

Mokoan -Return to Wetland

February 2010 Update

In June 2004, as part of its 'Our Water Our Future' White Paper, the Victorian Government announced its plan to save in excess of 44,000ML of water annually by returning Lake Mokoan to a natural wetland.

A significant part of the project is the provision of reliability offset measures for irrigators throughout the Broken System.

The finally adopted offsets include infrastructure and non-infrastructure measures which reduce demand on the system through reduction in system water losses and purchase of water entitlements.

The rain rejection storage to be created from a section of the Mokoan inlet channel is but one of a number of infrastructure measures being undertaken to reinstate supply reliability following decommissioning.

Rain Rejection Storage Works at Broken Weir

A rain rejection storage provides a means by which small flows, surplus to requirements downstream can be harvested and then re-released back into the system a short time later. By doing that a number of times throughout the year it reduces the call on releases from Lake Nillahcootie so Nillahcootie can be operated more effectively.



Figure 1: Vibrating Padfoot Roller compacting new foundation material in the bed of the Mokoan inlet channel at the site of a new flow regulating structure

Detailed engineering designs illustrate how the rain rejection storage will utilise a section of the existing Mokoan Inlet Channel, extending between the Broken River and Holland's Creek to provide approximately 200ML of storage capacity



Figure 2: One of the existing structures that will receive new flow regulating gates and improved supervisory control and data acquisition (S.C.A.D.A) equipment to enable the remote control and monitoring of water levels and flows.

Several existing structures along this section of channel are to be upgraded and a new regulating structure constructed to allow close control of future flow harvesting and releases to meet water use demands and diversion requirements downstream.

Works on the existing and new structures include new flow regulating gates, improved flow measurement, solar power supply to some sites and *supervisory control and data acquisition (S.C.A.D.A)* equipment to enable the remote control and monitoring of water levels and flows.

Construction works on the rain rejection storage at Broken Weir commenced on January 25, 2010 and are expected to be completed over a period of 14 weeks.

Embankment Breach

The breach of the Lake Mokoan embankment and demolition and removal of the existing outlet tower and access bridge, once complete, will bring to an end the Mokoan works decommissioning process.

Design considerations for the breach incorporated the need for the bottom of the cut in the bank to equal the high water level of the future Winton wetlands. Additional design considerations included all weather access to the wetlands and a cut no wider than 10 metres at its base so as not to impact on flooding patterns downstream from the breach.

Following a call for tenders in late 2009, a contract for the Embankment Breach was awarded to Terry Plant Hire of Wangaratta in late January 2010.

The approximate Breach contract timeline is for the contractor to commence on site mid February with breach excavation starting shortly thereafter.

The actual scope of the work includes a range of activities, these comprise:-

- The excavation and removal breaching rock.
- Bulk earthworks to remove over 23,000 cubic metres .
- The demolition and removal of the existing outlet tower and access bridge.
- The filling of existing concrete pipes with concrete.
- Construction of a concrete base, so as to avoid future build up of debris and other material
- Construction of an access culvert across the breach banks.

Remote Control and Monitoring Project another offset measures

The remote control and monitoring project is another of the offset measures being undertaken to reinstate supply reliability following decommissioning of Lake Mokoan.

All water authorities are now using remote control and monitoring in some shape or form with the amount of monitoring increasing every year as more and more technology becomes available to meet the demands of the system.

With regards to the Mokoan project, improved catchment monitoring, combined with the smarter, more timely operation of flow regulating structures will allow tighter control over flow releases from Lake Nillahcootie and more effective use of downstream tributary inflows and flows along the Broken River through to Shepparton.

There are currently 10 sites included in this project. The site that monitors and controls releases from the Lake Nillahcootie Outlet has been completed and operational since late in 2008. A further 6 sites

along the Broken River at Orrvale, Baddaginnie Creek, Casey's Weir, Holland's Creek, Samaria Creek and Lima Creek are currently in the implementation stage.

A further three sites along Broken Creek have designs and approvals completed however implementation is currently on hold awaiting further assessment following the completion of the water entitlement purchase program along this stream.



Figure 3: Shows the installation of the sheet piling control and the bank stabilisation works

In addition to the above sites, as a further component of the Mokoan Project, approximately 70 private diversion pumps now have their operation and flow rates monitored remotely by Goulburn-Murray Water operators to assist with the more efficient use of available water and to reduce operational water losses.

Information from the sites is available in 'real time' to allow the system operators to make earlier and smarter decisions on flow regulation to better meet demands and to reduce water losses.



Figure 4: shows the upgraded low flow monitoring site at the Broken River At Orrvale, with new access steps, bank erosion controls, bank stabilisation and defined measuring point (sheet piling).

Information gleaned from the remote sites can be requested and accessed through the existing Goulburn-Murray Water SCADA systems database. The currency of this information is also time critical with future plans to see information updated every 15 minutes. Having this information at your finger tips is the key to making informed decisions and acting quickly. Remote control & monitoring allows this to happen.