



DEPARTMENT of
PRIMARY INDUSTRIES,
WATER *and* ENVIRONMENT



Natural Heritage Trust
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A Commonwealth Government Initiative

Water Quality of Rivers in the Duck River Catchment

A Report Forming Part of the Requirements for 'State of Rivers' Reporting

PART 3ii

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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.

2.4.2 Catchment Surveys - Phosphorus

The maps presenting the survey data for TP concentration (Figures 2.30 and 2.31) shows that there is a very noticeable difference between concentrations in summer and winter during stable river flows. The generally higher concentrations recorded in winter (Figure 2.31) reflects the greater capacity for streamflow to transport particulate material on which the majority of the TP is attached. Highest concentrations were generally found within the main river. The plot of TP concentration along the length of the Duck River during summer and winter (Figure 2.32) shows that on both occasions TP concentrations in the river are increased markedly by inputs to the river between DR19 and DR12. White Water Creek and Edith Creek are the two major inflows to the river in this reach and both contains high concentrations of TP during the winter.

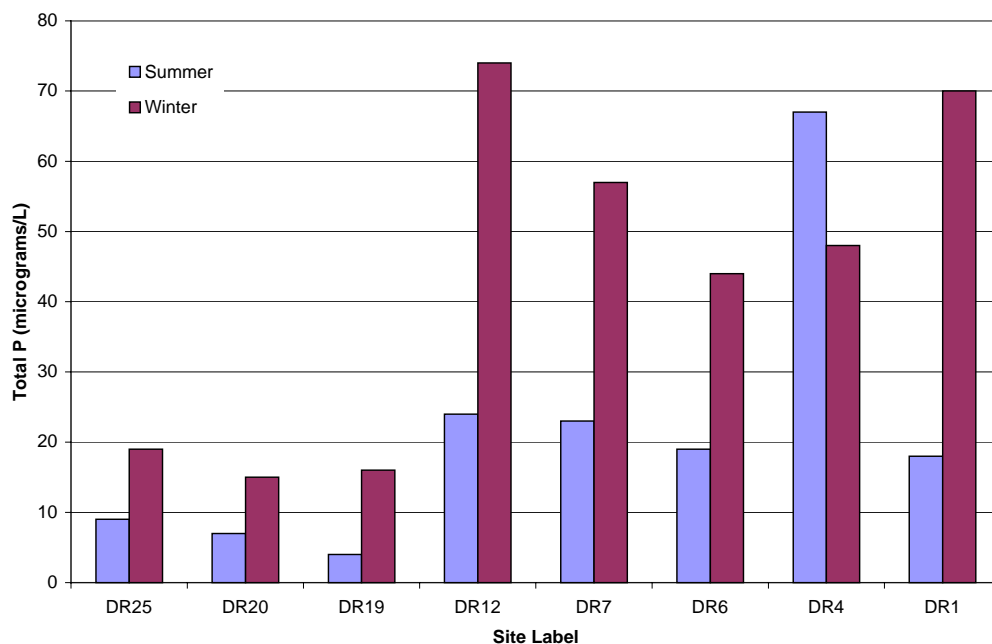


Figure 2.32: Comparison of longitudinal change in TP concentration in the Duck River recorded during snapshot surveys of water quality in March and August of 2000.

During the lower flows of summer, slightly elevated TP was found at DR4 (Duck at Scotchtown), sites on the lower reaches of Edith Creek and at sites above Lake Mikany (Deep Creek upstream of Lake Mikany & Muckeye Creek).

A significant proportion of the phosphorus recorded at sites during the winter survey was as dissolved reactive phosphorus (see Figure 2.33). At DR18 (Whitewater Creek) where the TP concentration was found to be in excess of 0.3 mg/L, 85% of the phosphorus was in the dissolved form, indicating probable point-source contamination of the river at or upstream of this site and the high bioavailability of phosphorus at that time. Other sites where a high proportion of DRP was also recorded were DR11 and DR12 (both located on Edith Creek), DR7, DR19 and DR20 (all located on the Duck River) and DR 27 and DR 29 (both sites located on Deep Creek). The elevated phosphorus levels at the latter two sites during winter are likely to be caused by stock access to these waterways rather than input of dairy effluent.

While no flow information is available for the creeks flowing into Lake Mikany, the high nutrient levels recorded at these sites has implications for water quality in the lake. This level of nutrient enrichment may encourage the growth of nuisance algae or cause blooms of planktonic algae, which may interfere with water treatment downstream and reduce the aesthetics of the lake.

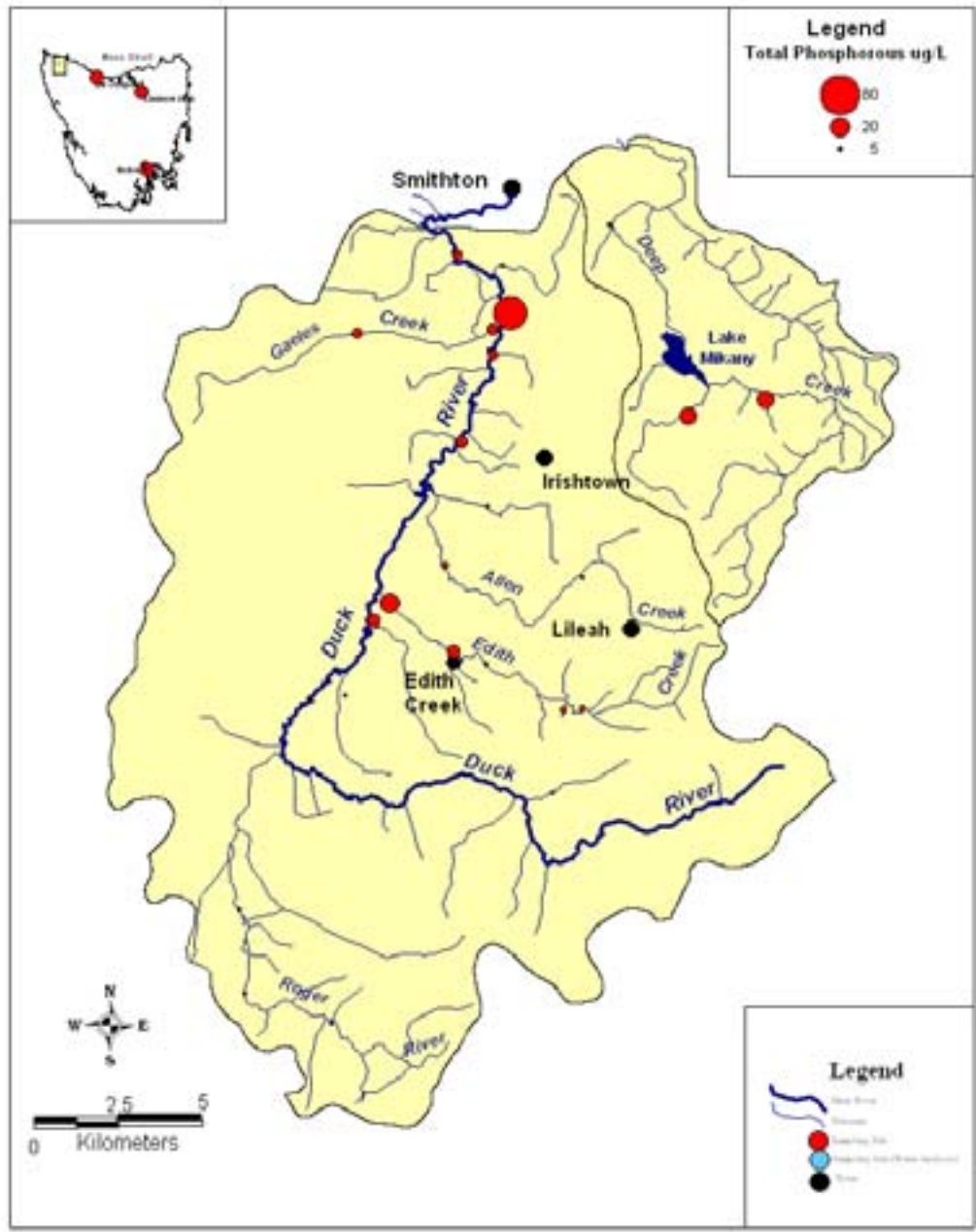


Figure 2.30: Snapshot of Total P concentrations recorded in the Duck catchment on 21 March 2000.

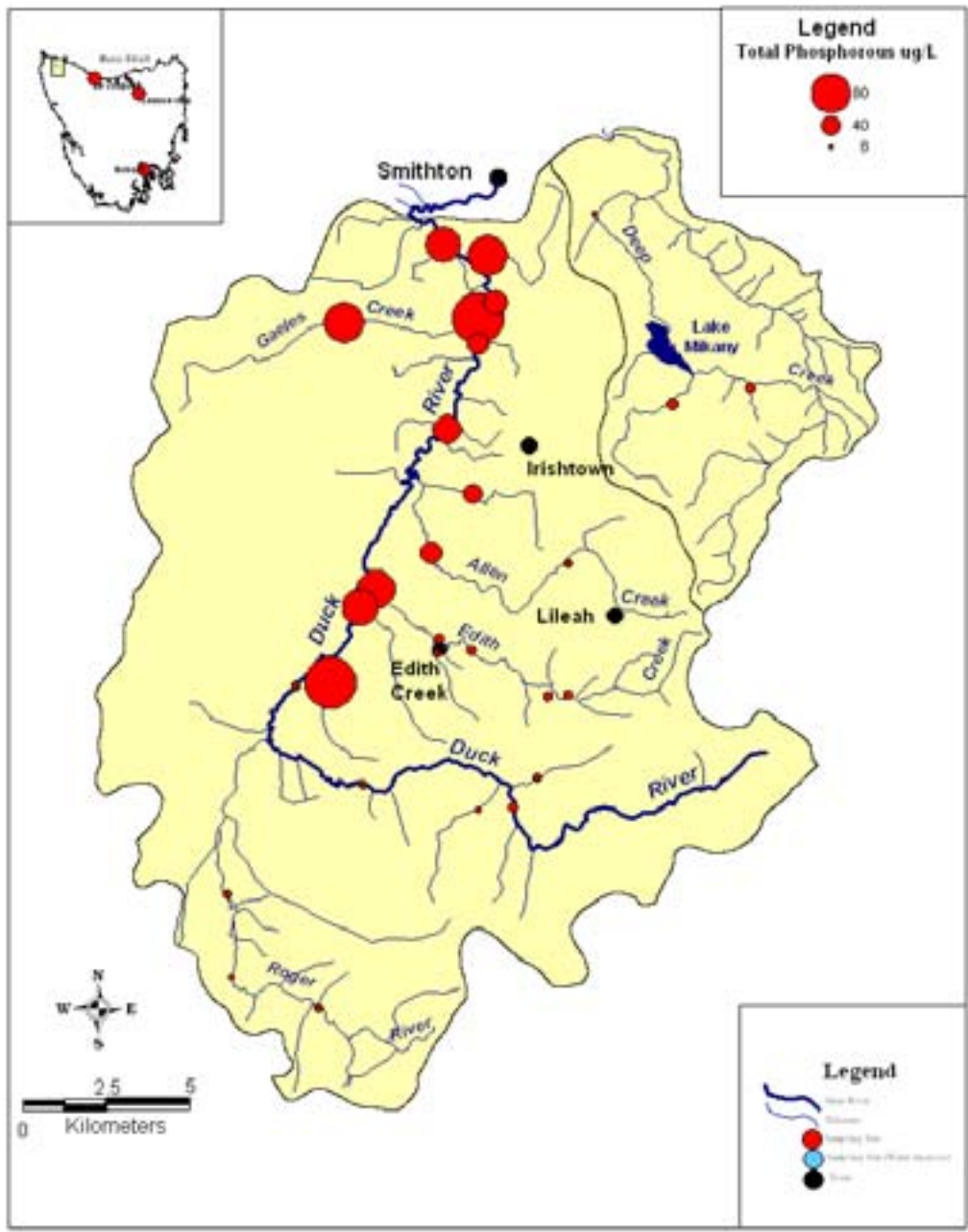


Figure 2.31: Snapshot of Total P concentrations recorded in the Duck catchment on 31 August 2000.

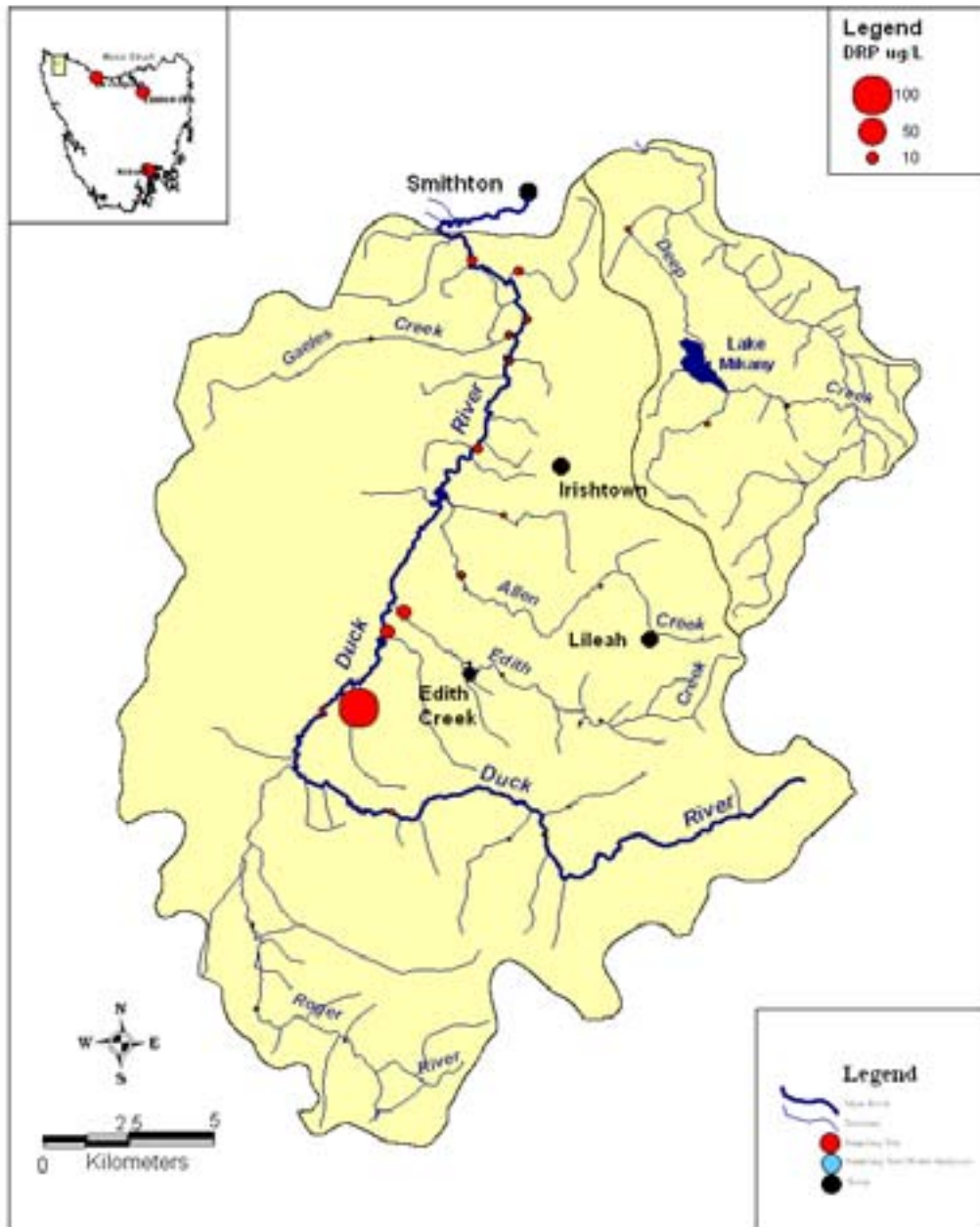


Figure 2.33: Snapshot of Dissolved Reactive P concentrations recorded in the Duck catchment on 231 August 2000.