Case Study

ARE YOUR FARM DAMS STILL FIT FOR PURPOSE?

A Water Security Case Study from Southern Dirt & South West NRM
FEaST2030 Water Security Workshop
Written by Jessica Sunderland, Project Officer, Southern Dirt

South West NRM

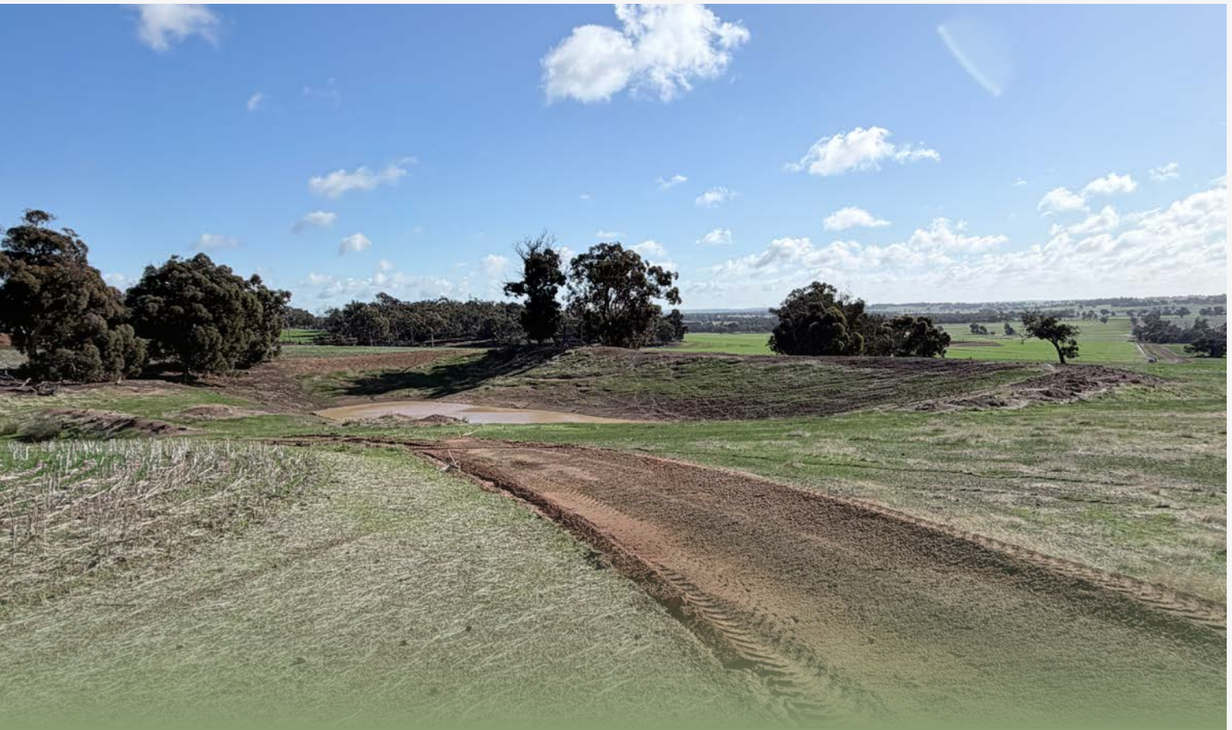
A Question Worth Asking

For many farmers in the Great Southern, water infrastructure is something built by a previous generation and rarely revisited. This is starting to change.

At a March, 2026 Water Security Workshop in Kojonup, delivered by Southern Dirt as part of South West NRM's FEaST2030 project, UWA Professor Nik Callow asked a simple question: Are your farm dams still fit for purpose?

The answer, for many, is that they may not be. The Department of Primary Industries and Regional Development (DPIRD) estimates there are around 185,000 farm dams in WA, representing somewhere between $10 and $15 billion in farmer investment. Many were built decades ago, designed for farming systems and rainfall patterns that no longer exist.

"We don't still farm like we did in the 1970s, so we can't expect 1970s water infrastructure to still be fit-for-purpose." – DPIRD



Options for Improving Water Security

There are a range of options available to growers looking to improve water security, from increasing the amount of water captured in dams to reducing losses. Each comes with different costs and performance characteristics depending on location, farming system, and the nature of the problem.

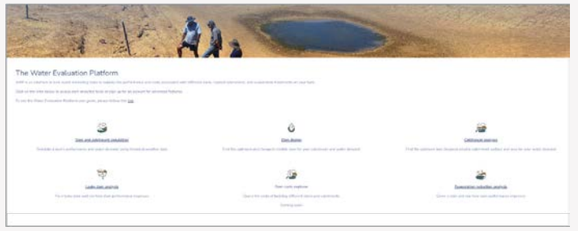
On the capture side, options range from improving or upgrading existing roaded catchments to installing high-performance engineered surfaces such as heavy-duty polyethylene (HDPE) liners. These liners can generate runoff from as little as 1 mm of rainfall and are increasingly preferred for their durability. Commercial installation costs typically range from around $5 to $7 per square metre, with manufacturer warranties of 10 to 15 years.

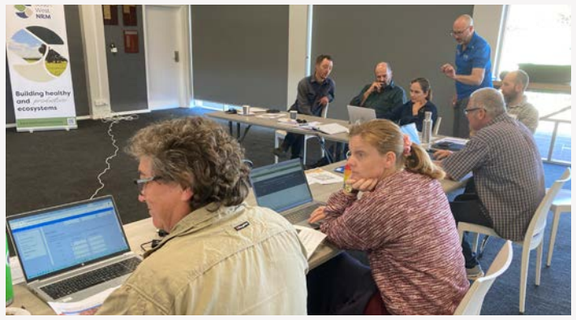
Evaporation is a significant and often underestimated loss. Monitoring found between 1.4 and 1.6 metres of evaporation from dams annually, meaning roughly half the water in a 5 ML dam can be lost each year before leakage is considered. Floating daisy dam covers reduced evaporation by around 70% beneath covered areas at a cost of approximately $15 per square metre.

Where leakage is the primary issue, flocculating products that clog fractures in dam bases can be effective. Economic analysis from the WaterSmart Dams project suggests leakage reduction may be one of the more cost-effective ways to retain more water in existing infrastructure.

There is no single right answer. The appropriate intervention depends on the individual property, the farming system, and the scale of the water security challenge.

The Water Evaluation Platform





To help growers navigate this complexity, the Centre for Water and Spatial Science at UWA developed the Water Evaluation Platform (WEP) as part of the WaterSmart Dams project. The tool is free to use and available at https://waterevaluationplatform.app/dam/

WEP uses localised historical daily climate data to model how a dam and catchment system would have performed under different conditions. Users enter dam dimensions, catchment area, and monthly water demand based on stock numbers or spray use, and the tool simulates the performance and cost-effectiveness of different interventions including engineered catchments, dam covers, and leakage reduction.

A key recommendation from the workshop was to run scenarios using post 2000 climate data, given the well-documented shift in rainfall and runoff behaviour across the South West since around that time.

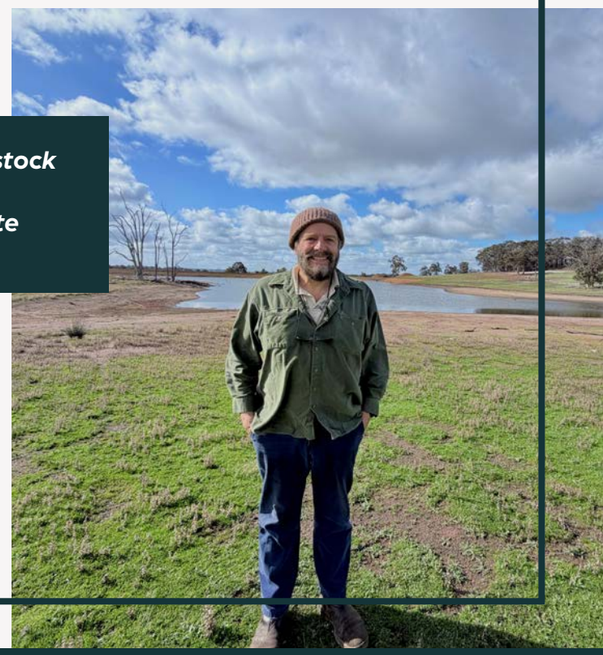
"While you can run scenarios for many decades or a hundred years, the most realistic results for the current climate will come from using post-2000 climate data." – DPIRD

South West NRM has developed a workbook guide for first-time users of the platform, available through the South West NRM website: https://southwestnrm.org.au/wp-content/uploads/2026/04/WEP-Workbook-20260319-1.pdf. For further assistance, contact South West NRM.

On the Ground: John South, Dunleath Farms

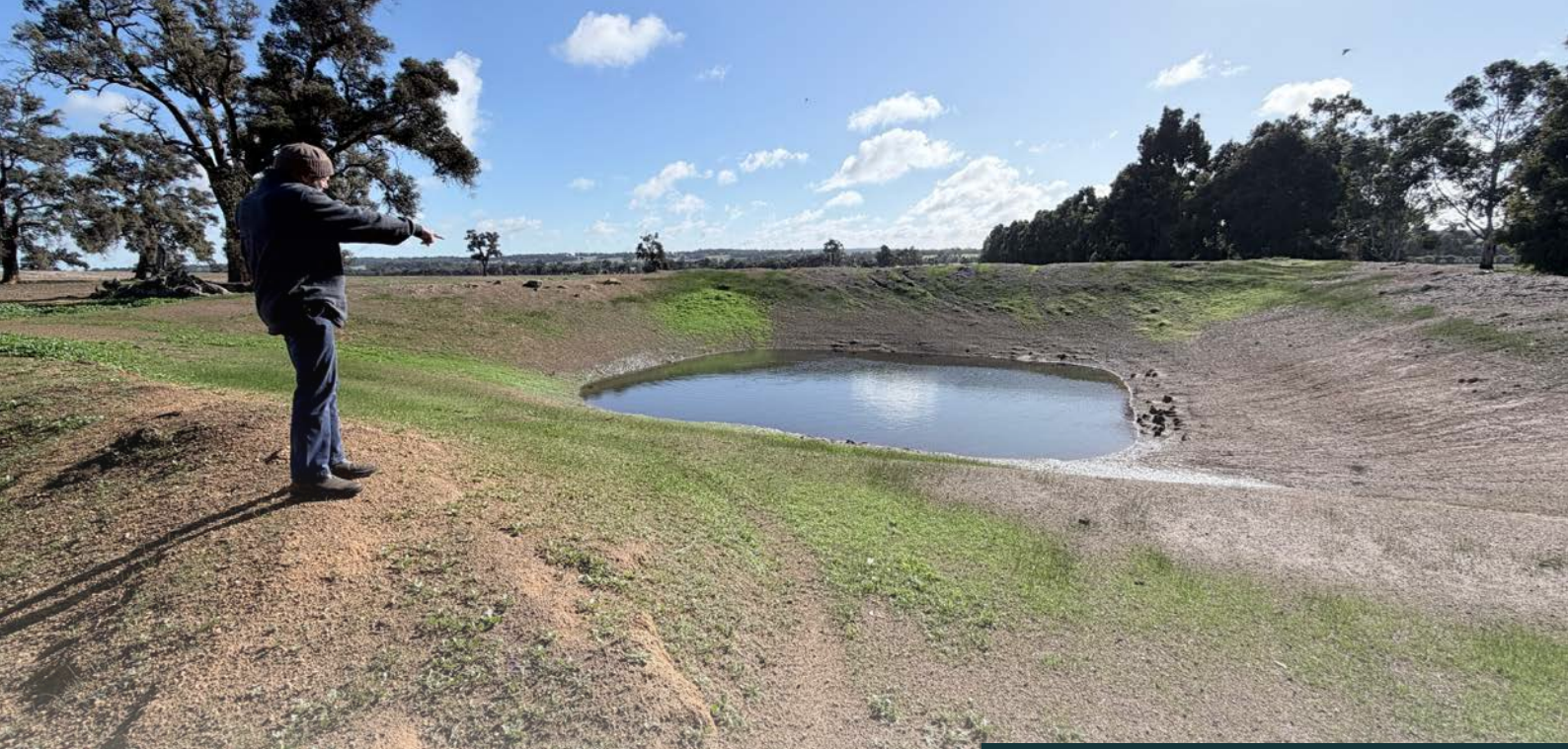
John South and his son Jack run Dunleath Farms, a mixed sheep, cattle, and cropping enterprise in the Darkan region. Water security has become their most pressing farm management challenge.

"Water has been our biggest concern with livestock on the farm, but it's becoming an even bigger concern as the erratic nature of a drying climate impacts us." – Darkan farmer John South



The challenge had already prompted significant investment in water infrastructure before the workshop, with John investing in desalination and a pipeline system to move water from reliable dams to troughs in paddocks where supply had become unreliable. The question was where further investment would deliver the greatest benefit.

"We've been trying to look at where the best spend of money is," he said.



"That's really the best thing that came out of that workshop – how to spend your money wisely, where you get the best bang for your buck," John said.

WEP Assessment at Dunleath Farms

Following the workshop, a WEP assessment was undertaken at Dunleath Farms. John wanted to understand whether installing graded catchments on existing dams would justify the investment and what catchment size would be needed to reliably meet water demand.

EXISTING DAM (NATURAL PASTURE CATCHMENT ONLY)

Dam volume: 2,949 m^3 | Catchment area: 2.21 ha | Reliability: 18.4%

WITH AVERAGE ROADED CATCHMENT ADDED (0.86 HA)

Dam volume: 2,949 m^3 | Total catchment area: 3.07 ha | Reliability: 95.8%

The assessment focused on a 3 megalitre dam used to supply water to approximately 1,000 sheep grazing stubble during December and January. The dam ran dry in early 2024.

A roaded catchment scenario was modelled using a nearby road that would be reprofiled to direct runoff via a drain into the dam.

Adding just 0.86 ha of roaded catchment increased the dam's reliability (percent of months water demand was met) from 18.4% to 95.8%, based on observed climate data from 2000 to 2025. Costs were also modelled based on default values.

The assessment gave John a clearer basis for evaluating competing options, something he identified as the most valuable outcome of the workshop.

Since the workshop, John has implemented the modelled scenario, with plans for further works. It has also changed the way he thinks about water infrastructure, giving him greater confidence in where to invest for the best return.

"Understanding how to use that program is a big benefit in helping you make your decisions."

His concern extends beyond his own property. John sees water security as a fundamental challenge for other Great Southern producers, with a drying climate steadily reducing the reliability of on-farm water supply.

"If we're looking at the sheep industry in WA, the drying climate has the biggest effect. Without having strategies to deal with the lack of water or reducing water, the sheep industry is going to be struggling to grow."

South West NRM's FEaST2030 project is supported by the Australian Government through funding from Natural Heritage Trust under the Climate Smart Agriculture Program. This case study was developed by Southern Dirt Inc.

Australian Government
Department of Agriculture, Fisheries and Forestry

South West NRM

Southern Dirt

www.southwestnrm.org.au
admin@southwestnrm.org.au
08 9724 2400
1 Verschuer Place, Bunbury, WA 6230