

Development places pressure on river flows and water quality as increasing numbers of people, animals and crops rely on river water. These pressures are exaggerated during periods of drought.

Over the past 100 years the Barwon-Darling River has suffered increasingly from reduced water flows and quality for many reasons, including:

- diversion of water for irrigation, industrial and domestic uses
- uncontrolled stock access fouling water with waste and causing riverbank erosion
- polluted run-off from towns
- salinity and blue-green algae
- sediment which blocks light to plant and fish ecosystems.

A range of measures are used to promote water conservation and to improve water quality by reducing nutrient flows into the river. Initiatives include revegetation of river banks, re-snagging, fish stocking, aquatic plant restoration, eliminating sources of pollution and community involvement in tackling catchment management issues.





The condition of riverbank land and vegetation affects water quality and the health of aquatic ecosystems.

Efforts to manage the supply and quality of water more effectively for an improved environment involves everyone: landholders, industry, residents and tourists.

The Darling is a major drawcard for tourists and a healthy river is essential to ensure its continued attractiveness. In fact, tourism is the third largest industry in the Western Catchment behind mining and agriculture. The Darling River Run is a 700 km tourist route from Bourke to Wentworth that attracts a steady stream of visitors each year.



The Louth Races attract approximately 4,000 people per year.

Pollution

Stormwater affects water quality in the Barwon-Darling River because pollution and litter from farming and residential areas travels with runoff through gutters and drains and into the river. Twenty-two litter traps have been installed in the stormwater system of towns along Barwon-Darling River, capturing larger items such as drink bottles and plastic bags before they enter waterways.

Everyone can reduce stormwater pollution by keeping roadways and traffic areas free of domestic, animal, farming and industrial waste.



Dry cleaning at Bourke Council's Depot avoids stormwater pollution.

On-property measures

Many landholders who front the Barwon-Darling River are undertaking measures on their property to improve water quality.

When stock access a waterway to drink, they can destroy riverside vegetation, cause riverbank and streambed erosion, stir up sediments and pollute the water. Stock often defecate when drinking, which introduces additional nutrients into the aquatic environment. One kilogram of phosphorus from manure can result in the growth of up to 500 kg of algae.



Fencing waterways and installing off-river watering points enables better management of stock, riverbank vegetation and water health.

These algal blooms can choke waterways and may be toxic to fish, other aquatic life, livestock and people. Many Western Catchment landholders are fencing their waterways to exclude stock and improve water quality.

Fencing waterways allows landholders to manage the riverside area separately from the rest of their property. Between 2004 and 2007, Western Catchment people fenced a total of 310 km of waterways (equivalent to the distance by road between Mungindi and Brewarrina or between Sydney and Taree) resulting in the protection of 300 km² of riverbank vegetation.

Most landholders are aware of, and taking steps to reduce, farm runoff into the River. Excessive levels of nutrients from farm runoff affects water quality by:

- promoting the growth of algae
- increasing sediment, which damages fish habitats
- making the river unsuitable for swimming
- adding to the cost of treating water for drinking.

Snags in rivers

Snags are the inland river equivalent of coastal reefs. Studies have shown that streams with snags are likely to have higher numbers of fish and invertebrates than those without.

Snags provide:

- hiding, spawning and resting places for native fish
- rich reservoirs of food for invertebrates and other organisms
- roosting places for birds
- habitat for animals such as tortoises and native water rats



Eighty per cent of Murray cod are found within one metre of a snag. Photo: Industry and Investment NSW.

Snags also assist in developing deep holes, maintaining channel shapes and protecting banks from erosion during fast flows.

People are now encouraged to leave snags where they are; protect healthy riverside vegetation, which is the source of future snags; and where possible restore snags through river restoration projects.

The Western CMA and Industry and Investment NSW have undertaken large-scale re-snagging as part of the Brewarrina to Bourke Demonstration Reach: a \$2.5 million project to improve aquatic habitat and bring back the fish in the Barwon-Darling between Brewarrina and Bourke.

Approximately 200 snags have been reinstated at 11 sites between Brewarrina and Bourke, and a further 500 snags reintroduced at 12 sites around Wilcannia. They replace snags removed during the days of the paddle-steamers for fuel and to aid navigation. The reintroduced snags are native hardwood species sourced from authorised timber clearing for other purposes in Western NSW.



The Western CMA and Industry and Investment NSW have undertaken large-scale re-snagging between Brewarrina and Bourke and near Wilcannia to increase numbers of native fish.

Salinity

Salinity (salt) is another factor affecting the Darling River's water quality. High levels of salinity damage ecosystems and reduce the quality of water for use in homes, for stock water and for recreational purposes such as swimming and fishing.

Salinity is not a new phenomenon – in fact, explorer Charles Sturt originally named the Darling "Salt River".

Naturally saline groundwater can seep from bedrock faults into the river during periods of low flow and then become concentrated by evaporation from residual waterholes.

While the Western Catchment is primarily a salt 'taker' from upstream catchment areas in Queensland and NSW, responsible management of native vegetation, water and soils in the Western Catchment is essential to ensure localised salt is not mobilised into the system.

Australia's Federal, State and Territory Governments have finalised a National Action Plan for Salinity and Water Quality. The Plan committed \$1.4 billion over seven years to support action by communities and land managers in 21 highly affected regions.

The Plan included the protection and rehabilitation of waterways, native vegetation, changes in land and water management, and engineering works.

The Saline Interception project at Jandra Station, 70 km north-east of Louth, is a large-scale groundwater pumping project that intercepts deep-channel saline inflows entering the Darling River.



In addition to manual salinity testing (photographed above), approximately 30 automated probes in the Barwon-Darling river system monitor salinity to provide information for improved decision-making to protect town and agricultural supplies and natural ecosystems.

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Through the Western Catchment Management Authority 2009

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (November 2009). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate officer of the Western Catchment Management Authority or the user's independent advisor.

December 2009

ISBN 978-0-7313-3982-2