

Flows for the Future (F4F)

Supporting healthy catchments for a sustainable and productive community



The Eastern Mount Lofty Ranges (EMLR) is a major contributor to South Australia's economy, generating \$440 million in agricultural production each year. It is a prime tourism destination and home to many farmers and rural lifestyle properties. Dams and watercourse diversions in the EMLR provide water security to support our economy and way of life.

Research shows that dams and watercourse diversions also contribute to the long-term degradation of catchments, many going without flowing water for much longer periods than in the past. While dams and watercourse diversions are crucial for water security, they have changed the patterns and amount of water flowing through the EMLR, having a significant impact on biodiversity².

Water is core to the culture and identity of First Nations across the Murray Darling Basin, including the Ngadjuri, Kurna, Peramangk and Ngarrindjeri people of the EMLR. The freshwater systems bring life and inextricably links people and culture to country and all living things. The Flows for the Future program aims to work with the community using collaborative and innovative solutions to improve the health and resilience of these systems.

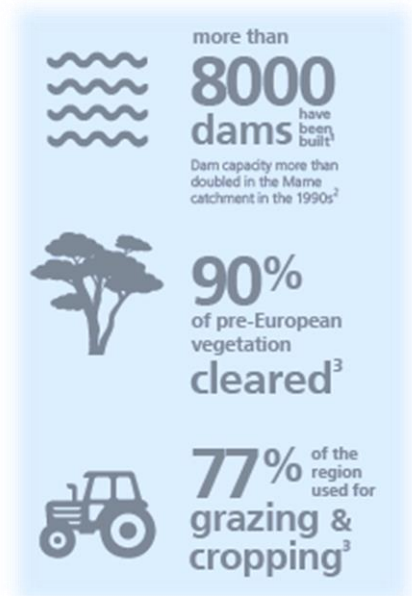
The program vision is for thriving catchments sustained by more natural flows.

Funding to return 'low flows' to catchments

Flows for the Future is voluntary, fully-funded and seeks to re-establish more natural flow patterns by installing 'low flow' devices at strategically located dams and watercourse diversion sites.

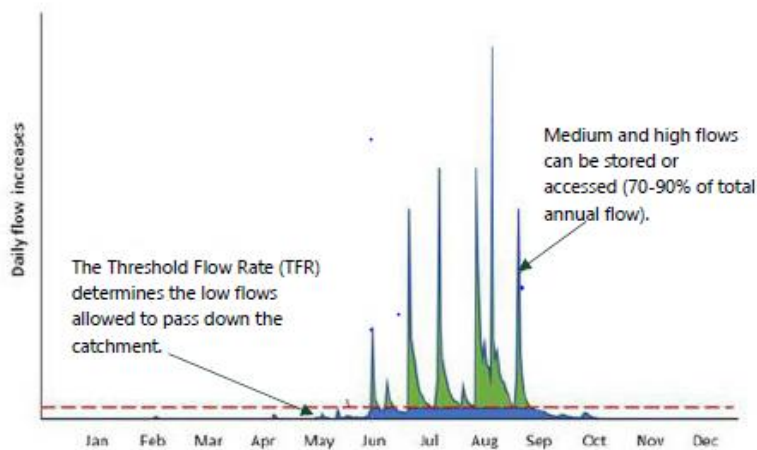
When there is flow in the catchment, these devices allow small volumes of water to continue downstream, beyond the barriers of dams and diversions,

Establishing a device on your dam does not mean that a constant flow of water will seep out of your dam. The continuation of low flow volumes into the downstream catchment can only occur when there are natural flow events (such as rainfall) in the catchment.



What are low flows?

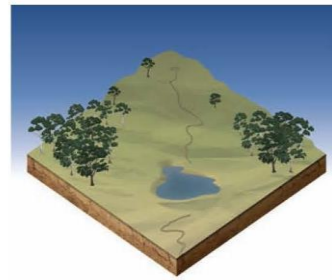
Low flows are a component of every flow event in a watercourse. Depending on the size of the event, which is often related to the time of year, low flows can either comprise the whole flow event or a proportion of it. In the diagram below, low flows are represented by the blue part of the graph (i.e. those below the 'threshold flow rate' (TFR)). The total volume of these low flows is small relative to the overall volume of water passing down a catchment.



Low flows are an essential part of the natural flow regime and are needed to maintain refuge pools, support fish breeding³, and assist other natural processes in watercourse ecosystems. Low flows retain water quality by flushing salts and pollutants that accumulate during dry periods. In the shorter term, improved water quality supports healthy livestock and crops. This supports profitable businesses to ensure the future security of local economies and communities. In the longer term, improved catchment health ensures sustainable water resources for generations to come.

Passing up to and including the (TFR) throughout a catchment will provide ecosystems with the requirements they need to be self-sustaining and resilient to drought. The actual value of the TFR differs for each dam because it is based on local runoff conditions for the management zone and the size of the catchment feeding into the dam. This results in a fair and equitable TFR calculation for every dam.

The low flows story



Dry catchment: No flow

The catchment is dry. There is no flow or paddock runoff filling the dam. No low flows need to be passed below the dam.



Break of season

Rainfall increases and paddock runoff occurs as pastures wet up. Low flows begin to develop and move down the watercourse. To help maintain the health and connectivity of aquatic habitats, the small volume of water (low flow) needs to pass below the dam to continue along the watercourse.



Catchment wetting: Flows increase

Flows develop further as paddock runoff increases. The dam fills. At the same time, low flows are passed below the dam to continue along the watercourse.



Catchment saturated

Flows have increased further. The dam is full and spilling over. Flows are passed from the dam to the watercourse below.

Our current flow regimes

Under the current flow regime watercourses are experiencing:

- a shorter season of flows i.e. the flow season starts later and ends sooner
- in some cases zero flow days occur more often and for longer periods
- when low levels of flow (low flows) occur they are often smaller and less frequent
- less frequent freshes (small pulse flows) which are also shorter and outside the high flow season.

Significant changes to natural regimes have occurred where runoff is captured by dams, delaying or reducing downstream flow until dams fill and spill later in the wetter months. Catchments are left noticeably drier for longer periods, particularly apparent from summer leading up to early rain events when low flows are critical for sustaining natural environmental processes. This impact is exacerbated by watercourse extraction from streams.

How the F4F program works

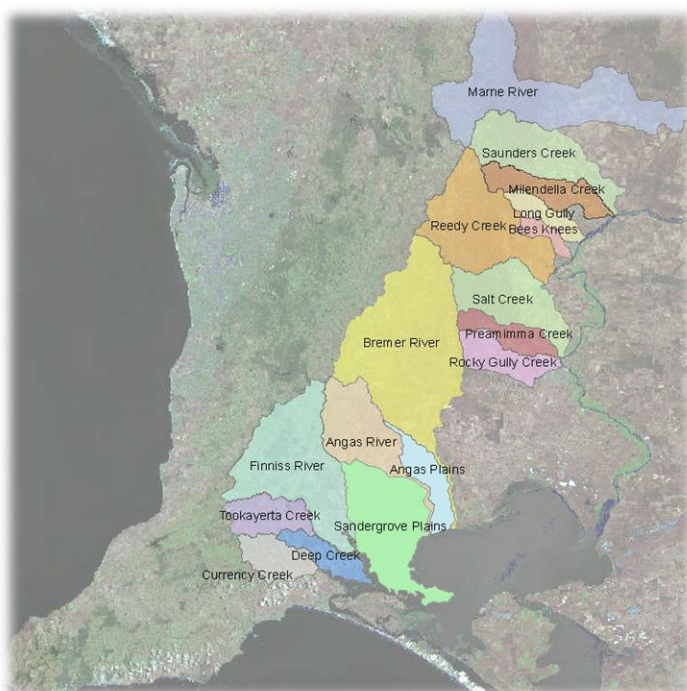
Flows for the Future is an opportunity to contribute to passing low flows by accessing funds and expertise offered by the program. The program funds the supply and installation of low flow devices, either through a grant process or via Department for Environment & Water contractors.

Over \$30 million is being invested by the Australian Government and South Australian Government into the Flows for the Future program, with the knowledge that the benefits will be long-term and extend to the whole community.

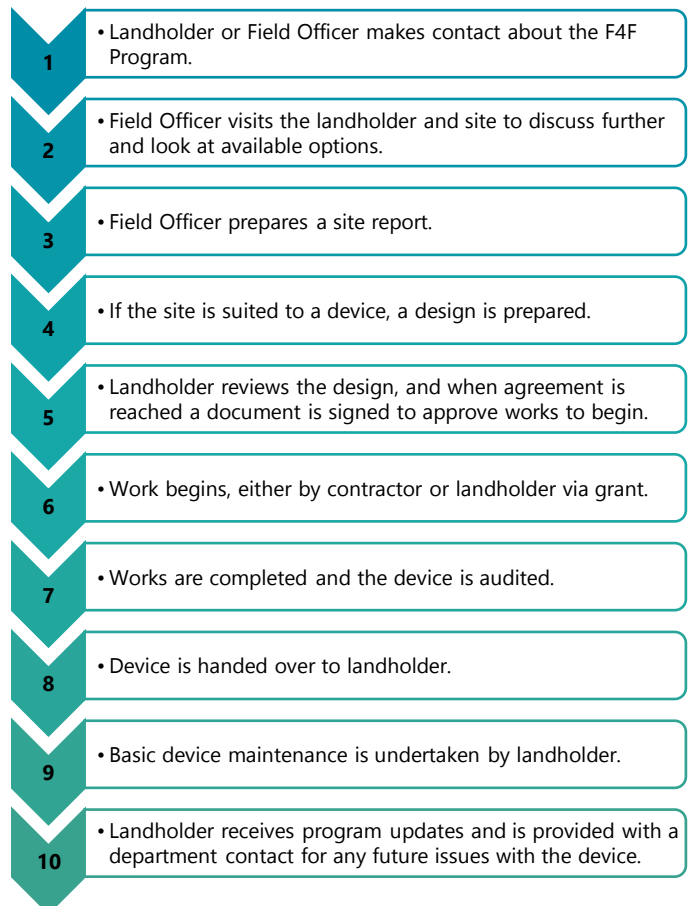
There is no 'one-size-fits-all' approach to pass low flows as every property differs in its rainfall, topography and catchment characteristics. Most commonly, low flows are passed using a gravity low-flow device⁴ which allows low flows to pass around the dam to the stream below while medium and high flows still enter the dam. In other situations, sites may require a release low-flow device⁵. Weirs, pump offtakes and sluice gates diverting flow from watercourses can also be modified to prevent low flows being extracted.

Water flow modelling conducted by Department for Environment and Water hydrology experts has identified the dams and watercourse diversions that will provide the maximum benefit with the installation of low-flow devices – these are the sites that will deliver the required environmental objectives in the most efficient way and are therefore a priority for works.

If your dam or watercourse diversion is in one of the catchments marked below and is a 'priority site', Flows for the Future field officers will contact you to discuss the program. If you wish to be involved, they will work through different device options with you, tailoring the solution to suit your property.



The Program in steps



Where is the program working?

The program commenced on ground works in the Angas River in 2017 and has since instigated engagement in the remaining catchments that make up the Eastern Mount Lofty Ranges. Regardless of where your property is located in the EMLR it's not too late to join up if your dam or watercourse diversion is a priority site.



Frequently Asked Questions

Will passing low flows mean I retain my current allocation?

The EMLR and Marne Saunders Water Allocation Plans outline an acceptable level of low flows that must be passed to maintain watercourse health. When announcing water allocations to existing users, it was the former state government's decision in 2013 to keep allocations as high as possible *on the condition that low flows would be passed on to support environmental outcomes*. If low-flow targets are achieved in our catchments, there will be less need for a review of current allocations.

Will the way my dam fills change?

Allowing low flows to continue into the downstream catchment does not mean that a continuous flow of water will exit from dams. Low flows are only passed when there is a flow event in the catchment. For most devices, the water already contained in the dam is not involved – most devices divert low flows around the dam prior to entry. The result is that the timing of water capture is shifted – the dam starts to fill later and it spills later. The dam still captures all medium and high flows. Field officers can provide you with information specific to your dam about any potential changes to your fill/spill patterns and dam water availability.

I don't have a licence and only use water for stock and domestic purposes. Does this affect me?

Dams and watercourse diversions for stock and domestic use impede the natural water flow pattern in the same way as dams that are used for other purposes. Landholders of unlicensed dams greater than 5ML at identified priority sites in the EMLR are encouraged to contribute to the catchment-wide passing of low flows by exploring the advantages that funding from the F4F program may bring. How is catchment health measured?

The impacts of water resource development have been observed through various ecological and hydrological monitoring studies across many years. Long term monitoring of real-stream flow across the catchment, together with flow modelling can simulate what the flow pattern would have been without dams and diversions. A monitoring and evaluation program is in place to measure the changes to water flow behaviour, water quality, macro-invertebrate communities, aquatic vegetation and native fish populations resulting from passing low flows.

What if something happens to my device?

Once installed, the device is 'handed over' to you and becomes an asset on your property. You will be responsible for its general maintenance. If structural damage occurs to the device (or damage to pump/electronic components for release low flow devices), the Department for Environment and Water will repair and/or replace the relevant components. A contact number will be provided to you at handover.

References:

1. CSIRO (2007). *Water availability in the Eastern Mount Lofty Ranges, Australia, Report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project*. CSIRO: 104.
2. Whiterod, N. (2016). *Confirmation for the need to restore flows across the Eastern Mount Lofty Ranges, Adelaide*. DEWNR Technical Note 2016/12, Department of Environment, Water and Natural Resources.
3. O'Connor, P., et al. (2008). *Bushbids: Biodiversity Stewardship in the Eastern Mount Lofty Ranges, South Australia*. Adelaide, Australian Government and South Australian Murray-Darling Basin Natural Resources.
4. *Fact Sheet 1. Gravity Low Flow Devices. Flows For The Future 2020*.
5. *Fact Sheet 2. Release Low Flow Devices. Flows For The Future 2020*.
6. *Fact Sheet 3. Passing Low Flows in conjunction with watercourse diversions*

Contact us to find out more

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