

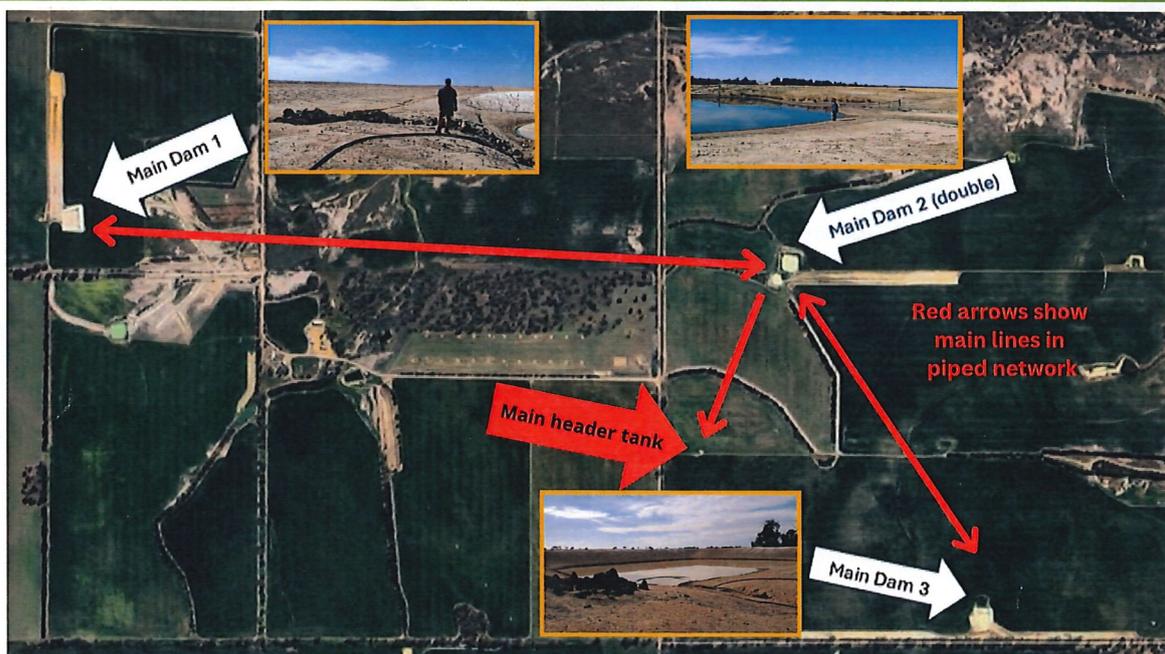


IMPROVING THE EFFICIENCY OF FARM DAMS

With shallow dams in low rainfall zones, the total annual evaporative loss could be up to 50% of the dam's total storage volume. (1)

CONSOLIDATION PUMPING

Consolidation pumping involves moving water from a number of small dams to one large dam. This reduces the surface area to volume ratio, keeping the average water temperature cooler and reducing overall evaporation. These are some of the benefits the Newbey brothers sought when they installed their consolidation pumping system in 2021.



Above: The Newbeys have three main dams which supply water to the whole farm via a network of mainly 2" poly pipe. All of the main dams are linked to each other, to header tanks and stock water troughs. The system is set up to provide multiple water-control options, and to reduce evaporation from having water sitting in lots of small dams. Each main dam has different water catchment potential from a combination of roaded catchments, contour banks and paddock run-off.

Main Dam 1 is the highest in the landscape and is reliant on a double-roaded catchment to fill it. It contains good quality, fresh water. Water was initially pumped into this dam to help fill it after it was installed in March 2021. Being higher in the landscape, this dam can easily gravity-feed water through the piping system into stock troughs and header tanks. It has a 3,000m² surface area when full.

Main Dam 2 is a double-dam positioned at the lowest point in the landscape. They are supplied by a double roaded catchment, two contour banks and paddock run-off. These are the dams from which water is usually pumped in the first instance because they fill first, especially during summer rainfall events when paddock run-off is significant. These two dams have a combined total surface area of about 5,000m² when full.

Meet the Farmers

Name: Scott and Wayne Newbey, 'Loma Langi'
 Location: Katanning, Great Southern
 Farm Size: 2,000 acres / 800 ha purchased in 2021
 Number of livestock: 11,000 - 14,000 sheep
 Ha crop: 400 ha
 Number of dams: 12 of which 8 are going dry or salty.
 A significant amount of the property is salt-affected.

Main Dam 3 is mid-point in the landscape. It's supplied by two roaded catchments running east and west along the edge of the paddock, parallel to a road from which it receives run-off via small surface banks connected to each roaded catchment. The dam has good quality, fresh water due to the clean catchments. It has a 2,000m² surface area when full.

Reference: (1) Agriculture Victoria



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MOVING WATER

How the system works

Deciding where to move water depends on several factors:

- Rainfall events.
- The time of year.
- Level of water in the main dams.
- Where water has been collected and where it's needed.



ABOVE: The water pump is powered by 3 solar panels giving a total of 750 watts. They all sit on a trailer which can be moved around the farm as required. Scott said: "We drag pipes and take the solar pump to shift water from where it is to where it's needed."

The trailer is home-made using what was first a ute chassis which then became a header comb trailer before getting a third lease-on-life to carry the solar pump!

Tips on Setting up a Consolidation Pumping System

- Preferably position dams high in the landscape so water can be gravity-fed to troughs and tanks instead of being pumped.
- Avoid saline areas at all costs.
- Roaded catchments run cleaner water compared to paddock run-off.

Katanning had a dry spring in 2023. The Newbeys had been pumping water out of the double dams for several months when the property had 34mm of rain during thunderstorms in mid-January 2024. Suddenly the double dams were full again. This demonstrates the importance of freeing up capacity in the low-landscape main dams to take advantage of rainfall events, which can be achieved with consolidation pumping.

WATER SECURITY GIVES MORE OPTIONS

Productivity improvements can be made when you have water. Scott and Wayne are currently building a 21-pen drought and confinement feeding area with integrated sheep yards and laneways.

Each pen will hold up to 300 sheep and be watered via troughs connected to the consolidation pumping system.



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"Being able to move water from dam to dam in the winter, and pump from multiple dams when you have high demand on the pipeline system has been a good combination,"
-Scott Newbey.

Less Evaporation

The Newbeys are keenly aware of needing to minimise their water evaporation losses.

"Evaporation in our part of the world is a huge draw on dams. Pumping water from two dams into one dam more than halves the evaporation rate," said Scott.



Water is pumped into this header tank (above) from any of the main dams via the piped network. It is then gravity-fed to stock troughs from the tank. The troughs provide a fresh water option for sheep in paddocks with the eight dry / salty dams. Header tank water is also used for spraying and fire fighting purposes.