

# State of Rivers Report for the Coal River Catchment



Water Assessment and Planning Branch  
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***Cover Photo: Coal River at Estate Rd***

**The Department of Primary Industries, Water and Environment**

The Department of Primary Industries, Water and Environment provides leadership in the sustainable management and development of Tasmania's resources. The Mission of the Department is to advance Tasmania's prosperity through the sustainable development of our natural resources and the conservation of our natural and cultural heritage for the future.

The Water Resources Division provides a focus for water management and water development in Tasmania through a diverse range of functions including the design of policy and regulatory frameworks to ensure sustainable use of the surface water and groundwater resources; monitoring, assessment and reporting on the condition of the State's freshwater resources; facilitation of infrastructure development projects to ensure the efficient and sustainable supply of water; and implementation of the *Water Management Act 1999*, related legislation and the State Water Development Plan.

## **List of Contents**

This document contains the results of a series of co-ordinated studies by the Department of Primary Industries, Water and Environment (DPIWE) which were conducted in the catchment of the Coal River between 1999 and 2001. These studies, which are detailed below, form the basis of the 'State of Rivers' report for rivers in the Coal River catchment.

### ***Executive Summary***

Provides a brief overview of the catchment, a summary of the major activities and water uses within the catchment and a brief and integrated summary of the major findings from the various study components. This document also makes some comment on issues for management and any future work that may be required to enhance knowledge about particular problems that were raised by these studies. For more detailed summaries of findings related to particular study components, see individual study reports (listed below).

### ***Water Quality in the Coal River Catchment***

Parts 1 – 5  
(77 pages)

### ***Hydrological Analysis of the Coal River Catchment***

(10 pages)

### ***Aquatic Ecology of the Coal River Catchment***

(35 pages)

### ***Index of River Condition for the Coal River Catchment***

(51 pages)

## ***Executive Summary***

Located in south east Tasmania, the Coal River is a partly regulated river flowing through a highly modified landscape. The catchment has a long history of agricultural development and is located in one of the driest regions of Tasmania. As a result of increased demand for water for agricultural and horticultural development, Craighourne Dam was constructed in 1986 to improve security of water supply. This 12,500 ML impoundment captures water from the top 24,700 ha of the Coal River catchment, and releases it for use downstream mainly through the summer months. The lower Coal River is used as the main conduit for delivering this water. Since the mid-1990's, Craighourne Dam has been subject to severe and recurring blooms of blue-green algae which has impacted on the use of water from this source. In addition, the Coal River catchment has a large natural store of salt in the soil and groundwater, and this creates problems for land and water use throughout many parts of the catchment.

With this as background, and with funding support from the Natural Heritage Trust, the Department of Primary Industry, Water and Environment embarked on a riverine monitoring program in the catchment as part of the 'State of River' reporting program. This project involved the collection of information on water quality, aquatic ecology, hydrology and the condition of waterways throughout the catchment. Four reports were produced and together these form the "State of River" Report for the Coal River catchment. The studies were undertaken from 1999 to 2001 with the aim of providing current data to support the development and implementation of catchment management plans and to improve water resource management.

The major findings from these studies relate to waterway salinity, widespread instream and streamside habitat degradation, a general decline in abundance and diversity of fish communities and poor ecological health scores. These issues are presented and discussed in more detail below, and together provide a comprehensive and integrated picture of the condition of the water resource and the aquatic environment in the Coal River Valley.

- The condition of the Coal River fish community is poor, with a very low diversity and abundance of native fish species and a relatively high proportion of introduced exotic fish. Since the 1970's there is evidence of a marked decline in the overall abundance of fish and this appears to be due to a combination of factors including the construction of instream barriers, changes in the flow regime, increased sedimentation and infestation of the river channel by willows. In addition, many of the tributary streams to the Coal River are ephemeral, with creeks and rivulets often reduced to a series of ponds and stagnant pools following long dry spells. Water quality in these areas during these periods is very poor, with very low dissolved oxygen, elevated salinity and high nutrient concentrations. During these times, the Coal River becomes the last refuge in the catchment for fish.
- The AusRivAS assessment of rivers and streams in the Coal River catchment has found that macroinvertebrate communities in most places are impacted. The mean ratio of observed to expected taxa (OE scores) for riffle and edgewater habitats was 0.66 and 0.7 respectively, indicating a loss of up to 34% of taxa at the family level. While macroinvertebrate diversity at some sites was moderate to high, most communities were dominated by taxa that are tolerant to habitat degradation or poor water quality, and therefore still show low river health scores. Although poor water quality was found at many locations (as indicated by elevated turbidity and high conductivity), habitat availability also plays an important role. Many sites on the Coal River have poor habitat quality due to increased sedimentation, channelisation, clearance of riparian vegetation and/or infestation of the riparian zone by weeds and exotic species. In addition, the altered flow regime, and the changes this has brought about to instream habitat availability, has impacted on the river immediately downstream of Craighourne Dam. Despite this, there is evidence of a recovery in biological health with increasing distance downstream of Craighourne Dam, which is probably due to

increased baseflow inputs from unregulated tributaries dampening the impact of flow regulation.

- While salt is naturally present throughout many parts of the catchment, the degree to which this affects salinity in waterways largely depends on land use activities and the frequency of rainfall, which during the decades since construction of Craigbourne Dam appears to have declined. This has resulted in severe to extreme levels of conductivity in many tributary streams, with levels well in excess of 1,500  $\mu\text{S}/\text{cm}$  measured at a number of locations. The presence of salt at this level in waterways may have some consequences for aquatic biota, but has more significant consequences for agricultural use, particularly where water is taken from the lower reaches of the river to irrigate Stage 2 of the South East Irrigation Scheme. It was estimated that over a 9-month period in 1999, 248 tonnes of dissolved salt was extracted from the river and distributed over land within Stage 2 of the scheme. This has implications for the long-term sustainability of agriculture in this area.

### ***Recommendations***

From the riverine assessments that have been made, it is clear that the loss of riparian vegetation and the degradation that has occurred to stream beds and banks through stock access and erosion has impacted on both water quality and instream habitat for aquatic biota. In many parts of the lower catchment, native vegetation has either been totally removed or has been replaced by undesirable exotic weed species such as willow and Cumbungi. While revegetation of the riparian zone and the rehabilitation of rivers and streams within the catchment may improve ecological health, if the occurrence of extended dry periods continues to increase, it is likely to create conditions that will result in poor water quality, particularly with regard to waterway salinity. Salinity, and its potential to impact on water and land use, is one of the largest water resource issues facing the catchment now and into the future, particularly as it impacts on the quality of water in tributary streams. With increasing pressure on the surface water resource to support growth in agricultural production, there is some risk that the saline groundwater in the valley will further impinge on the quality of surface waters and the ecological condition of waterways. The management and operation of Craigbourne Dam will continue to have a pivotal role in ensuring the delivery of good quality water to the South East Irrigation Scheme. As has been pointed out in the catchment management strategy for the Coal River valley, any future expansion of irrigation in the catchment must recognise the salinity issue and plan water use accordingly. This can best be done through the continued promotion of standards for irrigation that emphasise salinity management and remediation.