

Water quality summary for the Murray and Lower Darling surface water resource plan area (SW8)

Water quality technical reports provide an overview of the water quality condition for each water resource area in the Murray–Darling Basin.

Purpose

The *Murray–Darling Basin Plan* (2012) requires all basin water resource areas to have a water quality management plan. Water quality technical reports for each area provide specialised background information to support the plans.

The Water Quality Technical Report for the Murray and Lower Darling surface water resource plan area gives an overview of the water quality condition. The report also outlines the factors influencing water quality in the region. This includes the likely causes of water quality degradation.

Water quality targets

The report compares water quality data to Basin Plan water quality targets. These targets support environmental, social, cultural and economic benefits in the Murray–Darling Basin and help identify risks to aquatic ecosystems, recreational and irrigation use.

Future monitoring of progress towards the targets will assess the success of management actions taken to address water quality decline.

Water quality parameters

The report looks at water quality parameters listed in the Basin Plan that represent general water quality condition. These parameters are most likely to demonstrate change over time from management actions. They include:

- turbidity and suspended sediment
- nutrients
- dissolved oxygen
- pH
- water temperature and thermal pollution
- salinity
- harmful algal blooms
- toxicants
- pathogens.

Methods

The water quality data used in the report comes from 14 routine water quality monitoring stations within the Murray and Lower Darling surface water resource plan area.

We have developed a water quality index (WaQI) to communicate and report water quality condition. It combines data from a range of parameters to a common score and rating.

Water quality summary



Water quality technical report for water resource plans

For New South Wales, the WaQI uses parameters such as total nitrogen, total phosphorus, turbidity, dissolved oxygen and pH. Where data is available, it also considers temperature, salinity and blue-green algae.

The outcome provides a number between 1 and 100 categorised according to the following water quality rating:



Results

We used data collected between 2010 and 2015 to calculate index results for a range of sites in the Murray and Lower Darling surface water resource plan area. Results are shown in Figure 1. The Water Quality Technical Report for the Murray and Lower Darling surface water resource plan area has further details.

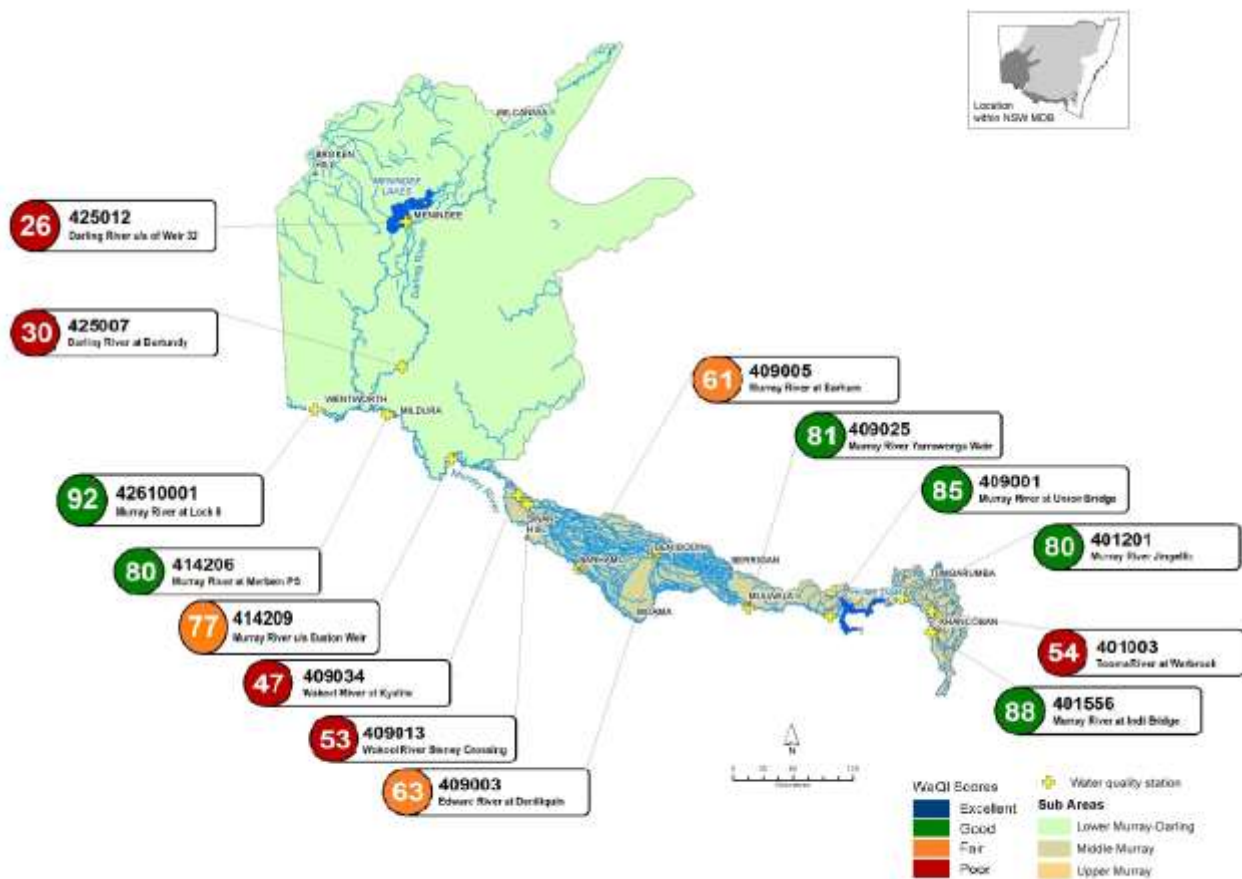


Figure 1 Water Quality Index Scores for the Murray and Lower Darling surface water resource plan area

Water quality issues within the Murray and Lower Darling catchment result from a combination of factors. These include changes to natural flow regimes, catchment conditions and land use. Table 1 lists the major water quality issues in the Murray and Lower Darling catchment.

Table 1. Summary of major issues and causes of water quality degradation

Issue	Location	Potential causes
Harmful algal blooms	uplands, midlands, lowlands	Stratification and warm water temperatures in Hume Dam and Menindee Lakes. Seeding of Murray River by Hume Dam and Lake Mulwala. Low flows in Murray and Darling Rivers. Nutrient inputs.
Dissolved oxygen and pH outside of normal ranges	uplands, midlands, lowlands	Reduced flow and increased low flow and cease-to-flow periods disrupting dissolved oxygen dynamics and increased eutrophication.
Increased nutrients and turbidity	uplands, midlands, lowlands	Stream bank and riparian condition, grazing and cropping practices, carp and feral species. In the lowlands, increased sediment and nutrient input associated with erosion.
Salinity	lowlands	Inputs from saline catchments and connection with saline groundwater during zero and low flow periods.
Poor water quality events following releases during cease to flow periods	lowlands	Poor water quality events in the Darling River (in terms of dissolved oxygen, salinity and pH) following the start of water releases from Menindee Lakes during cease to flow periods, flushing of poor- quality water downstream from isolated standing pools.
Hypoxic blackwater events	midlands, lowlands	Less frequent flooding allows increased organic material to accumulate on riverbanks and floodplains.
Toxicants and pesticides	midlands, lowlands	Pesticide use in cropping areas.
Disruption to organic carbon cycling	midlands, lowlands	Reduced freshes and high flows, disruption of longitudinal connectivity by Hume Dam.
Thermal pollution	Uplands, midlands	Cold water released from Khancoban and Hume Dams in summer. Warm water releases in winter.

More information

Please see the full report for further information on the water quality condition and discussion of results. It can be accessed [here](#).

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