

# Water Management Review

January 2007 **Derwent Catchment**



## New era for Lagoon of Islands

Hydro Tasmania has made a major commitment to improving the water quality in Lagoon of Islands by adopting a Nutrient Management Strategy that combines scientific and engineering approaches. This strategy will be implemented over the next 20 years, heralding a new era for Lagoon of Islands.

Water quality conditions in the lagoon have been deteriorating over the past decade, culminating in a blue-green algal bloom. Water quality in the Ouse and Shannon rivers is also poor and water users downstream of Lagoon of Islands have been raising their concerns about the issue.

Hydro Tasmania CEO Vince Hawksworth said that the situation at Lagoon of Islands is an unacceptable environmental condition, and not consistent with the sustainability values of the business.

“Solving this problem is one of our highest environmental priorities. Hydro Tasmania will invest considerable resources in trying to overcome the water quality problem at Lagoon of Islands, and we are aware that it will be a prolonged challenge,” said Mr Hawksworth.

Solutions to the problem in Lagoon of Islands have been researched by Hydro Tasmania for some time. This research has led to the development of the new strategy which will implement a number of actions including an innovative environmental management approach known as biomanipulation.

Biomanipulation involves removing fish so that zooplankton, which consume algae, can increase. Without predation by fish it is hoped that the zooplankton will increase to a level where they can control the rampant algae. If biomanipulation is successful, it will control the algal bloom in the short term.

A second key part of the strategy is to reduce nutrients entering the lagoon via the Ripple Canal. Water flowing in from the canal brings with it high levels of nutrients which contribute to the problems within



*Lagoon of Islands*

*Photo courtesy of David R. Blühdorn*

the lagoon. Stabilising the canal banks through lining, revegetation techniques and establishing a wetland will help reduce overall nutrient input.

The work will be undertaken in close consultation with the Inland Fisheries Service and other stakeholders. Hydro Tasmania is also conferring with nationally and internationally recognised scientists regarding the lagoon and the innovative techniques that the strategy will implement.

In addition, water is being released from Great Lake to dilute flows emanating from Lagoon of Islands thereby improving water quality conditions for downstream users on the Ouse and Shannon rivers. Monitoring has intensified and Hydro Tasmania is testing water quality at the lagoon's outflow and other sites in the Shannon-Ouse catchment.

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**Hydro Tasmania**  
*the renewable energy business*

## Rehabilitation partnership at Lake St Clair

Operational changes implemented by Hydro Tasmania in 1998 to maintain a lower water level in Lake St Clair have been effective in stabilising shoreline erosion, a DWMR study has confirmed. Hydro Tasmania is now working collaboratively with the Parks and Wildlife Service (PWS) and the Department of Primary Industry and Water (DPIW) to encourage the re-establishment of natural vegetation in sensitive, eroded areas.

The shoreline erosion was originally identified by the PWS and was formally described in a report to the World Heritage Area Consultative Committee (WHACC) in the 1990s. This report suggested that prolonged periods of high water levels had resulted in vegetation dieback and accelerated erosion. The PWS recommended changes to the lake levels to reduce the erosion.

Hydro Tasmania investigated the issue further and explored a range of potential management options. The eventual outcome was a change to the way Lake St Clair is operated, which limits the amount of time the water level is above a critical level. This water management strategy for Lake St Clair was detailed in the 1999 World Heritage Area Management Plan and has been implemented voluntarily by Hydro Tasmania.

Monitoring by Hydro Tasmania in 2002 showed that the modified operation of the lake had been effective in stabilising the erosion. The vegetation was recovering well in some areas, such as along the eastern shoreline of Lake St Clair. However, at Narcissus at the northern end of the lake and Frankland Beaches at the southern end, recovery was not so successful.

In June 2006, Hydro Tasmania botanist Anita Wild reassessed shoreline erosion and vegetation recovery in consultation with PWS rangers and the DPIW rehabilitation officer. Site visits confirmed that erosion has stabilised indicating that the lake level management strategy is working.

While there is good news on the erosion front, some areas are still showing little evidence of vegetation recovery. Ms Wild says that this is primarily due to the harsh climatic conditions that prevail at Lake St Clair.

"It is very difficult for vegetation to take hold on bare surfaces that are exposed to the elements," she said.

"Frost heave in autumn and spring, and drought and desiccation in summer mean that vegetation recovery doesn't stand much chance without some intervention and encouragement."

DPIW Rehabilitation Officer, Michael Comfort, said that DPIW and the PWS have been trialling a number of techniques at both Narcissus and Frankland Beaches since 2000.

"Due to the harsh environment any recovery will be a slow process. The trials undertaken to date have been monitored, and different techniques are evolving based on the results," Mr Comfort said.



*The boardwalk near the Narcissus River showing jute matting and slash laid previously by PWS to encourage vegetation regrowth*



*A bare area near the Narcissus River mouth. Revegetation techniques such as siltworms may be used to encourage vegetation regrowth*

*Photos courtesy of David R. Blühdorn*

The work by the DPIW and the PWS has included laying jute matting, cutting and laying native vegetation slash, fertilising, direct seeding, planting of tubestock, construction of sand fences of several designs, and the placement of signage. The works have been coordinated and largely funded by the DPIW with field assistance from PWS staff and volunteers. DPIW also have a program to monitor erosion at the Frankland Beaches.

Hydro Tasmania has joined the Lake St Clair rehabilitation partnership and is working with PWS and DPIW to undertake further rehabilitation works in the Narcissus area.

DPIW and Hydro Tasmania have developed the concept of using "siltworms" (hessian geotextile tubes filled with organic material), or similar devices in eroded areas to encourage the vegetation to re-establish. Siltworms are pinned perpendicular to the overland water flow and capture silt, seeds and organic debris. A trial of this technique using several different siltworm designs will be undertaken in March 2007, funded largely by Hydro Tasmania, with on-ground support coming from DPIW, the PWS and volunteers.

Those involved in the rehabilitation effort know only too well the challenges they face at Lake St Clair, and it is likely to be some time before the results of the most recent trial are known. It is hoped however, that given perseverance and using a variety of techniques, successful rehabilitation will be achieved.

## More on Shannon Lagoon

The article on the Shannon Lagoon turbidity study in our October newsletter failed to highlight the fact that the work was done as a partnership between Hydro Tasmania and the Inland Fisheries Service Biological Consultancy (IFSBC). In particular, Dr Adam Uytendaal from IFSBC contributed significantly to the study, modelling the impact of wind, different water levels and wind barriers on the turbidity. The contributions from the IFSBC are greatly appreciated and Hydro Tasmania is looking forward to continuing this partnership.

Work on Shannon Lagoon is ongoing, in the form of an assessment of existing biological information collected by IFS, Department of Primary Industry and Water, the Australian Museum, University of Tasmania and Hydro Tasmania.

The review of this information, which includes macrophyte cover, fish populations, fringing vegetation and habitat assessment, has shown that:

- Shannon Lagoon is an important habitat for healthy populations of two species of endangered fish – the Shannon and Great Lake paragalaxiids.
- Aquatic plants appear to be abundant in Shannon Lagoon.



*Dr Adam Uytendaal from IFSBC enjoys the brisk breeze on Shannon Lagoon*

- Shannon Lagoon is likely habitat for endangered water bugs.
- Shannon Lagoon is surrounded by rare plant communities that are vital habitat for the endangered Ptunarra Brown Butterfly.

Despite its murky appearance and shallow, man-made status, it is clear that Shannon Lagoon contains important habitat and is highly valuable for the conservation of a number of Tasmania's endemic species.

## European invaders attack natives

This headline might have been shouted down a cobbled high street in colonial times. In this case however, it aptly describes an ongoing battle being played out in Tasmanian waterways between redfin perch and native fish.

Redfin or European perch is an exotic species of freshwater fish introduced to Tasmania around the mid 1800's. Their voracious appetite for all things small and fishy, and tendency to form large populations, means that the redfin perch pose a very real threat to the state's native fish populations.

Hydro Tasmania fish biologist, David Ikedife said that Tasmania's threatened galaxiids are particularly vulnerable to predation by redfin perch.

"A high proportion of the state's threatened native fish populations are in Hydro Tasmania catchments, so we're very concerned with protecting these species," Mr Ikedife said.

"There are several threatened species in the upper reaches of the Derwent system, but we are lacking recent information on redfin perch distributions adjacent to these areas."

Hydro Tasmania will conduct fish surveys this summer to fill these knowledge gaps, and will determine where there might be potential for redfin to infest native fish populations.

Mr Ikedife says that where risks are identified, Hydro Tasmania will investigate what measures could be put in place to ensure that redfin remain isolated from threatened natives. Likely options include the construction of barrier weirs to stop redfin from moving upstream and colonising new areas.



*Natural or man-made barriers like this one in Liawenee Canal prevent the spread of redfin perch*



*A redfin perch*

*Photo courtesy of IFS*

## Didymo is a blooming problem

Its common name of “rock snot” may amuse you, but Didymo is the newest potential threat to Tasmania’s waterways – and it is no joke! There is a high level of concern among the state’s river custodians. Hydro Tasmania, the Inland Fisheries Service (IFS), and the Tasmanian quarantine section of the Department of Primary Industry and Water (DPIW) have started discussions on how to prevent the introduction of this fresh water algal pest.

Didymo, native to the northern hemisphere, has been spreading through the rivers of New Zealand’s South Island since at least 2004 when it was discovered. It forms thick mats and flowing streamers that are reminiscent of wet toilet paper.

But Didymo does not just have a visual impact. It has very serious implications for the environment and poses a significant threat to the aquatic ecology and fisheries of infested areas. Didymo thrives in cool running water and spreads quickly. Severe blooms can completely carpet river beds for ten or twenty kilometres and in one reported case over one hundred kilometres, smothering other aquatic life.

Didymo can have an economic impact too. Infestations of the algae in irrigation and hydropower schemes have the potential to invade canals and clog intakes which may lead to equipment damage, costly shut-downs and unreliable electricity supply.

Contaminated fishing equipment of visiting international anglers is likely to have been responsible for the introduction of Didymo to New Zealand. Our close proximity to New Zealand and the frequent visits by anglers between the two places means that there is a very real risk of Didymo being introduced into Tasmanian rivers.

With no control measures currently available, preventing the introduction of Didymo is the best defence. Quarantine legislation makes it illegal to import Didymo into Tasmania, and travellers from New Zealand are required to disinfect fishing gear and water sports equipment using a solution of chemicals recommended by DPIW.

### Recommended disinfecting procedures for Didymo (from DPIW website)

- Before leaving a river remove all obvious clumps of algae from your gear, then search gear thoroughly and remove inconspicuous material. Algal material should be disinfected (see below) and disposed of in the rubbish.
- Gear should be thoroughly cleaned by soaking and scrubbing all gear for a minimum of 1 minute in hot water (60°C) with a 2% solution of household bleach, or a 5% solution of salt, nappy cleaner, antiseptic hand cleaner or dishwashing detergent. Used cleaning water should not be emptied into waterways.
- If cleaning is not practical, dry all gear completely and wait 48 hours prior to contact with another waterway.



*An officer from New Zealand’s Southland Fish and Game inspects a Didymo bloom in a New Zealand river*

*Photo courtesy of Southland Fish and Game*

Unless an effective control method is developed, the unwitting angler who brought Didymo to New Zealand may return some day to find that the trout fishing experience they travelled from the other side of the world to enjoy no longer exists. The threat of a similar situation in Tasmania has prompted Hydro Tasmania, the IFS and DPIW to begin developing a co-ordinated Didymo risk management strategy for the state.

More information about Didymo can be found on the web at <http://www.dpiw.tas.gov.au/inter.nsf/WebPages/CART-6R6923?open>, or email Tasmanian quarantine at [Quarantine.Enquiries@dpiw.tas.gov.au](mailto:Quarantine.Enquiries@dpiw.tas.gov.au)

## Contact Us

If you have questions or any feedback relating to the Derwent Water Management Review program we are keen to hear from you.

We are keeping our mailing list updated so if you would like someone added to it, or if your details have changed, please let us know.

### Help us help the environment

By sending us your email address you can receive DWMR newsletters electronically and reduce paper use.

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