

# Water Management Review

## South Esk – Great Lake Catchment



### Package of Commitments for South Esk – Great Lake Aquatic Environment Management Program

#### The South Esk – Great Lake Water Management Review

The Water Management Review (WMR) program was initiated in 1999 as a mechanism by which Hydro Tasmania would review its environmental performance and identify measures for moving towards sustainable water management. The program systematically and openly reviews present water management practices in light of their current impacts on the environment, and where warranted identifies and evaluates options that will yield better environmental or social outcomes.

The first catchment to be assessed under Hydro Tasmania's WMR program is the South Esk – Great Lake catchment, and the program for assessment of issues in this catchment comprised four stages as follows:

#### Stage 1 - Information Review

#### Stage 2 - Community Consultation

#### Stage 3 - Technical Studies

#### Stage 4 - Program Development

The focus for work undertaken in Stage 3 was to identify options for management of issues raised during the first two stages, and a total of 67 potential options were identified. These options were then reviewed to develop a program for environmentally sustainable water management for Hydro Tasmania's operations in the South Esk – Great Lake catchment.

In developing this program, it was necessary for the business to weigh up social and environmental implications of the identified sixty-seven options alongside business economics and generation requirements. It must be recognised that this process cannot solve all water resource issues, and that Hydro Tasmania in certain cases needed to carefully define the extent of its commitments to ensure ongoing business viability. As a consequence, every study did not lead to a new commitment on the part of the business. However there were many good solutions and improvements that Hydro Tasmania was able to identify through this process, as well as clearer directions for future investigations in its Aquatic Environment Program.

Nine commitments are made by Hydro Tasmania as an outcome of this WMR, and form its Aquatic Environment Management Program for its operations in the South Esk – Great Lake catchment. These commitments result in a cost to the business in the order of two million dollars over the next five years, and are as follows:

- **Lake Augusta** – The key issue for the investigations was dune erosion in relation to lake level fluctuations. The study was unfortunately inconclusive due to an absence of long-term data. In response, **Hydro Tasmania will install instrumentation at Lake Augusta to monitor groundwater movement in relation to lake levels for a three year period, and commits to supporting further investigation of the dune system.**
- **Great Lake** - The investigations focussed on the key issue of movement of algal beds in response to water level fluctuations. These beds are habitat to a number of endemic fauna species listed under the Tasmanian Threatened Species Protection Act 1995, and the concern was that the beds are unable to migrate up and down at a sufficient rate to ensure habitat protection. Investigations showed that not only lake level variations but other factors such as water clarity (affected by turbidity due to long-shore erosion and wind-induced sediment suspension) had an influence on algal bed movement, and these factors are not well enough understood at this stage to define management responses.

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- Faunal relationships also need further understanding. In response, **Hydro Tasmania is committed to support a further five years of research into the Great Lake algal beds and associated faunal relationships.**
- **Arthurs Lake.** – The key issues focussed on in the investigations were threatened native fish populations and fishing amenity, as this is by far the most popular recreational trout fishery in the State. Native fish studies undertaken during this study found that fish populations in Arthurs Lake are currently healthy and are not threatened by the present lake level management regime. In response to the issues raised, **Hydro Tasmania will endeavour to maintain Arthurs Lake levels above a minimum of 949 metres above sea level particularly during the fishing season.** Hydro Tasmania will be able to maintain water levels in Arthurs Lake above 949 mASL once Basslink is completed and subject to Great Lake being above 1029.8 mASL. At all other times the system will be operated to avoid where possible allowing the lake to go below this level.
- **Woods Lake** – The key issues are wind-generated sediment re-suspension causing poor water quality, native galaxiid fish species, recreational angling and downstream irrigators. To avoid the lake level being drawn down to depths where turbidity levels have been shown to increase, **Hydro Tasmania commits to maintain the minimum operating level for Woods Lake at 735.4 metres above sea level. Hydro Tasmania will also support further research into native fish species through the provision of data and field assistance.** Hydro Tasmania as part of this commitment will review its alarm systems for the lake, to ensure that system operators are aware when lake levels are approaching this minimum and adjust system operation accordingly.
- **Brumbys and Westons weirs** – The main issue of concern was flooding in Westons Rivulet when pumps in Westons Weir have insufficient capacity or fail to pump all water diverted from Upper Brumbys Creek into Great Lake. **Hydro Tasmania commits to ensure reliability of the pumps at Westons Weir through a scheduled program of maintenance, and will review its procedures accordingly.**
- **Downstream Poatina Power Station** – Key issues of concern were the impacts of normal power station operations on water levels in Brumbys Creek and the lower Macquarie River – specifically the impacts on riparian land use and water extraction, erosion of riverbanks, and poor water quality and power station flood rules. The majority of these issues were investigated in depth as part of studies for the Basslink Integrated Impact Assessment Statement. Basslink was shown in these studies to be likely to exacerbate many of the present concerns downstream of Poatina, and a re-regulation storage was identified as the best option to mitigate these issues. **Hydro Tasmania is committed to construction of a re-regulation storage downstream of Poatina Power Station,** and this storage will address the majority of present concerns raised during the WMR process. The existing flood rules for Poatina were reviewed and an improvement in internal communications between local power scheme and operations staff during flood events should ensure that local conditions are more adequately considered during implementation of the current flood rules.
- **Spills at Trevallyn Dam** – The main issue of concern was access by irrigators in the South Esk and Macquarie catchments to floodwaters for the purpose of filling on-farm storages, rather than see this water spill over Trevallyn Dam. Hydro Tasmania undertook extensive hydrological analyses and identified the flow conditions that can be used as triggers to allow DPIWE to grant temporary licences to extract water during periods of high flow. **Hydro Tasmania commits to making the timely and appropriate hydrological data available to DPIWE, in order to enable them to issue temporary water licences when the Trevallyn Dam is spilling.**
- **Fish Passage at the Trevallyn Power Scheme** – The main issue of concern is that the Trevallyn Dam blocks upstream migration of juvenile eels (elvers) from the sea, and adult eels enter the power station on their downstream migration toward the sea to breed. The investigations looked at a wide range of options, but were unable in the time frame of these investigations to finalise a preferred option to facilitate eel migration. **Hydro Tasmania is committed to further research into eel movements, fate and options at the Trevallyn Power Scheme, to the feasibility of eel deterrent at the Trevallyn Power Station intake, and to continue work towards facilitating eel migration at the Trevallyn Dam.**
- **Environmental Flow at Cataract Gorge** – Key issues at Cataract Gorge were adequacy of the existing environmental flow to meet ecological requirements of aquatic fauna, water quality deterioration during the summer months, and implications of summer minimum flows for public use, amenity and aesthetics. Detailed investigations led to the identification of a range of flows that would meet the needs of the biota, with different species benefiting to a greater or lesser degree depending on the magnitude of the flow. Based on examination of these factors and optimising benefits for community values within the Gorge, **Hydro Tasmania commits to a year-round environmental flow release of 1.5 m<sup>3</sup>/sec in Cataract Gorge, and seasonal monitoring of the effectiveness of this flow at 3 sites in the river for a five-year period.** This environmental flow commitment is more than three times the present minimum flow in the Gorge. This commitment will improve water quality, reduce human health risks, improve aesthetics and amenity, ensure safe current velocities for swimming, and benefit the aquatic biota including the threatened Cataract Gorge snail (*Beddomeia launcestonensis*).