

LAKE CATHIE / LAKE INNES ESTUARINE SYSTEM

MANAGEMENT PLAN / STRATEGY

BACKGROUND

This Management Plan was prepared for Hastings Council under the NSW Government's Estuary Management Program. The study was jointly funded by NSW Public Works (PWD), the National Parks and Wildlife Service (NPWS) and Council. An Estuary management Committee, which included representatives from local action/environmental groups as well as relevant Government authorities, assisted with preparation of the Plan.

Lake Cathie/Lake Innes is a moderately sized estuary on the NSW mid-north coast, immediately south of Port Macquarie and 400km north of Sydney (see Figure 1). The lakes are joined by Cathie Creek to form an estuarine system which enters the ocean at the village of Lake Cathie. The entrance through Lighthouse/Rainbow Beach is only intermittently open to the ocean.

Prior to 1933 Lake Innes was not part of the Cathie estuarine system but a separate freshwater lake. A feature of the lake was its abundant and diverse waterbird population. A failed attempt to drain the lake resulted in it becoming part of the estuarine system.

In addition to supporting species which are regionally uncommon, the reversion of Lake Innes if it were possible, may provide a habitat which has become rare through artificial alteration of wetlands across the north coast. Lake Innes, in this condition, would be of regional if not state wide significance to breeding waterbirds and would provide drought refuge to those restricted to fresh-water habitats. To use Goodrick's words, "the lake would provide an area of immense value to waterfowl". If Lake Innes was returned to its natural state, the remaining estuary should remain a valuable habitat to saline and salt tolerant species of waterbirds.

The impacts of such a development are likely to be positive on most of the fauna present in the area. Negative impacts on wading birds using the delta at the mouth of the Lake Innes channel and the sand shoals in the lower estuary are likely, however, these species have many other areas to exploit. It is also likely that increased tidal range would extend habitat for these species partially compensating for the loss of these habitats. Proposed changes to the system may have little negative impact on the terrestrial system and are unlikely to be measurable. Positive impacts would include the creation of freshwater habitat for terrestrial Amphibian species and turtles, and increase in productivity of the entire system.

Although Lake Innes is no longer a freshwater system it remains an area of high conservation value and supports an estuarine fishery particularly school prawns. Most of the estuary and a large part of the catchment are within the Lake Innes Nature Reserve.

1 September 1994

Port Macquane is one of the fastest growing regional urban centres in NSW, and because of its proximity, the Lake Cathie/Lake Innes catchment is subject to increasing residential/tourist development pressures

In response to these pressures and the need for nature conservation, Council and the National Parks and Wildlife Service resolved to prepare this Management Plan. Of specific interest were management issues relating to

- opening of the ocean entrance, undertaken by Council to prevent flooding and improve water quality, but which can adversely affect roosting water birds,
- shoaling in the lower estuary which limits recreational boating and swimming opportunities,
- closing Lake Innes to tidal flows so that it reverts to a freshwater system,
- water quality problems associated with extended ocean entrance closure, hypersalinity and increased input of nutrients and other pollutants.
- possible flooding of several houses on the north-western foreshore of Lake Cathie,
- waterway uses and the requirements of commercial and recreational fishermen, tourists and nature conservation,
- sedimentation resulting from developments in the estuary and increasing development in the catchment.

These issues are detailed in the Management Study and annotated on Figure 2. In response to these issues objectives and management options were formulated and the following management plan was adopted by Council

STRATEGY

Entrance Opening

- Implement a combined entrance opening strategy (when to open) similar to that shown at Figure 3, based on consideration of environmental and social constraints including length of closure period, water level, salinity level, time of year, etc. The opening procedure (how to open) should be as set out in the following section on Shoaling in the Lower Estuary
- Undertake ongoing investigations over (say) 5 years into the impact of the new strategy on the physical, water quality and biological processes of the estuary and modify if necessary

Shoaling in the Lower Estuary

- As an initial step in establishing a new management regime remove, by dredging or other means, sand from the lower estuary (east of Ocean Drive Bridge) subject to determination by Council, on examination in accordance with the provisions of SEPP35, that the work is unlikely to have a significant environmental effect
- the material removed be used for beach replenishment and reclamation within the lower estuary (east of Ocean Drive Bridge) and any surplus to be deposited and spread on Lighthouse Beach a minimum of 200m north of the entrance
- No sand to be extracted from or deposited in the area to the west of Ocean Drive Bridge.
- Implement an entrance opening procedure (how to open) based on the following requirements
 - maximise channel scour by opening after a high tide which is followed by a large tidal drop and a reasonably low, low tide.
 - minimise subsequent tidal infeed by opening as close as possible (given the above) to a neap tide period for which high wave energy conditions are forecast.
- Review the opening procedure including monitoring of at least three breakout events, so that future openings can be optimised
- Monitor channel infilling, including changes to marine delta shoals, and initiate channel closure if appropriate,
- maintenance dredging of the lower Estuary be carried out every 5 years subject to annual review of sand build up.
- Any proposal for removal of sand from the active beach zone is only to be considered as a possible long term solution subject to detailed consideration of an Environmental Impact Statement prepared by the proponents

Closing Lake Innes

- recognise the closure of Lake Innes as a possible beneficial long term option for the estuary.

Water Quality

- Continue the existing Public Works lake and entrance water level and water quality monitoring stations and establish an ongoing program to monitor the level of pollutants in catchment runoff and sediments
- Investigate the impact of catchment runoff on fringing wetlands, estuarine sediments and estuarine water quality, and establish a nutrient budget for the system
- Construct gross pollution traps (GPT's) and sediment traps on drainage paths leading from existing urban developments

Flooding

- Extend to this system Councils flood policy which requires a minimum floor level equivalent to the design 1% flood levels identified by the previous flood study plus a freeboard of 800mm to provide for uncertainty as to flood levels, greenhouse and a factor of safety
- No action be taken to enlarge Kenwood Drive Bridge
- Work be carried out to stabilise the northern side of the approaches to Kenwood Drive Bridge.

Waterway Uses

- Prepare and implement a regional waterway use assessment which examines the different attributes and limitation of estuarine waterways in the Council area

References

1. PWD Survey Branch - Lake Cathie & Lake Innes Hydrographic Survey - March 1993
2. Creighton C - The Lake Innes - Lake Cathie Catchment - University of New England, 1983
3. PWE, Rivers and Ports - Lake Cathie Flood Study - PWD Report No 84010, September 1984
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Authority

This Management Plan was adopted by Council at its Meeting held on 1 September 1994

1 September 1994

Summary of actions required by Strategy

Short Term

- * Dredge lower estuary \$100,000

Medium Term

- * Investigate Pollution impacts and establish Nutrient Budget \$30,000
- * Construct GPT's for existing urban development \$100,000
- * Assessment of recreational water uses \$20,000
- * Bank protection at Kenwood Drive Bridge \$50,000

Ongoing

- * implement new opening procedure, monitor impact of new procedure, pollutants and water quality \$5,000pa
- * maintenance dredging \$10,000pa

Policies

- * Recognise Lake Innes closure as possible beneficial long term option
- * Flood Policy - minimum flood levels

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