



Gumeracha Weir to Kangaroo Creek Reservoir

The Adelaide and Mount Lofty Ranges Natural Resources Management Board, SA Water and the Department for Water are collaborating on a trial to provide environmental flows to the River Torrens.

Environmental flows seek to mirror natural seasonal flows, but in a modified way that takes into account water security and flood protection. Full flows cannot be returned to the River Torrens because water is required for human consumption and industry, but we can plan to achieve the best possible environmental benefits with the flows available.

The flows are part of a broader program that also includes the South Para and Onkaparinga Rivers.

The trial commenced in December 2011 and will run for three years. It will test the anticipated benefits of the environmental flows to aquatic health predicted by scientific investigations conducted over a number of years.

The results will guide decision-making so ongoing environmental flows can optimise benefits to the rivers of the Mount Lofty Ranges.



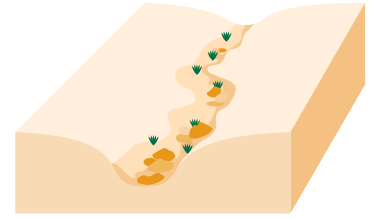


Environmental flows River Torrens

The environmental flows will be delivered in four basic phases that mimic natural seasonal flows

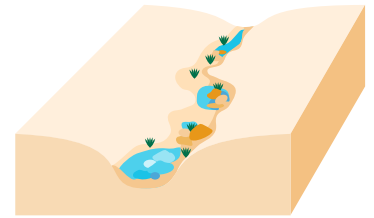
No flow

A dry phase where the river separates into a series of pools. Periods of no flow are important in recycling of nutrients and creating food sources for aquatic animals. They also give native fish an advantage over introduced fish species.



Low flow

These minimum flows are experienced over low rainfall months and are vital to maintaining the right water temperature and quality in pools, which provide an essential refuge for fish and other water-dependent life in dryer seasons.



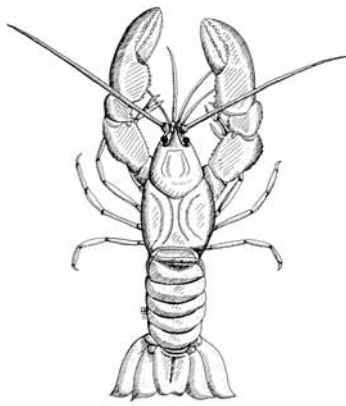
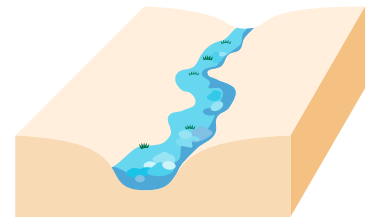
Fresh flow

These flows provide higher volumes of water and create more habitat for fish and allow them to travel between pools. The flows are essential to maintaining viable and widely distributed populations of fish.

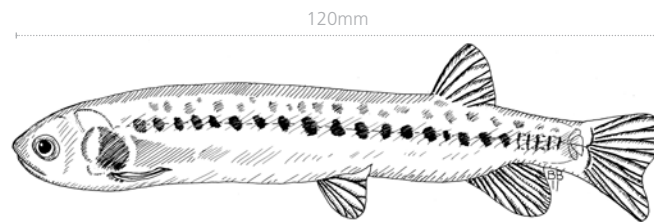


Flush flow

These high-volume, high-velocity flows scour sediment and vegetation that build up during lower flows. Over time sediment fills spaces between rocks, significantly reducing habitat for bugs, fish and other aquatic animals such as yabbies. Flush flows also allow fish to migrate both up and downstream and can provide important passage to the sea during breeding events.



Yabbie



Mountain galaxias is a native fish found in the Torrens River



Encroachment of terrestrial weeds and other vegetation on river bed as a result of reduced frequency of fresh and flush flows



Pool environment provides important refuge for aquatic biota. Hydrologic disconnection of pools due to severely reduced low flows threatens biota with local extinction





Why an environmental flows trial?

Water supply dams and diversion weirs are located along the South Para, Torrens and Onkaparinga Rivers for the purpose of storing and diverting water to Adelaide. The dams and weirs are an essential part of ensuring Adelaide receives a reliable water supply.

However, diverting water from rivers has significantly interrupted the cycle of natural flows in our rivers and this has had a knock-on effect to the health of vegetation, fish and other organisms. In some cases, rivers experience no flow up to 90% of the time, whereas prior to diversion they may have flowed all year round. This has contributed to the local extinction of one species of fish with another three at risk of becoming extinct.

River Torrens trial reach (Gumeracha Weir to Kangaroo Creek Reservoir)

For more than 160 years the Torrens River has been used for water supply, horticulture, recreation, commerce and drainage. The metropolitan water supply system in the Torrens catchment includes the Kangaroo Creek Reservoir and Millbrook Reservoir. Flow in the River Torrens along this reach includes both catchment water (from the Mount Lofty Ranges) and River Murray water pumped into the river to supplement water supply.

Water flowing in the River Torrens is captured at the Gumeracha Weir and diverted to the Millbrook Reservoir which is located in an adjacent valley, off the River Torrens. As a result, flows downstream of Gumeracha Weir are regularly zero during the drier months as the weir diverts water to Millbrook Reservoir. Flows that do make it past the weir are recaptured in Kangaroo Creek Reservoir for use in metropolitan water supply.

The trial reach is located in the Adelaide Hills Council area and extends from Gumeracha Weir to the head of the Kangaroo Creek Reservoir. In part, the section runs through the Cudlee Creek Conservation Park.

A number of native fish species have been found in the reach, including Climbing galaxias, Mountain galaxias, Dwarf flathead gudgeon, Flathead gudgeon and Bony herring. However, numbers of most native species are low.

Lack of flows means the river frequently separates into a number of isolated pools. Without freshening flows, poor water quality persists in pools leading to poor health and death of inhabitants such as fish.

Environmental flow regime for the River Torrens (Gumeracha Weir to Kangaroo Creek Reservoir)

The flow regime for the River Torrens has been determined through scientific investigation and would include annually:

- a continuous 2.5 ML per day low flow from 1 October to 31 June
- a continuous 9 ML per day low flow from 1 July to 30 September
- three flushes, over five days each rising to a peak of 200 ML per day. One each in May, July and September
- a flush, over five days, rising to a peak of 200 ML per day, in September.
- A total environmental flow provision of 4511 ML



1 Dwarf flathead gudgeon are a native fish that live in the Torrens

2 Brown and Rainbow trout are voracious predators of native fish and found in the Torrens

Photos courtesy of Dr D McNeil and Dr M Hammer





Environmental flows River Torrens



Expected benefits for the River Torrens (Gumeracha Weir to Kangaroo Creek Reservoir)

- Improved water quality to levels conducive for aquatic life survival during the year
- Improvements in aquatic habitat
- A self-sustaining population of Climbing galaxias with regular breeding and recruitment
- Self-sustaining populations of Flathead gudgeons, Dwarf flathead gudgeons and Mountain galaxias with higher numbers than currently present
- A healthy macroinvertebrate (bug) community, which in turn underpins the health of the aquatic ecosystem
- Healthy stands of native aquatic vegetation

Measuring the trial

A rapid and positive response to the flows can be expected for aquatic macroinvertebrates (bugs), while fish may take a number of years to respond fully. To make sure the environmental flows deliver intended benefits in the long term, the Board, SA Water and the Department for Water will be closely monitoring conditions in the River to evaluate the success of the trial. The results will further be used to refine the flows to optimise their environmental benefits.

The results will be made available to the community at key stages throughout the trial, with a full evaluation of the outcomes available following completion of the three year trial.

For further information visit
www.amlnrm.sa.gov.au/Water/Surfacewater/Environmentalflows.aspx

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Aerial photography/Cadastral data
supplied by Customer Service Centre Client Services
Department of Environment and Natural Resources