.5%
Murray Bridge 230 -25.8%
Swan Hill 80 14.3%
Poltalloch 810 5.2%
Meningie 1680 1.2%
Measurement location
% change against average
Salinity measurement (EC)
Goolwa Barrage 1260 -36.4%
River Murray salinity levels
Updated: 28 November 2019


DARLING RIVER
Morgan
Renmark
Mildura
Loxton
ADELAIDE
Murray Bridge
RIVER MURRAY
Swan Hill
SALT INTERCEPTION SCHEMES — RIVER MURRAY
1. Waikerie
2. Waikerie 2L
3. Sunlands/Qualco
4. Woolpunda
5. Pike
6. Loxton
7. Bookpurnong
8. Murtho
9. Rufus River
10. Upper Darling
11. Curlwaa
12. Buronga
13. Mildura-Merbein Rehabilitation
14. Lake Hawthron
15. Psyche Bend
16. Mallee Cliffs
17. Barr Creek
18. Pyramid Creek
State-operated scheme
Joint venture scheme

Problem 2: Low Dissolved Oxygen Levels

- Low dissolved oxygen levels have been known to cause mass fish deaths
- severely impacts wildlife and biodiversity in the watershed.
- 22 fish klls between 2018 and 2019
- Caused by variety of factors including high temps, droughts, blackwater, etc.

Goal 2: Increase dissolved oxygen levels to concentrations necessary for aquatic life, approximately 5mg/L.

Problem 3: Algal Blooms

- can cause several issues from producing toxins in the water to depleting oxygen levels after the algae die
- caused by blue -green algae which occur naturally in rivers and lakes
- trends have not decreased much since 1980, showing that they are a recurring problem.

Goal 3: Decrease the frequency of algal blooms in the Murray -Darling Basin by 50%.

Conclusion and Recommendations

- For excess salinity:
  - Improve farming and irrigation practices
  - Operate salt interception schemes
- For low dissolved oxygen:
  - Release additional water into the basin
  - Usie aerators to add oxygen to the water
- For algal blooms:
  - Flush blooms with new water
  - Continual monitoring of algae levels