

# State of Rivers Report for the Jordan River Catchment

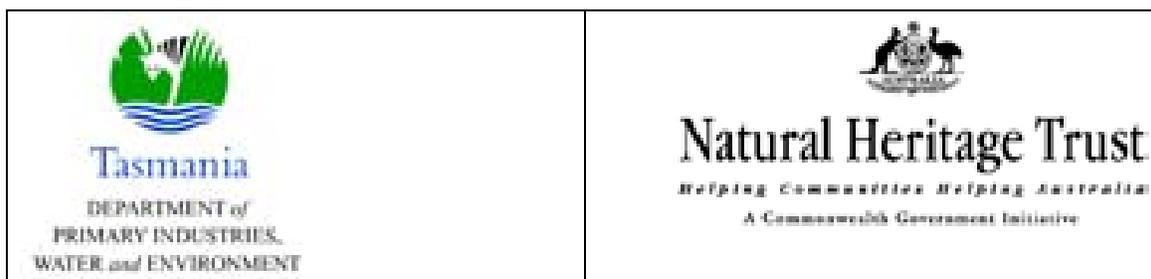


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***Cover Photo: Jordan River at Apsley***

**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 North River between 1999 and 2001. These studies, which are detailed below, form the basis of the 'State of Rivers' report for rivers in the Jordan River catchment.

### ***Executive Summary***

Provides a brief overview of the catchment, a summary of the major activities and water uses within the Jordan River 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 of Rivers in the North Esk Catchment***

Parts 1-6  
(92 pages)

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

(9 pages)

### ***Aquatic Ecology of Rivers in the Jordan Catchment***

(20 pages)

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

(63 pages)

## ***Executive Summary***

Located in south eastern Tasmania the Jordan River emerges from Lake Tiberias 15km south of Oatlands and flows through the driest region in Tasmania before draining into the Derwent near Bridgewater. The Jordan River is ephemeral and generally reduces to a series of pools in summer. The primary landuse activities in the Jordan are grazing (predominantly sheep), dairy, cropping, forestry, with some industrial, rural and urban land uses.

The upper catchment of the Jordan River consists largely of native forest while the lower catchment that has a long history of agricultural use (North, 1999). Along the lower reaches the riverbanks of the Jordan River and major tributaries are generally degraded with few sections retaining intact native riparian vegetation with widespread weed infestation, notably willows posing a significant management problem. Many sections of the river are cleared, with pasture grass adjacent to the riverbanks.

A comprehensive study of the Jordan River and some of its tributaries was undertaken from January 1999 to December 2001 by the Department of Primary Industries, Water and Environment (DPIWE) with financial assistance from the National Heritage Trust. This project was carried out as part of the State's commitment to 'State of River' reporting for rivers around Tasmania. The information generated through the study is also seen as vital for the planning and implementation of catchment management and regional natural resource management plans, providing baseline information for water management planning and community groups engaged in river management activities.

State of Rivers reporting involves investigations in the key areas of water quality, ecology and hydrology and collectively uses these studies to provide an assessment of the current status of the river catchment in regard to ecosystem health. The major findings of the study are presented below.

- The hydrology of the Jordan River catchment is characterised by a high degree of variability at the annual, seasonal and monthly timescales. During the period of the study, flows in the Jordan River at Mauriceton were well below average. The only significant flood occurred in October 2000, when flow at this site peaked at  $31 \text{ m}^3 \text{ s}^{-1}$ , which is equivalent to about a 1:3 year event.
- Water quality throughout the catchment is significantly degraded and reflects a river system that has been extensively modified along its length. These modifications include the removal of riparian vegetation, infestation by exotic weed species, instream alterations and channelisation, and the construction of water retention structures. From monitoring, it is apparent that these changes, along with the increasingly dry conditions that occur in the catchment and localised landuse activities, have resulted in significant impacts on water quality. Of particular concern was the level of salinity that was found at many locations throughout the catchment. The apparent decline in flows in the Jordan will further exacerbate salinity concentrations as the diluting effect of flushing flows has become less frequent, especially since the 1980's (Fallon *et al*, 2000).
- A number of sites exhibited characteristics of significant nutrient enrichment, in particular 'ponded' sites in the middle and lower catchment that receive runoff or effluent from local areas. Dairying activities in the middle of the catchment were likely to be the main cause of the nutrient enrichment and poor water quality that was measured in that reach of the river, and at the catchment outlet urban runoff and wastewater treatment plant discharge were also factors causing water quality degradation.
- Virtually all sites that held water and could be sampled using the AUSRIVAS methodology were found to be significantly or severely impaired during sampling in the autumn and

spring of 1999. Detailed analysis of the data from this sampling indicated that poor water quality and habitat degradation are impacting on the health of the aquatic ecosystem, and this is supported by water quality monitoring information. Habitat availability is also an important factor influencing macroinvertebrate community composition in this catchment. Factors resulting in poor habitat quality in the Jordan River are increased sedimentation, river channelisation, clearance of riparian vegetation, and infestation of the riparian zone by exotic weeds species. Willow infestation is likely to be the principal contributor to instream habitat degradation in the lower reaches of the Jordan River and tributaries.

- It is likely that many of the river health problems found in the present study are further stressed by high water demand during the irrigation season and a lack of flow in the river during exceedingly dry periods. Many severely impaired sites improved their river health rating in spring, when there was generally less water demand and higher river flows. However the improvement in river health still resulted in a significant impairment at most sites in spring.

### ***Recommendations***

It is clear that the physical characteristics of the Jordan River and its catchment are substantially modified as a result of its long history of human settlement and land use. Many of these changes can be related in some way to the environmental condition of the waterways draining this area. In addition, there appears to be a trend for increasingly dry conditions and an increased incidence of extended periods when there is no flow along the length of the river. Such conditions occurred during the period 1999 to 2001, when this study was undertaken.

The future challenge for Natural Resource Management in this catchment will be to determine what level of impact on the aquatic ecosystem is acceptable whilst continuing to maintain or improve agricultural production. At present it appears that these impacts are considerable. There are a number of techniques available that can be employed to improve water quality and ecosystem health, such as the establishment of riparian vegetation, fencing streamside zones, more effective use and application of fertilisers, land treatment of dairy shed wastes and retention and processing of urban stormwater. If issues that have been highlighted during this study are to be appropriately addressed, an integrated land and water management response is essential.