ENHANCING FARM DAMS

Part One

BENEFITS AND COSTS

AN ENHANCED FARM DAM IS ONE THAT HAS BEEN FENCED TO EXCLUDE LIVESTOCK AND REVEGETATED TO IMPROVE WATER QUALITY AND SUPPORT BIODIVERSITY.

This brochure is Part 1 of a three-part series on enhancing farm dams. It explores the benefits and costs of dam enhancement, including potential impacts on livestock productivity, water security and biodiversity. Parts 2 and 3 cover planning, implementation and long-term management.

South West NRM

WHY ENHANCE A FARM DAM?

ENHANCING A FARM DAM HELPS TO:

- Reduce faecal matter input, algal blooms and livestock disease risk.
- Reduce pugging, erosion and sedimentation of the dam.
- Improve water quality through nutrient stripping and shading, increasing how much livestock drink and therefore how much they eat.
- Oxygenate water and sediments.
- Create wildlife habitat and breeding sites.
- Support natural predators of pests, such as birds and beneficial insects.
- Improve visual amenity.

BENEFITS OF DAM ENHANCEMENT

1. LIVESTOCK PRODUCTIVITY AND HEALTH: THE PRIMARY ECONOMIC DRIVER FOR DAM ENHANCEMENT IS THE CORRELATION BETWEEN WATER QUALITY AND STOCK WEIGHT GAIN.

- **Pathogen reduction:** A study of 109 dams showed that enhanced farm dams have lower levels of E. coli. Average levels were below the recommended maximum level for livestock, while unfenced dams were 2–3 times higher, and 50%–100% above recommended maximums. Turbidity was also lower in enhanced dams.[1]
- **Phosphorus reduction:** The same study showed lower phosphorus levels in enhanced dams. Phosphorus increases the risk of toxic algal blooms and poisoning.[1]
- **Weight gain potential:** Research indicates livestock drinking clean, palatable water (low turbidity and bacteria) increases their water intake, which directly boosts feed consumption and weight gain.[2] Economic modelling suggests cattle need to achieve an additional annual weight gain of between 1.8% and 6.5% to break even on the cost of dam enhancement, and that the probability of benefits exceeding costs is above 70%.[3]

2. WATER SECURITY AND ASSET LONGEVITY: ENHANCED DAMS ARE BETTER EQUIPPED TO HANDLE CLIMATIC EXTREMES.

- **Drought resilience:** Vegetation around dam edges creates a microclimate that reduces wind-driven evaporation, a primary cause of water loss in the South West. A tiered shelterbelt of native shrubs and trees at right angles to hot summer winds can reduce losses and the likelihood of needing to destock due to limited water.[4]
- **Reduced maintenance:** Groundcover such as grasses, sedges and rushes on dam inflows reduces erosion and creates a sediment trap, reducing siltation, turbidity and the need to clean dams.

3. BIODIVERSITY AND ECOSYSTEM SERVICES: A HEALTHY DAM FUNCTIONS AS A 'MINI-WETLAND,' SUPPORTING NATURAL PEST CONTROL AND NUTRIENT CYCLING.

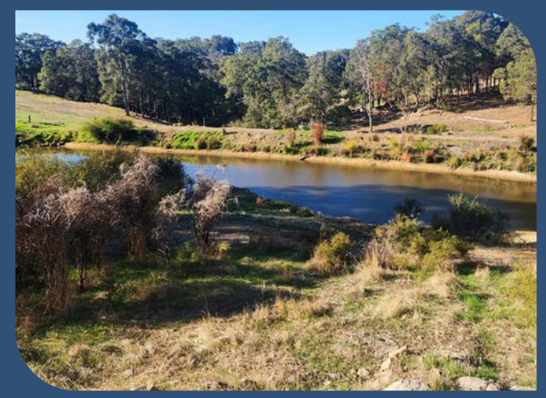
- **Habitat restoration:** Diverse native vegetation supports microbats and insectivorous birds that provide pest management services, predating on pasture-damaging insects and reducing reliance on chemical interventions. Enhanced farm dams with aquatic vegetation that reduces nutrients such as nitrogen typically support more macroinvertebrates. Enhanced dams also tend to have more bird species, particularly small woodland birds which take advantage of surrounding woody vegetation. [5]
- **Greenhouse gas emissions:** Research demonstrates that enhanced dams contain less nitrogen and phosphorus and emit an average of 56% less methane compared to unfenced dams.[6]

INDICATIVE COSTS

TO TRANSITION A TRADITIONAL DAM INTO AN ENHANCED STATE THE FOLLOWING STEPS ARE RECOMMENDED.

Implementation plan and indicative costs. Regional estimates for 2026.

1. Exclude livestock – fencing is a priority. Install fencing to limit or remove stock access. Cost $5–$10 / m (not including labour).
2. Install alternative water point and optimise stock weight gain – either troughs or hardened access. Pipe water from the dam to a trough, or to a tank and gravity fed to trough. If direct access is required, create a fenced off gravel access point to the dam to protect the banks and limit livestock impact. Cost (solar trough system) $3k – $7k.
3. Weed management – contractor costs approximately $1,200 – $1,400 per hectare.
4. Revegetate banks with native riparian species. Vegetation filters runoff and stabilises your banks. Aim for an average density of 0.5 plants per m^2 (5,000/ha), planting sedges more densely at the waterline and spacing shrubs and trees further back. Cost: Native tubestock $2.50–$6.00/ea; cell trays $0.72–$2.00/ea.
5. Infill planting and ongoing weed management is essential for long-term success.



REAL-LIFE SUCCESS

Bridgetown landholder Jenny Dewing has first-hand experience with farm dam enhancement. When she took over her property, the dam was silted up and a deeply eroded gully posed a safety risk to cattle.

"We fenced off the area to exclude stock and moved to a gravity-fed trough system."

"The difference has been remarkable. The cattle no longer trample the banks or muddy the water, and we've removed the hazard of stock falling into the gully. By revegetating the area and infill planting the spillways, we've completely stopped the erosion and silting. Our water is now crystal clear, and the stock are incredibly healthy."

THE BUSINESS CASE FOR FARM DAM ENHANCEMENT IS STRONG, WITH RESEARCH SUGGESTING THE BENEFITS ARE LIKELY TO EXCEED THE COSTS WHILE ALSO IMPROVING BIODIVERSITY, WATER SECURITY AND VISUAL AMENITY.

For guidance on planning, implementation and ongoing management, see Parts 2 (Planning and Preparation) and 3 (Long-term Maintenance) of this series.

FURTHER READING

Sustainable Farms (2022). Enhance farm Dams. https://www.sustainablefarms.org.au/on-the-farm/farm-dams/

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