

State of Rivers Report for the Inglis-Flowerdale Catchment

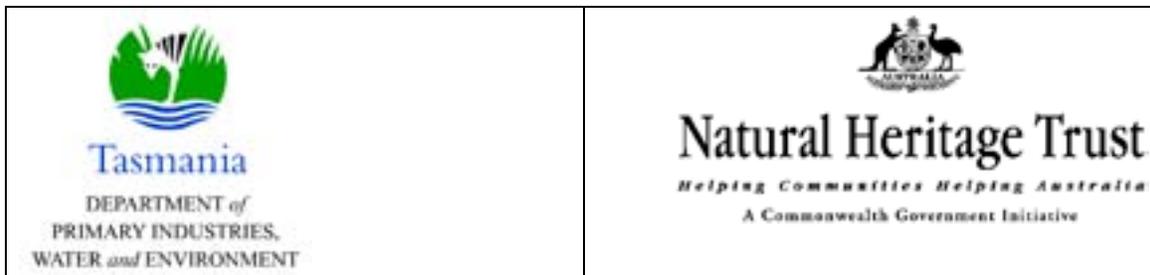


Water Assessment and Planning Branch
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Cover Photo: Flowerdale River downstream Moorleah

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 Inglis & Flowerdale Rivers between 1999 and 2001. These studies, which are detailed below, form the basis of the 'State of Rivers' report for rivers in the Inglis-Flowerdale 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).

(2 pages)

Water Quality of Rivers in the Inglis-Flowerdale Catchment

Parts 1-4

(56 pages)

Hydrological Analysis of the Inglis-Flowerdale Catchment

(14 pages)

Aquatic Ecology of Rivers in the Inglis-Flowerdale Catchment

(28 pages)

Index of River Condition for the Inglis-Flowerdale Catchment

(65 pages)

Executive Summary

The Inglis-Flowerdale catchment lies on the north-west coast of Tasmania between Smithton and Burnie. The Inglis River originates in the Campbell Range at 350 m above sea level and drains an area of approximately 471 km² over its 62 km length before discharging into Bass Strait at Wynyard. The Flowerdale River is 65 km long, is the largest tributary of the Inglis River, and drains around a third of the catchment area. Both sub-catchments contain productive, well-drained, basalt and mudstone soils, although part of the Flowerdale River drains areas of poor quartzite soils. The topography changes from steep-sided valleys in the upper regions of the catchment, to deeply incised hills in the middle catchment, and rolling hills with gentler slope in the lower catchment. The middle and upper catchment is predominantly used for forestry (both native and pine plantations), while the lower catchment has been cleared for grazing, cropping and dairy agriculture. The current licensed annual water allocation in the catchment is approximately 9,360 ML, 90% of which is used for agricultural irrigation.

The following report is from a study of rivers in the catchment that was undertaken from 1999 to 2002 by the Department of Primary Industries, Water and Environment with financial assistance from the Natural Heritage Trust. This study was carried out as part of the State's commitment to 'State of River' reporting for rivers around Tasmania, with the aim of providing current information for the better management of our waterways and water resources. The major outcomes of the study are presented below.

- The higher level of agricultural activity that occurs on the eastern side of the catchment has impacted negatively on water quality, environmental condition and the 'riverine health' of streams draining that part of the catchment. Relatively poor water quality was recorded at locations on the lower reaches of the Inglis and Flowerdale Rivers, in Camp Creek and Seabrook Creek, and in the upper catchment of the Calder River. At these locations, substantial removal of exotic riparian vegetation, unrestricted access to waterways by stock, and in some cases significant instream modification, has resulted in poor environmental condition and subsequent impacts on aquatic ecosystems. At locations where exotic riparian vegetation had been completely removed, very large daily changes in water quality were observed and this is likely to cause additional stress to aquatic organisms during summer months.
- In the middle and lower reaches of the Inglis River, degraded instream habitat was the cause for poor 'river health' and river condition scores, and this was largely due to the high load of sediment that the river is carrying and a more extensive level of disturbance. The sediment within the river tends to smother microhabitat and can interfere directly with food acquisition by filter-feeding fauna. Opportunistic sampling during an intense thunderstorm clearly demonstrated that runoff from gravel roads in the middle of the catchment is delivering substantial loads of sediment directly to the river system. The cumulative impact of sediment from these roads and the numerous gravel pits that are located in this part of the catchment is likely to be high. In the lower Inglis River, this is likely to have been exacerbated by the extensive removal of willows that was carried out midway through the study, and just prior to significant floods in the catchment in July 2000. The removal of these willows resulted in the release of sediment that had previously

been stored within the banks and bed of the river, and consequently to the very high estimates of instantaneous sediment loads that occurred at that time.

- Using modelled flow data along with measured water quality data, nutrient load estimates for the catchment suggest that although sediment transport may be high, nitrogen and phosphorus loads leaving the catchment are only moderate within the Tasmanian context. Nutrient export coefficients calculated for this catchment indicate that nutrient loss is roughly equivalent to that for the Pipers River catchment, and well below those that have been estimated for the nearby Duck and Montagu catchments.
- In general, the Flowerdale River is in better environmental condition than the Inglis River and smaller streams on the eastern side of the catchment. Although the Flowerdale sub-catchment is subject to some forestry activity, the rivers draining this area are generally protected by a healthy, native riparian zone that also contributes energy and habitat to the river in the form of native wood. The healthy native riparian zone also provides benefits related to water quality, as shading of the river helps to reduce peak water temperature during the summer and dampens the large daily changes in dissolved oxygen that can cause stress to aquatic life.

In general, the results of the study showed that much of the Flowerdale River and the headwaters of the Inglis River are in good environmental condition, and that land-use activities that presently occur in this part of the catchment are not having a noticeable detrimental impact. The results have also showed that conditions in the lower sections of the Inglis River and in the smaller waterways on the northern and eastern sides of the catchment are relatively worse, with poorer water quality and more degraded instream and streamside habitat. In some cases these are causing significant impacts on the health of the aquatic ecosystem. It should be understood that this assessment is based on a relatively rudimentary and broad-scale 'environmental audit' of the catchment. Given the limited timescale and budget, the studies were not able to undertake specific investigations to resolve issues of particular concern such as those of threatened species or rural chemical use.

From the results of this project, the major issues for management within this catchment relate to the removal of riparian vegetation from rivers and streams and the ongoing impacts of sediment and nutrient delivery to waterways in the middle and lower catchment. These impacts could be mitigated through improved protection and rehabilitation measures for riparian zones, better management of runoff from gravel roads and extraction pits, and decreasing erosion and run-off from areas of intensive agriculture. Such measures will greatly improve water quality and in-stream habitat for a suite of aquatic fauna, and produce overall benefits for the aquatic ecosystem.