

# Review of Alternative Proposal for Lake Mokoan

## Lake Mokoan Decommissioning

### What is Lake Mokoan?

Lake Mokoan is a very shallow, large water supply reservoir outside Benalla. It is supplied from the Broken River and a local catchment.

It loses an average 50 gigalitres of water per year through evaporation alone, contributing to the Broken irrigation system being the most inefficient in Victoria.

For every four megalitres released from storage, only one megalitre is available for use - the other three are lost through evaporation, seepage and operational losses.

### Why do we need to change anything?

At 26 per cent efficiency, the Broken irrigation system is worse than all the major irrigation systems, which typically operate at around 65-70 per cent efficiency.

In the face of continued low rainfall and climate change, Victoria cannot afford to be wasteful with its water resources.

The storage not only loses 50 gigalitres per year to evaporation, it is expensive to operate, prone to blue-green algae outbreaks that limit its use and earmarked for expensive dam safety repairs.

A Statewide review of major storages in 2002 identified a need to decommission Lake Mokoan. Further studies in 2003 and 2004 confirmed the benefits of decommissioning Lake Mokoan.

### How was the decision to decommission made?

The decision to decommission was made after a major investigation of options (the Lake Mokoan Study), extensive consultation and careful consideration by the Victorian Government. The decision is a key part of the Restoration of Rivers section of the 2004 *Our Water Our Future* policy paper.

### What are the benefits of decommissioning

Decommissioning will have multiple benefits, including:

- 54 gigalitres per year on average for environmental flows in the Broken, Goulburn, Murray and Snowy Rivers, mandated under the Living Murray Initiative and the Snowy agreement.
- A sustainable and much more efficient irrigation system in the Broken Valley.
- A major new natural wetland area in northern Victoria, with considerable tourism, educational and research potential.

### What is full decommissioning?

Decommissioning Lake Mokoan involves the following major works components:

- Breaching the dam wall and rendering all unrequired infrastructure safe and compatible with future land use.
- Construction of supply pipes from the Broken River to those water users who previously had the right to draw water directly from Lake Mokoan.
- Provision of offsets sufficient to maintain the existing reliability of supply after decommissioning. The Tungamah domestic and stock water supply pipeline represents around one-third of the offsets. Other offsets include transferring users from the Broken system to the Goulburn system, and purchasing entitlement from willing sellers, up to 4.64 gigalitres from the Broken system.
- Creation of a mid-Murray Storage to allow re-regulation of a proportion of the water savings for use in the lower Murray, and transfer by exchange of 19,000 ML of water savings to the Snowy River.
- Rehabilitation of a major new wetland complex centred on Winton Swamp and other large and small wetlands that will remain once Lake Mokoan is decommissioned.

# The Alternative Storage Proposal

## **What is the Justice for the Broken Valley storage proposal?**

The Justice for the Broken Valley proposal is for a new, 62-gigalitre storage to be located in the centre of the existing Lake Mokoan. This area was formerly the Winton Swamp, which was part of a complex of interconnected swamps inundated by Lake Mokoan. The storage would include a major flood pumping station, outlet structure, outlet channel and spillway.

It would also include the existing offsets - the Tungamah domestic and stock pipeline system, the Mawson water entitlement and the monitoring and control improvements that are all part of full decommissioning. The proposal includes some asset decommissioning, the Mid-Murray works and a much more limited rehabilitation of the former wetland complex.

## **Why has the Justice for the Broken Valley proposal not been accepted?**

The Justice for the Broken Valley proposal has not been accepted because it compares poorly with full decommissioning financially, economically and environmentally.

The proposal would cost \$35 million to \$50 million more than decommissioning, produce 12 gigalitres less in water savings and cost 50 per cent more to operate than decommissioning.

It would also require up to nine gigalitres more water entitlement having to be purchased if the same amount of water was to be available for the environment as decommissioning. This additional purchase would have to come from the Goulburn or Murray irrigation areas. This volume of water is part of Victoria's commitment under the Living Murray Initiative.

The additional capital costs would either have to be passed on to the Broken Valley irrigators via increased tariffs, or be met from consolidated revenue. Current Victorian, NSW and Commonwealth funding commitments for decommissioning Mokoan are based on paying for water savings (eg \$84 million for 54 gigalitres).

It is not a viable water savings project if the savings are reduced by 12 gigalitres and the capital costs are also much higher.

While the impact on heritage and the environment has not been assessed, this proposal is expected to have a much greater impact on both than decommissioning.

Modelling has shown that the reliability of supply under the storage proposal would be 94 per cent, but does not consider the potential for blue-green algae blooms. Any blue-green algae impact would significantly reduce the estimate of reliability.

## **How does the cost/benefit analysis for the Justice for Broken Valley proposal compare with full decommissioning?**

Decommissioning has a significantly positive net present value (\$10 million to \$20 million) at a discount rate of 4%.

The Justice for Broken Valley proposal has a strongly negative net present value (-\$42 million to \$72 million) at a discount rate of 4%.

Sensitivity testing shows that if water savings value is increased from the assumed \$79/ML (regarded as low/conservative) to \$115/ML (based on recent estimates), the decommissioning net present value increases three to five-fold.

The net present value of the Justice for Broken Valley's proposal also increases under this test, but still remains negative overall.

## **What are the environmental and heritage issues related to the Justice for the Broken Valley proposal?**

Environmental and heritage impacts of the Justice for the Broken Valley proposal have not been assessed or referred to the relevant Victorian and Commonwealth agencies.

However, it is likely that the proposal would reduce habitat for migratory birds, including Latham's Snipe, and reduce vital environmental flows in the Broken River compared with what would be available for decommissioning.

Further, the proposal involves building storage embankments that would risk disturbing sites of both heritage and environmental significance at Lake Mokoan.

Decommissioning Lake Mokoan has been referred for consideration of the environmental impacts under both Victorian and Commonwealth legislation, and deemed to be acceptable.

# Decommissioning and Related Issues

## **What will become of the Lake Mokoan site?**

The Lake Mokoan site will be rehabilitated based on the original Winton Swamp and other wetlands that existed prior to construction of Lake Mokoan dam.

A major new wetland complex will be developed on part of the site. This complex will have almost 7,000 ha of wetland, wetland fringe, riparian zone and diverse dryland to be retained as a public asset and managed for ecological, tourism, educational and research purposes. An area of just over 2,000 ha will be sold for appropriate purposes, mainly for farming.

## **What happens next?**

A number of important components of the decommissioning that were not affected by the process to consider the alternative storage proposal, are already well advanced.

Installation of monitoring and control equipment, construction of the pipeline to supply Lake Mokoan diverters, and the mid-Murray Storage works will commence early in 2008.

A water broker will be engaged to follow up on entitlement purchase expressions of interest.

## **Will the irrigators get less water as a result of decommissioning?**

No. The Victorian Government is committed to maintaining existing reliability of supply to irrigators after decommissioning. This is being done through the provision of supply offsets that will reduce demand by reducing system losses, transferring some users to the Goulburn system and buying entitlement from willing sellers.

The supply offsets have been confirmed as providing at least 91 per cent reliability of supply. This is an appropriately conservative estimate, and may prove to be higher.

It should be noted that the irrigators' storage proposal is estimated to provide 94 per cent reliability of supply, but this may be less because it did not account for the potential for blue-green algae blooms in the storage.

Effectively, the difference between the irrigator proposal and full decommissioning in terms of reliability of supply is minimal.

## **Will decommissioning increase the flooding risk to Benalla?**

Lake Mokoan has never played a significant role in flood mitigation to Benalla because it is used for water supply and is not located on the Broken River.

Even if there were storage space in Lake Mokoan, use for major flood mitigation would be significantly restricted by the Lake Mokoan inlet channel capacity and the outlet capacity from Lake Nillahcootie.

During the major flood of 1993, the inlet channel was not available for diverting any flow due to local flooding and limits to inflow allowances related to blue-green algae control.

The Goulburn-Broken Catchment Management web site ([www.gvcma.vic.gov.au](http://www.gvcma.vic.gov.au)) provides a more detailed response to concerns about flooding.

## **What about the flooding risk associated with changing operating rules for draw down in Lake Nillahcootie required after decommissioning?**

Because Lake Nillahcootie is a water storage, is relatively small and only commands 29 per cent of the catchment area to Benalla, its potential to mitigate major flooding impacts is minimal.

## **What about minor flooding?**

A major benefit of the decommissioning with respect to the environment is an increase in spills from Lake Nillahcootie, resulting in minor flooding.

After decommissioning, some sections of the riverine system will return to a more natural flow condition, which means that flows will vary with rainfall and run-off.

There will be an increase in minor floods for Holland Creek and the Broken River.

This minor flooding is greatly beneficial for maintaining the health of our riverine system, and will have no impact on the Benalla township.

During minor flooding the floodplain is inundated briefly and the floodplain wetlands are filled. The river system is provided with important nutrients (food), as well as allowing aquatic fauna to move between wetlands and river systems to complete important parts of their life-cycle such as breeding.

# Decommissioning and Related Issues

## **What will be the future annual tariff for water in the Broken Basin?**

Goulburn-Murray Water has already announced that the water tariff will increase from the current \$9/ML to between \$50 and \$60/ML, regardless of whether Mokoan is fully decommissioned or the Justice for Broken Valley proposal is implemented.

Tariffs will rise largely as a result of Goulburn-Murray Water's decision to introduce Basin Pricing.

The Justice for Broken Valley proposal tariff would be slightly higher than full decommissioning. However, this assumes the additional capital and operating costs for their proposal are not passed on, but instead met from consolidated revenue or other funding sources.

Basin Pricing removes the subsidy to the Broken System currently provided by Goulburn irrigators.

Goulburn-Murray Water will conduct further consultation and, in association with the Essential Services Commission, is responsible for confirming and implementing this change of tariff.

## **Will trade out of the basin be allowing in the future?**

Consideration is being given to the possibility of permitting entitlement to be traded out of the Broken System in the future.

Victoria is obligated under the National Water Initiative to consider more open trading arrangements subject to their impact on irrigator reliability and the environment.

No decision on permitting trade out of the system will be made until irrigators and other entitlement holders and interests are fully consulted.