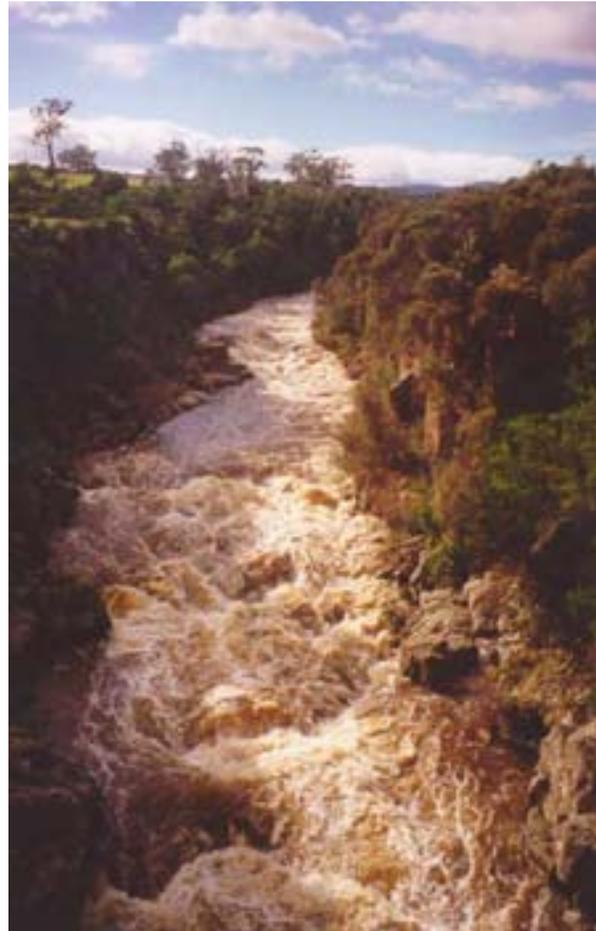


State of Rivers Report for the North Esk Catchment

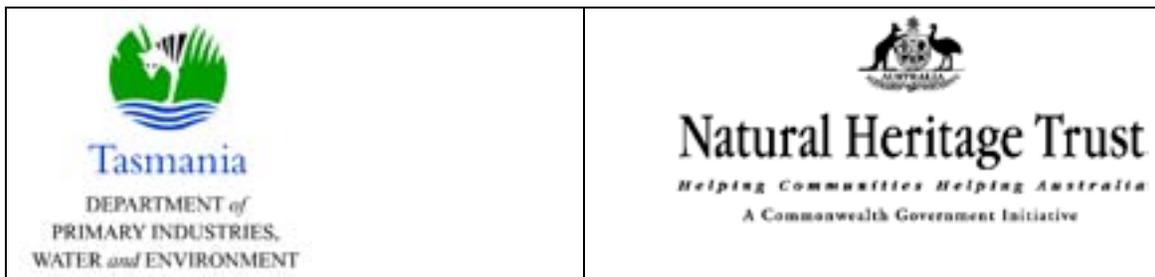


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Authors;

Katrina Wilson, Abigail Foley, Christopher Bobbi, Bryce Graham
Ian Tye, Tom Krasnicki, David Horner



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Cover Photo: *North Esk River at Corra Linn Gorge during flood.*

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 North Esk 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 of Rivers in the North Esk Catchment

Parts 1-5
(89 pages)

Hydrological Analysis of the North Esk Catchment

(14 pages)

Aquatic Ecology of Rivers in the North Esk Catchment

(36 pages)

Index of River Condition for the North Esk Catchment

(46 pages)

Executive Summary

Located in north eastern Tasmania the North Esk catchment enters the Tamar River in the City of Launceston. The North Esk and St Patricks Rivers are the two major drainages within the catchment and provide the majority of domestic water supply for the City of Launceston and together comprise a catchment area of approximately 1,065 km². These rivers also provide water for the rural communities, for domestic, stock and other agricultural uses. Both rivers also are used for recreational purposes such as fishing, canoeing and other river based activities.

A comprehensive study of rivers in the catchment was undertaken from January 1999 to December 2000 by the Department of Primary Industries, Water and Environment (DPIWE) with financial assistance from the Natural Heritage Trust. This project was carried out as part of the State's commitment to 'State of River' reporting for rivers around Tasmania, and involved investigations of the key areas of hydrology, water quality river health and river condition and collectively these studies provide an assessment of current status of the catchment. The major findings of the study are presented below.

- Water throughout the catchment was generally very dilute, with the marked exception of Old Mill Creek (in the middle of the catchment) and Rose Rivulet and Kings Meadows Rivulet (located at the bottom of the catchment). These tributaries displayed much higher salinity that can be explained partly by the composition of the underlying geology, but is also likely to have been exacerbated by land use and river management practices. All three tributaries are heavily modified, and along with the lower reach of Distillery Creek, had very low physical form and streamside condition ratings.
- Sites on both the North Esk River and its minor tributaries that rated very low in respect to instream and streamside condition using the 'Index of River Condition' technique were also found to have aquatic macroinvertebrate communities that were moderately to significantly impaired under the AUSRIVAS assessment model. Due to the high conductivity measured at both Rose and Kings Meadows Rivulets, these could not be assessed. However other sites that were found to be impaired were sites on lower Distillery Creek, upper Burns Creek, at the very bottom of the North Esk River and in the middle of the catchment on the North Esk River at Musselboro Road. River health at all of these sites was regarded as being affected by factors other than water quality, and all sites have substantially modified instream and streamside habitat.
- The relatively low concentrations of phosphorous and nitrogen that were recorded reflect the generally dispersed nature of agriculture in the catchment and the nutrient load estimates that were made can be considered to be low in comparison to other Tasmanian catchments where similar estimates have been made. Despite this, some data was collected which showed that substantial deterioration in water quality does occur in smaller tributaries that have been significantly modified by land-use and river management practices. Examples of this were Kings Meadows Rivulet and Old Mill Creek where very high turbidity was recorded following a rainfall event.
- Tributaries in the upper catchment as well as the St Patricks River and all of its associated tributaries are in good to excellent condition. Water quality is good and habitat degradation is limited to the presence of exotic species in within the riparian zone and mild sedimentation, particularly on streams flowing though agricultural areas.
- Examination of long-term water quality records from Esk Water treatment plants extracting water from the North Esk and St Patricks Rivers showed that there has been a steady increase in water temperature in the North Esk River between 1971 and 2001, accompanied by a corresponding decline in water pH. Water pH in the St Patricks River has dropped noticeably since 1991 after remaining steady for the 20 years beforehand. Changes in land-

use within the catchment and long-term changes in climatic conditions are the most likely potential factors causing these patterns of change, however these links were not investigated further during this study.

From both the survey of river condition and the river health assessments, it is evident that riparian (stream-side) zone rehabilitation and management is a significant issue for agricultural and urban areas of the North Esk catchment. Within urban areas it was found that the riparian zone was highly altered and that native species were in low proportions. Infestation by weed species, poor native plant cover and unrestricted stock access were also common indicators of degraded river condition overall.

Areas with poor riparian condition should be the focus of future catchment management activities to avoid further degradation, in addition to continued protection of areas that are of high conservation value or undisturbed. Implementation of better riparian management practices, decreasing agricultural runoff, providing adequate environmental flows especially during periods of low flows and effectively managing sewerage and stormwater systems are all areas where positive steps could be taken to for sustain the health of waterways in the North Esk catchment.