

Flows for the Future

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.

The EMLR are the traditional lands of the Ngadjuri, Kurna, Peramangk and Ngarrindjeri people. Freshwater is core to culture and identity of Aboriginal peoples across the Murray-Darling Basin. The freshwater systems bring life to the EMLR and inextricably link people and culture to Country and all living things.

Many water catchments in the EMLR are declining in condition, with some areas going without flowing water for longer periods than they used to in the past. While dams are crucial because they provide water security, their combined impact with watercourse diversions has changed the pattern and amount of water flowing through the Mount Lofty Ranges.

Productive and sustainable businesses need healthy water catchments. The Flows for the Future Program (F4F) will help to improve the health and resilience of catchments throughout the EMLR, including those of the Marne River and Saunders Creek.

The program's key goal

The F4F Program is an opportunity to access funds and expertise to improve water catchment health in the EMLR by passing on 'low flows'. These are naturally occurring, small flow events that are a vital part of the annual water flow pattern of a catchment. The program will fund the supply and installation of low flow devices, either through a grant process or a DEWNR-led process.

Low flows need to flow across land and into watercourses to maintain natural ecological processes such as keeping refuge pools wet and supporting fish breeding. They also maintain water quality by flushing salt 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.

Over \$13 million is being invested by the Australian and South Australian Governments into the F4F Program.

How will this be achieved

The program seeks to re-establish some natural water flow patterns in streams affected by water capture in the EMLR.

It involves the installation of low flow devices at strategically located dams and watercourse diversions.

These devices allow low volumes of water to be passed downstream when there is flow in the catchment. This supports the economic productivity of the region by maximising the volume of water that users can take from their dams.

How low flows are passed

The method to secure low flows is unique to every property, due to rainfall, topography and catchment area, hence there is no 'one size fits all' approach. Most commonly, low flows are passed using a bypass device which allows low flows of water to pass around the dam to the stream below while the medium and high flows are free to fill the dam as per usual. In other situations, devices may use a release system using existing pipes over or through the dam wall. Weirs, pump offtakes and sluice gates diverting flow from watercourses can be modified to allow low flows to pass.

Water flow modelling by DEWNR hydrology experts has identified the dams and watercourse diversions that will provide the maximum benefit with installation of low flow devices – these are priority sites where focusing the passing of low flows will deliver the required environmental objectives in the most efficient way.

Low flow devices are not new. There are 11 low flow demonstration sites across the Mount Lofty Ranges (see case study 2) and devices have been in operation in the Clare Valley for 15 years (see case study 1). The sites demonstrate different types of low flow devices and are being monitored to provide technical data linking rainfall to flows received and low flows passed.



Australian Government



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South Australia



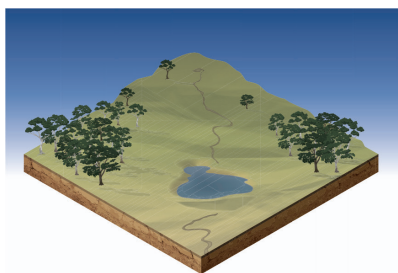
Natural Resources
SA Murray-Darling Basin



The low flows story

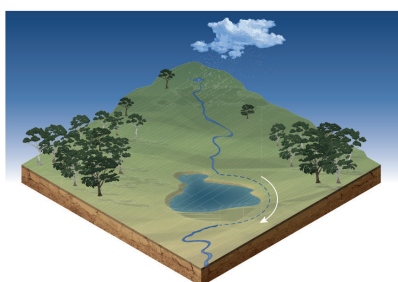
CASE STUDY 1:

Bypass device all part of farm business sustainability



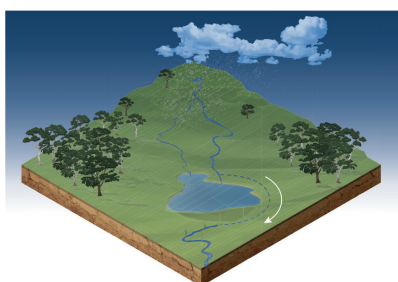
Dry catchment: No flow

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



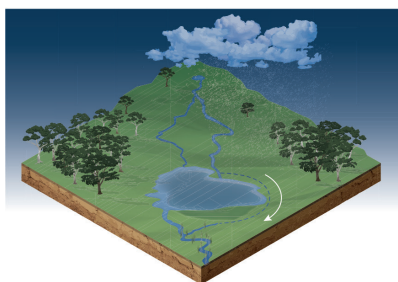
Break of season

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.



Mintaro farmers John and Pam Mitchell updated their 20-year-old low flow bypass last year, which also diverts saline first flows early in the season.

Healthy catchments for a sustainable and productive future

Passing low flows is not a constant flow of water from dams – it is a low volume of water that passes only when there is flow in the catchment. Low flows play a vital role in determining the health of aquatic habitats. They provide and maintain aquatic refuges and support the life cycle of water-dependent plants and animals.

A healthy catchment is crucial for the sustainability of the EMLR.

Installing a low flow bypass device on a 25 megalitre dam about 15 years ago ensures that John and Pam Mitchell, Mintaro, continue to deliver beneficial environmental flows further down the catchment.

The couple, who farm with sons Andrew and David, crop about 2,000 hectares alongside 2,800 Merino ewes and 24 hectares of riesling, cabernet sauvignon and shiraz vines. The dam and the bypass device were installed to help irrigate the vineyards when they were first planted in about 2003-2004.

“Having the bypass is a condition of our water licence,” John said. “It allows us to access water for drip irrigation for the vineyards.”

The first device was recently upgraded to a more reliable system.

“The first bypass was very basic, made of bricks, with a concrete base underneath and two 50 millimetre pipes going through it to allow water to flow through,” John said. “Water could flow at a rate of about four litres a second, with the first flows diverted down the catchments. This first flow is possibly saline, so I don’t miss it.”

The current bypass has a concrete ‘weir-like’ base which water flows over, with two 50 mm pipes before the weir to divert low flows into the creek that flows past the dam. Water then flows onto large rocks before flowing into the natural stream below the dam. Medium and high flows fill the dam as usual.

“We need the bypass to comply with licensing and we need the water licence for our business,” he said. “It’s not an issue, once it’s there, it’s there and it’s not a problem.”

A third-generation farmer, John said they used sustainable methods on-farm such as direct drill sowing, retaining and maintaining stubbles and growing legumes, and the bypass device worked well within this system.

“We try and do what we can do to run a sustainable enterprise,” John said.



CASE STUDY 2:

Low flow device helping achieve property sustainability goals



Peter Gale with the series of pipes, sensors and valves that comprise his property's method of passing low flows.



A sensor at a small weir above the dam measures in-flows.

For Back Valley cattle producer Peter Gale, farm production and managing natural resources go hand in hand.

He runs 100 Murray Grey cattle over 200 hectares, including some scrub and a wetland. Peter and his parents originally were dairyfarmers but closed the dairy in the early 1990s and transitioned to beef cattle production. At the same time, Peter sought a career change and now farms on the Fleurieu Peninsula and works in Adelaide as a university lecturer.

“I love the land, I’ve grown up on the land and feel part of this country. I feel I have a responsibility to try and hand it on to the next generation in a way that is better than when I was given this land as a family farm,” he said.

Peter is hosting a low flow device demonstration site, established by the Department of Environment, Water and Natural Resources. His property has a number of smaller dams with the largest at 60 megalitres, fed by a catchment area over 120 hectares in size.

The dam provides irrigation water while creating an environment for birds and wildlife. There is a 20 m head from the dam to where land is irrigated so watering occurs without pumping.

His focus at the property in the past 30 years has been to restore some of the natural environment so it is ecologically sustainable, where commercial beef production and the natural environment can co-exist in harmony.

“As part of a revegetation program, we are planting up to 500 trees per year. That’s mainly developing the wildlife corridors and shelter belts for the cattle as well. It allows a native environment for birds and other animals,” he said.

It is his philosophy on sustainable agricultural production from a sustainable environment that provided the motivation to volunteer to host a demonstration site.

Methods to pass low flows are different at every property, depending on the dam, catchment topography and flow patterns. At Peter’s property, it involves measuring inflows into the dam at a sensor point on a small weir (see image 2). Radio signal connects the top side of the dam to the bottom side of the dam and when inflow reaches a certain point, a signal is sent to a sensor which opens a gate valve to release water from the dam through a pipe through the dam wall.

Previously, Peter could manually release water but this new system is completely independent and powered by solar panels.

“Previously we had to rely on manual opening of the gate valves to allow for the early release of water, which meant checking on a regular basis through summer and autumn. The advantage of this new system is that it combines sensing when water is coming in and, when we’ve had good rain, water is automatically released.

“It also gives us the opportunity to measure how much is going in and out so we can evaluate the system’s effectiveness over the next 10 years on the wetland.”

Overall, he says, there has been no negative impact on his property due to the passing low flows system being installed.

“It doesn’t impact on the amount of grazing land, there’s some areas of the scrub land where there is light grazing land, but most of the grazing for the cattle is outside the wetland and the scrubland. The open country is managed to maximise the level of grass production through seeding and revegetation.”



How the F4F Program works

If your dam or watercourse diversion is located at a priority site, F4F Field Officers will contact you to discuss the program and the next steps. They will work through different device options with you, tailoring devices your property.

There are two options for the installation of devices – you can apply to install the devices yourself or you may elect to have the F4F Program manage the installation. Once construction is completed then future maintenance of the device becomes your responsibility as the property owner/ manager, as part of normal farm infrastructure.

A monitoring, evaluation and reporting program is in place to measure the catchment-wide environmental changes resulting from passing low flows.

Steps

- 1** Landholder or Field Officer makes contact and discusses the F4F program
- 2** Field officer visits the landholder to discuss the program further and available options
- 3** Landholders and field officer tailor **Site Action Plan (SAP)** to the property
- 4** The device design, discussed as part of the **SAP, is approved by engineers**
- 5** **Work begins** – either by the landholder or a contractor
- 6** **The low flow device is complete** – the device is inspected and is handed over to the landholder
- 7** **The landholder maintains the device** to ensure it remains fully operational

Frequently Asked Questions

Is Flows for the Future about supporting agriculture or the environment?

It's both. We all know water is valuable. Without it, people, animals and the land will suffer. In the Eastern Mount Lofty Ranges (EMLR), we rely on water and a healthy catchment to sustain businesses, industries and lifestyles.

Productive and profitable businesses need healthy catchments and this program seeks to ensure the catchments in the EMLR are sustainable for all uses. The provision of low flows enables the maximum amount of water to be allocated for productive purposes while ensuring that critical catchment health needs are met.

Why should I participate?

The Flows for the Future (F4F) Program is a great opportunity for eligible landholders to have the supply and installation of low flow devices paid for by the program. This means that if you have a priority site, the program will meet the entire cost of installing the low flow device and you will definitely be meeting your requirements as a water user at no out-of-pocket cost. Ownership of this asset will then pass to you. You will be responsible for any ongoing operations and maintenance.

Will the way my dam fills change?

Allowing low flows to pass does not mean that a continuous flow of water will exit from dams. These low volumes only pass when there is flow in the catchment. Using low flow devices shifts the timing of dam water capture - the low flows are passed and the medium and high flows are captured by the dam as usual.

In terms of watercourse diversions, this will mean that water can't be taken when there is no flow, such as pumping water from watercourse pools when there is no flow.

Who will install the device?

There are two options, depending on how you wish to be involved in the process. Low flow devices can be installed by you, via a program funding grant, or a contractor will be paid by the F4F Program to install the device.

Field Officers will tailor a 'Site Action Plan' for the device and installation with you. This will be assessed by engineering experts to ensure that the device and method of installation is suitable for each site.

Why is this happening now?

As part of the process for implementing the Murray-Darling Basin Plan, the Australian Government has provided \$12.1M to DEWNR to help landholders install low flows devices at no upfront cost. This is in addition to approximately \$1.4M that is being provided by DEWNR.

The EMLR and Marne Saunders Water Allocation Plans outline an acceptable level of low flows that must be passed to ensure the water catchments are in a healthy state. When announcing water allocations to existing users, it was the Minister for Sustainability, Environment and Conservation, the Honourable Ian Hunter MLC's decision to keep allocations as high as possible on the condition that low flows would be passed on to support environmental outcomes

More FAQs available online.

Want to know more about Flows for the Future?

Call **8204 1673**, email **F4f@sa.gov.au** or visit **www.naturalresources.sa.gov.au/flows-for-future**



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