

Water Management Review

South Esk – Great Lake Catchment



Key Issues

- Geoheritage
- Erosion
- Cultural Heritage
- Threatened species

Related WMR Technical Studies

- Great Lake

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THE SUSTAINABLE ENERGY BUSINESS

Technical Study – Lake Augusta Assessment

The South Esk – Great Lake Water Management Review

The Lake Augusta 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 catchment that were carried out following identification of aquatic environment and water management issues through information review and stakeholder consultation. The issues that were 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

A range of issues potentially related to lake level management at Lake Augusta were investigated during this study. These include the erosion of sand dunes on the eastern shore of the original lake, the native fish species *Paragalaxias julianus*, and public access issues. Following commencement of the study, the native fish species was listed as threatened.

Background & Information Gaps

Lake Augusta is in the Central Highlands of Tasmania, and is part of the Western Lakes district within the Tasmanian Wilderness World Heritage Area. Much of the area surrounding Lake Augusta is managed by the Tasmanian Parks and Wildlife Service (PWS). However the land to the full supply level and some land to the south and east of the lake around the dam is vested in Hydro Tasmania.

Lake Augusta retains water from the upper Ouse and James rivers, which is then diverted into Great Lake via the Liawenee canal. Lake Augusta reaches full supply level (FSL) periodically during wet periods, inundating the flat surrounding area. As the water recedes, the lake becomes two separate water bodies, the original Lake Augusta and a body of water that is retained behind Augusta Dam (referred to as the Augusta Impoundment). Lake Augusta levels fluctuate on a weekly to monthly basis and the lake spills into the Ouse River several times each year for periods of a day to several weeks. Spills usually occur in winter and early spring, but also occasionally at other times. As the lake rises, access tracks to parts of the Western Lakes become impassable and are closed by PWS (these being the main access road before the spillway and the 4WD track to Pillans and the Julian Lakes). When high levels occur during the fishing season, it is an issue for trout fishers who wish to access this prime fishery.

A previous geomorphic survey has suggested that elevated lake levels in Lake Augusta are contributing to erosion of unusual high altitude sand dunes on the eastern shore of the original lake. The study suggested that effective rehabilitation could be achieved through increasing the duration and frequency of low lake level events to allow sand replenishment from the littoral zone to the dune system, and by setting a new maximum level below the current FSL to prevent further degradation in the short term.

Lake Augusta is fished regularly for brown and rainbow trout. The Inland Fisheries Service has developed a management plan for the Western Lakes Wilderness Fishery (November, 2002), which includes Lake Augusta and the Nineteen Lagoons region.

Technical Studies

Aims

The aims of this study were to determine:

- whether Hydro Tasmania operations at Lake Augusta have any influence over the condition of the sand dunes and potential erosion processes;
- how the threatened species *Paragalaxias julianus* is responding to current lake management practices, and
- the level of influence Hydro Tasmania has over public access to parts of the Western Lakes.

Assessment of Issues

A geomorphic assessment commissioned for Lake Augusta aimed to determine the erosion potential of the area, and to establish whether any erosion has resulted from lake level management. The conclusions from this assessment included a hypothesis that lake level management may be one of the factors contributing to the erosion of the lunette through changes to the ground water table, along with damage caused by trampling from recreational users, and burrowing and grazing of marsupials. However this hypothesis could not be substantiated because of a lack of data and other scientific evidence. Aerial photographs also indicate that vegetation on the eastern side of lunettes has been affected by the mobility of the dune system since before the dam was built. The study recommended groundwater monitoring over a longer time period, so that sufficient data can be collected to test the hypothesis that lake level changes are affecting the local groundwater table.

Aboriginal sites have been identified near Lake Augusta in a number of prior surveys. However, there has been no assessment of the relative cultural importance of the area, or the susceptibility of the sites to erosion as a result of water level management. If future investigations indicate that lake level is resulting in dune erosion, an assessment of cultural heritage issues may be necessary.

An analysis of lake level and spill records, and consultation with the local PWS rangers, revealed that access restrictions on the main road to the Western Lakes as a result of the lake spilling are relatively infrequent during the fishing season. Gate closures by the PWS for safety and track maintenance restrict access for the early part of the season, and spills during the fishing season when the gate is usually open are infrequent. The Pillans-Julian 4WD track is also closed by PWS when conditions are wet to protect it from undue degradation. This track becomes impassable at the James River as water levels rise. This would occur under natural conditions, however it is likely that the presence of Augusta Dam has increased the time required for the water level to drop (ie. the infrastructure has not increased the number of times the track is impassable, but may have increased the time for the water level to drop).

Electrofishing surveys of various habitats around the margin of Lake Augusta confirmed the presence of healthy populations of *Paragalaxias julianus*, *Galaxias brevipinnis* and *Galaxias truttaceus*. The survey results also showed that the rocky margins of the natural lake, particularly those located on its western side, appeared to be the preferred habitat for *P. julianus*. Large numbers of individuals of this species were collected from in and around the cobbles and boulders in these areas.

Outcomes

While the geomorphic survey better characterised the condition of the existing dune system at Lake Augusta, the lack of data meant that the study was unable to test hypotheses regarding the impact of lake level changes on local groundwater levels. 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.

The lake currently supports healthy populations of *P. julianus* and other galaxiid species and no changes to the lake level regime are required to manage this issue.

While public access might be improved if water levels in the lake could be reduced more rapidly, the costs of modifying infrastructure are significant and at this stage cannot be justified based on the number of times access is restricted.