Key Issues

- *Estuarine siltation*
- *Power station operation*

Related WMR Technical Studies

- *Cataract Gorge*
- *Trevallyn fish passage*

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Hydro Tasmania

Technical Study – Tamar Siltation

The South Esk – Great Lake Water Management Review

The Tamar Siltation Assessment is part of Hydro Tasmania's South Esk – Great Lake Water Management Review (SEGL WMR). The WMR program examines Hydro Tasmania's water management practices in each of its catchments. This assessment is one of 12 studies in the SEGL catchment. The studies were carried out following extensive identification of aquatic environment and water management issues, involving consultation with stakeholders throughout the catchment. The issues identified are documented in two reports: *Environmental Review: Great Lake – South Esk Catchment* and *Community Consultation Report: Great Lake – South Esk Water Management Review*. The outcomes from the technical studies will ultimately be incorporated into an Aquatic Environment Management Program for Hydro Tasmania.

Issues Investigated

The issue investigated by this technical study was how current operation of Trevallyn power station impacts on siltation in the upper Tamar River and how changes in operation might help to further reduce silt build-up.

Background and Information Gaps

The Tamar River is in the north of Tasmania, originating at Launceston at the confluence of the North Esk and South Esk rivers. The upper estuary is subject to significant siltation and has been dredged to varying degrees since the mid 1800's, prior to commencement of the power scheme. Dredging is currently supervised by the Upper Tamar River Improvement Authority (UTRIA), which comprises representatives from local councils, government, the Launceston Port Authority and the community. The principal objective of the Authority is to provide river dredging for flood protection, recreational amenity, commercial activities and general navigation in the upper reaches of the Tamar River. Although the port is no longer used for major shipping activities, there are industries that rely on use of the port facilities and there are also a variety of recreational and amenity uses.

During the consultation phase of the SEGL WMR, UTRIA raised the issue of siltation in the upper Tamar River, and suggested that the operation of the Trevallyn Power Station should be re-examined as a possible method for reducing dredging activities in the area. This issue had previously been canvassed in a comprehensive scientific study of sedimentation in the Tamar in the mid-1980's.

Technical Studies

Aims

The aims of the study were to review the content and findings of the 1980's investigations to determine whether the conclusions were based on appropriate and sufficient data, and assess the implications for Hydro Tasmania in revising its operating practices at the Trevallyn Power Station to assist with silt management in the Tamar Estuary.

Assessment of Issues

This study reviewed relevant information regarding siltation in the upper Tamar Estuary. Information presented in the comprehensive surveys undertaken in the mid-1980's have clearly shown that siltation in the upper estuary is not caused by nor exacerbated by the presence of the power scheme. Discharge of freshwater from the Trevallyn Power Station actually reduces the local build-up of silt in the area of Home Reach just below the tailrace. Estimates made in reports from that work suggest that the overall effect of the scheme has been to reduce sedimentation in Home Reach from about 100,000 m^3/year to around 30,000 m^3/year. These estimates where made following reasonably detailed tidal gaugings and cross-sectional surveys carried out over a number of different power station discharge patterns during 1985. At the time of the study, maintenance dredging of about 20,000-30,000 m^3/year was thought to be required to keep the channel open and navigable.

Reports from the studies in the 1980's also suggested that while the present operation of the power station reduces siltation in the upper estuary, further reductions in silt deposition might be achieved if Trevallyn power station operation can be more closely aligned with the tidal cycle. Maximising discharge of freshwater from the power station during the time of the flood tide (incoming) might result in silt deposition lower down the estuary, where dredging is not required.

To test this hypothesis, and to get some estimate of the possible costs to Hydro Tasmania of this alteration to operational procedures, a trial was undertaken between May 1990 and April 1991. During this trial, modified output from the power station occurred on 56 days, and resulted in an estimated power loss of about 827 MW hours. Other costs that the (then) Hydro Electric Corporation (HEC) incurred due to this trial related to increased engineering time in the management of Trevallyn Power Station, increased network losses due to importing power to Trevallyn and modifications to system generation to take into account the trial. At that time the HEC estimated that with these added costs, the total cost of implementing this operational regime for the 12-month period of the trial amounted to about $80,000. This amount was approximately the same as the amount that UTRIA thought might be saved by reduced dredging requirements.

A re-examination of this issue to take into account the generating system as it stands today was undertaken using Hydro Tasmania's present generation system model. The implications for the business of modifying its practices to reduce dredging costs, and the loss of operational flexibility for Trevallyn Power Station are still seen as significant issues for the business.

Outcomes

The study highlighted that the present operations already result in a significant reduction in silt build-up in the upper Tamar River. The issue of siltation in the upper Tamar is not one that arises from present power station operations. Hydro Tasmania has concluded that any decision to alter the operational regime of Trevallyn Power Station is a commercial issue for the business and is outside of the scope of the Water Management Review process.