



COMMONWEALTH ENVIRONMENTAL WATER HELPS TO MAINTAIN RIVER HEALTH IN THE MURRAY RIVER

Background

Flooding in the summer of 2011-12 exceeded the floods recorded in 2010-11 in a number of areas of the southern Murray Darling Basin. This was particularly the case with the Murrumbidgee River which experienced massive flooding after March 2012 rainfall with areas of the floodplains inundated for the first time in over a decade.

The accumulations of organic matter that were washed into wetlands and waterways as a result of the floods decayed and darkened the water, turning it black. As the organic matter decays, oxygen in the water is consumed, sometimes at faster rates than it can be replenished.

The low levels of dissolved oxygen can cause stress and sometimes death to fish and other aquatic species.

Significant levels of blackwater started to occur in the Murrumbidgee and flow into the Murray in April with the potential to impact adversely on fish and other aquatic species.

Benefits of environmental watering

As the lower Murrumbidgee River was already in a state of natural flooding, environmental water could not be used at that time to help dilute the areas of blackwater occurring in the Murrumbidgee River.

Commonwealth environmental water was provided to maintain flows in the Murray at levels that would be able to provide a suitable ratio for dilution of water coming out of the Murrumbidgee River. From 16 April to 17 May 2012, 92 gigalitres of Commonwealth environmental water were released from Hume Dam, adding to flows already in the Murray River. A further approximately 45 gigalitres was delivered to the Edward-Wakool River system to provide important fish refuge habitat from

blackwater in this region. The flows from the Edward-Wakool system flowed through to the Murray River, contributing to maintaining higher Murray River flows at the Murrumbidgee River junction.

The additional flows of environmental water were not able to fully counteract the negative impacts of blackwater. However they did maintain river flows at levels that assisted in maintaining or improving aquatic habitat and providing important refuges for fish and other aquatic species.

Snapshot of Monitoring Results on 8 May 2012

The map shows a snapshot of monitoring results at 6 sites on the Murray River recorded on 8 May 2012. The map shows the flows in the Murray and lower Murrumbidgee, which included a contribution of Commonwealth environmental water, mitigated the impacts of the hypoxic blackwater generated in the Murrumbidgee River entering the Murray River.

The quality of water in the Murray has been maintained, and the impacts of the blackwater are negated within a very short distance from the confluence of the two rivers.

Box 1. Murray River upstream - healthy water

On 8 May 2012, just upstream of the junction of the Murray and Murrumbidgee Rivers, a total of 17.7 GL per day was flowing down the Murray River which included approximately 4 gigalitres of Commonwealth environmental water. The oxygen levels in this water are good and will support aquatic species.

Box 2. Murrumbidgee River upstream – hypoxic blackwater

On 8 May 2012 the lower Murrumbidgee River remained in a state of natural flooding with 18.7 GL of hypoxic blackwater flowing into the Murray River per day. The

dissolved oxygen levels were below critical thresholds for survival of aquatic species.

Boxes 3 – 5 downstream of the Murray/Murrumbidgee junction – increased mixing of water

In Box 3, the dilution flows from the Murray River had a remarkably quick effect on water quality, with immediate substantial mixing occurring within 170 metres of the junction with the Murrumbidgee River. Within and across the water column, areas of improved levels of dissolved oxygen (in the blue and green areas) would provide refuge from those areas of dissolved oxygen below critical

thresholds (in the red and yellow areas) for native fish like Murray Cod. In Boxes 4 and 5, from 500 metres to 1 kilometre downstream, increased mixing of water provided improved dissolved oxygen levels and suitable habitat for fish and other aquatic species.

Box 6. 5 kilometres past the Murray/Murrumbidgee junction – healthy water

At 5 kilometres downstream of the Murray-Murrumbidgee junction, there is a complete mixing of water from the two rivers and oxygen levels have improved to a level that is suitable for fish and other aquatic species.

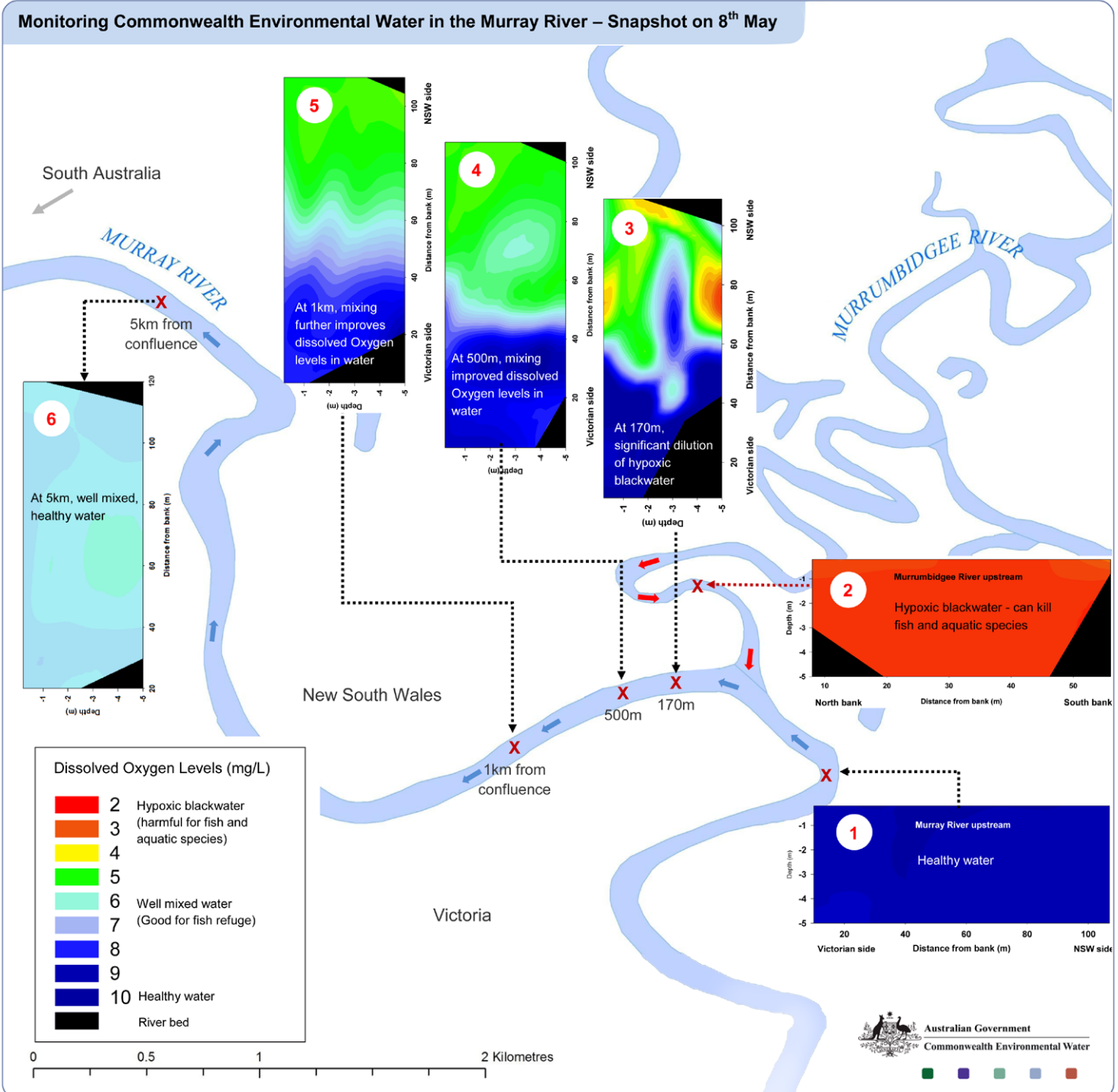


Photo: Hypoxic blackwater, copyright © Murray-Darling Freshwater Research Centre, used with permission.

...to protect and restore rivers, wetlands and other environmental assets in the Murray-Darling Basin