

# FACTSHEET 2 NO.2

## BROKEN SYSTEM- LAKES, DAMS, WEIRS AND CHANNELS



**Produced by** Goulburn - Murray Water and Department of Sustainability and Environment

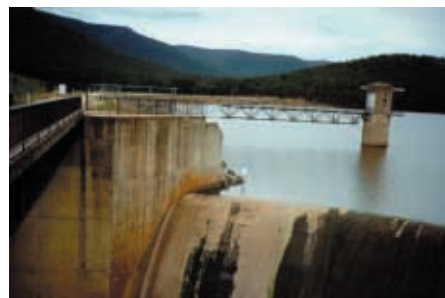
### LAKE NILLAHCOOTIE



Featuring a unique gothic arched crest on its main spillway, Lake Nillahcootie was completed in 1967. The dam wall is made of earth and rock fill and stands 35 metres high. The dam itself stores 40,000 ML of water.

The spillway capacity is 117,000 ML per day and a secondary spillway at the eastern end of the dam operates during severe floods.

Further water can be released from Lake Nillahcootie through a concrete encased, 1800mm diameter steel pipe. Goulburn-Murray Water's Reservoir Controllers can release up to 1,800 ML of water a day by managing the flow of water through the pipe.



As part of its routine dam safety management program Goulburn-Murray Water is currently undertaking a design review of Lake Nillahcootie. This review will assess the dam structures against current day design standards.

### LAKE MOKOAN

Lake Mokoan was built in the later 1960s over the site of the Winton and Green swamps. Together with Lake Eildon, Mokoan was intended to supply diverters along the Broken and lower Goulburn Rivers and to supply part of the Shepparton irrigation district. Diversion works for the Shepparton district supply were not constructed due primarily to concerns about the quality of Lake Mokoan water.

A large, shallow water storage, Lake Mokoan has a maximum capacity of 365,000 ML with a surface area of 7,890 hectares and a maximum depth of 7.3 metres.

Water diverted from Broken River at Broken Weir and from Hollands Creek at Hollands Weir flows into Lake Mokoan via a 21 km long channel. This inlet channel diverts up to 2,400 ML per day, with rainfall on the lake's surface area and runoff from its local catchment contributing further water.

During peak demand periods, Lake Mokoan has been used to supplement the River Murray by increasing flows downstream of the Barmah Choke.

A recent study of Lake Mokoan's viability looked at the cost of works needed to reduce significant dam safety risks with the Lake Mokoan Dam. The findings showed that expenditure of \$20 million in dam safety works would be required over the next 20 years.

For more information please call 1800 013 357

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### BROKEN RIVER WEIRS

#### **Broken Weir**

The Broken Weir is about 8 km upstream from Benalla and forms a pool from which up to 1,500 ML per day can be diverted to Lake Mokoan. The structure has a main rock fill spillway and a secondary grassed spillway. A bypass structure allows set minimum flows to be passed into the Broken River downstream of the weir.

#### **Hollands Weir**

Flows diverted from the Broken River at Broken Weir reach Hollands Weir and together with flows from Hollands Creek are diverted to Lake Mokoan. The channel from Hollands Weir to Lake Mokoan can divert 2,400 ML of water per day. A bypass structure to pass minimum flows downstream into Hollands Creek is also provided.

#### **Benalla Weir**

Benalla Weir pools water to provide recreational opportunities on and around the Benalla Town Lake. A fishway at the weir means fish can swim upstream from the waters of the Broken River below the weir.

*Gowangardie Weir*



### FLOODS IN THE BROKEN SYSTEM



*Casey's Weir*

#### **Casey's Weir**

Constructed in 1885, Casey's Weir pools water for diversion from the Broken River into the Broken Creek system. The Broken Creek system provides for supply of irrigation entitlements. It is also the current source of supply for the Tungamah domestic and stock Water Supply District. A fish ladder was constructed at Casey's Weir in 2005 to support fish migration.

#### **Gowangardie Weir**

Gowangardie Weir was constructed in 1897 about 30km east of Shepparton. A mass concrete structure 90 metres long and four metres high, Gowangardie creates a pool extending around 2.5km upstream. This weir provides for diversion to the East Shepparton Stock and Domestic System. There is no fishway at the weir, this prevents fish movement from the lower to upper Broken River, except in times of high river flows.

### UPPER BROKEN CREEK WEIRS

Upstream from Katamatite a number of weirs were constructed on the Broken Creek to provide water for diversion to the Tungamah Stock and Domestic Scheme. The Trewins, Flynn's and Waggarrandall weirs also operate to support the delivery of regulated irrigation demands in the Upper Broken Creek.

### STOCK AND DOMESTIC SCHEMES

#### **Tungamah Domestic and Stock Scheme**

The Tungamah Domestic and Stock Scheme supplies 940 dams with water on 465 properties covering an area of approximately 56,000 hectares of dry land cropping and grazing farms.

The Scheme is supplied by water diverted from the Broken River to the Broken Creek at Casey's Weir and then from Broken Creek into a series of creeks for once-a-year dam fill.

A new pipeline from the East Goulburn Main Channel will soon replace the open channel scheme. An offset measure to maintain reliability in the Broken System, use of the pipeline will result in significant water savings. The contract for pipeline construction will be awarded in early 2006 with a completion date scheduled for June 2007.

#### **East Shepparton Domestic and Stock Scheme**

The East Shepparton Domestic and Stock scheme is an independent gravity supply scheme that pays an annual fee to the Greater Shepparton City Council for engineering and financial services. Gowangardie Weir supplies the scheme, which in turn supplies 300 dams by 85km of channel over 10,000 hectares.