



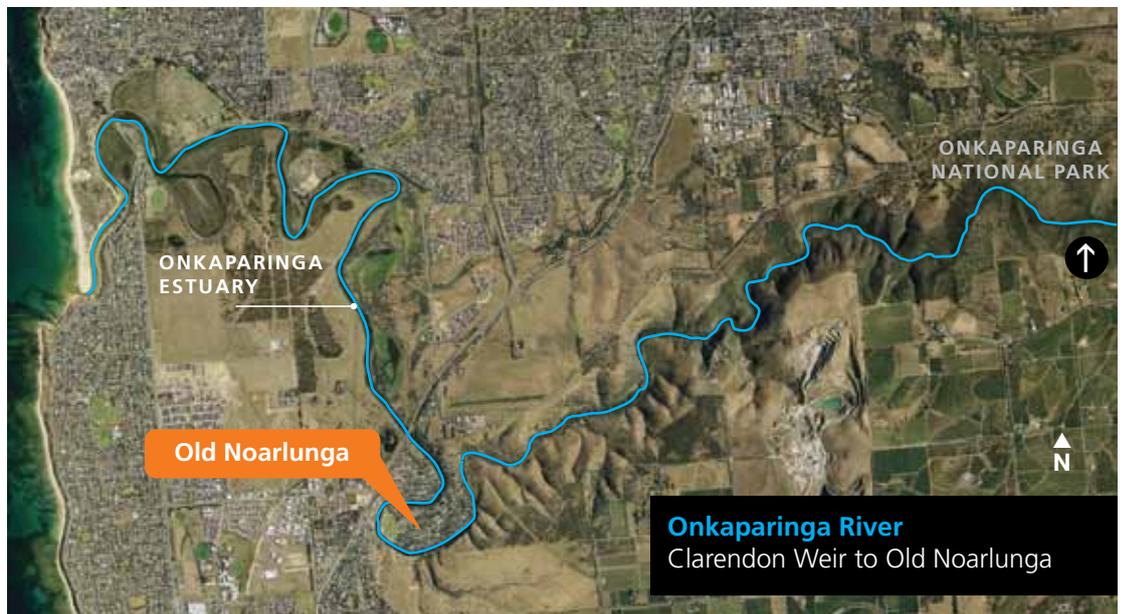
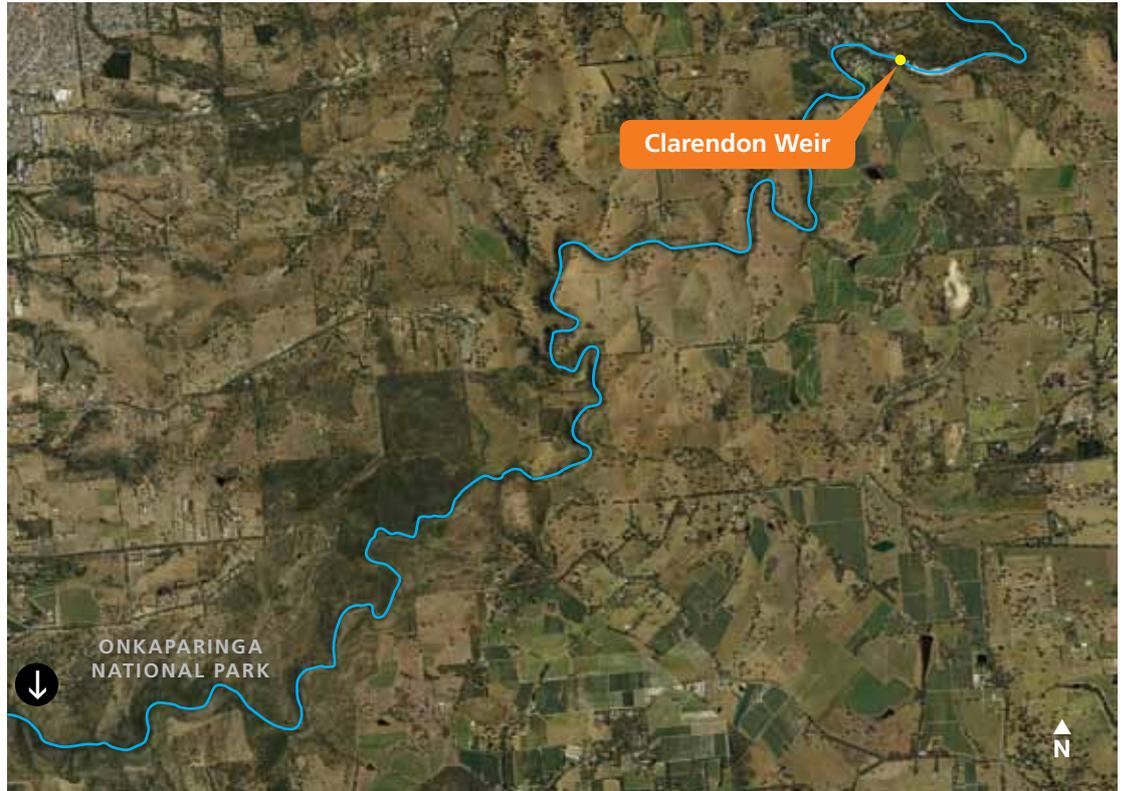
Onkaparinga River Environmental flows



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 Onkaparinga River.

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 Onkaparinga

River because water is required for human consumption and industry, but we can plan to achieve the best possible environmental benefits with the flows available.





Environmental flows Onkaparinga River

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.



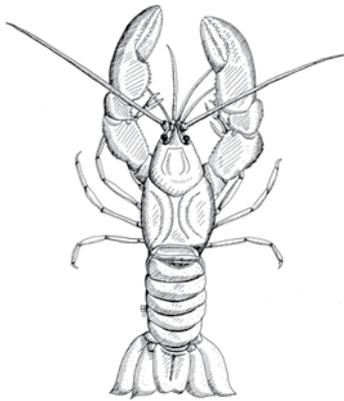
Fresh flow

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.

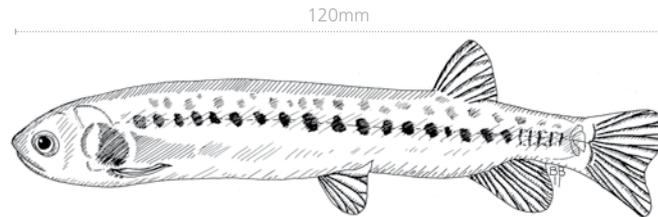


Flush flow

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 Onkaparinga River



Vegetation encroachment into stream bed as a result of long term reduction in high flow events



Reduced flow allows build up of filamentous algae and reduced habitat value





Environmental flows Onkaparinga River

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

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.

Onkaparinga River trial reach

The Onkaparinga River begins near Mount Torrens in the Mount Lofty Ranges and flows south-westerly to the river mouth at Port Noarlunga. The catchment area consists of a number of tributaries, including the Aldgate, Cox, Lenswood, Inverbrackie, Echunga and Kangarilla creeks.

The trial reach on the Onkaparinga River extends from the Clarendon Weir downstream to the head of the estuary located immediately above Old Noarlunga.

The Onkaparinga River is a major source of Adelaide's drinking water, supplying around 40% of Adelaide's water needs in an average year. River Murray water is pumped into the Onkaparinga River at Hahndorf and from here flows on to the Mount Bold Reservoir. Water is then released from Mount Bold Reservoir to the Clarendon Weir.

The Clarendon Weir was constructed in the 1890s and later modified in the 1960s. The weir was part of an early settler water supply scheme and is now an integral part of Adelaide's water supply. Water is diverted from Clarendon Weir to Happy Valley for treatment and distribution.

Prior to construction of the Clarendon Weir, the Onkaparinga River would have experienced some flow every day of the year (on average) past this point. Flows along the river now occur in an average year about 10% of this time. Extended periods without flows have resulted in vegetation encroachment into the channel, with a subsequent reduction in channel width and loss of aquatic habitat.

The range of fish along this reach is more diverse than any of the other reaches involved in the trial. There is also a high diversity of aquatic plants, with species such as Ribbonweed (*Vallisneria nana*), Curly pond weed (*Potamogeton crispus*), Water ribbon (*Triglochin procerum*) commonly recorded in pools in the trial reach.



1 Climbing galaxias are now extremely rare in the Onkaparinga possibly due to the failure of past spawning and recruitment. They rely on autumn flows to take their newly spawned larvae out to sea. They rely on spring flows to allow grown fish to swim back into fresh water



2 Pouched lamprey are no longer found in the Onkaparinga River. Recently only a few have been captured in the Torrens mouth and otherwise they are regarded as locally extinct or extremely rare



3 A native eel found in the Onkaparinga River



Photos courtesy of Dr D McNeil and Dr M Hammer



Environmental flows Onkaparinga River

Environmental flow regime for the Onkaparinga River

The environmental flow regime for the Onkaparinga River has been determined through scientific investigations and would include annually:

- a no flow period from 1 January to 31 March
- a fresh flow of 100 ML per day for five days triggered by the first rainfall after 15 March, or 1 April (whichever is earlier)
- a low flow of 30 ML per day continuous from 1 April to 31 October
- a low flow of 10 ML per day continuous from 1 November to 31 December
- two flush flows over nine days each, rising to a peak of 400 ML per day; one in June and one in September (1220 ML each);
- a total environmental water provision of 9,400 ML



Expected benefits for the Onkaparinga River

- Water quality in isolated pools will be maintained at levels suitable for aquatic life during no flow periods
- Improvements in aquatic habitat
- Increased populations of diadromous (migrating from the sea to fresh water to spawn) native fish
- Regular breeding opportunities for Mountain galaxias, Dwarf flathead gudgeon and Flathead gudgeon
- More stable populations of native fish species and discouraged expansion of introduced fish species
- Healthy stands of native aquatic vegetation
- Reduced terrestrial plant species within the river bed

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
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