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REPORT ON LAKE TE ROTOKARE

1. General

Lake Te Rotokare is located on private land off Omarunui Road, approximately 5km south of Taradale. The lake bed is dry at present, but has in the past been up to 35 hectares in extent with a maximum water depth of 1.4 metres. It has a natural hill catchment of about 130 hectares.

2. History

Little is known about the history of the lake prior to the turn of this century. It is well known however that the lake bed was dry, and was successfully cultivated for cereal crops about 1917-19. Apparently the area then reverted to swamp and was filled by overflow from the Tutaekuri River, and in the 1930's and 40's there was sufficient depth of water to permit water skiing.

The lake continued to be replenished periodically from river overflows, which followed the course of what is now the Upokohina Stream, until the early 1970's when the Board stopbanked the Tutaekuri from Puketapu to Redcliffe.

The work effectively prevented replenishment of the lake from the river. The drainage improvement works carried out along the Upokohina Stream in 1972-73 also removed any possibility of natural replenishment from outside the catchment by providing an efficient drainage path away from the lake.

Te Rotokare and its swampy margins then relied solely on runoff from the surrounding hill catchment for replenishment. This has proved insufficient to sustain the lake which dried up late in 1982, and remains dry to this day.

3. Ownership

The lake bed is jointly owned by five properties as follows:

R. M. Shine	19.2 ha
G. Williams	8.3 ha
E.F.G. Ericksen	1.7 ha
C. J. McCormack	1.7 ha
A. R. Wheatley	0.7 ha

Now that the lake has dried up the property boundaries are no longer stock-proof, and stock management has become difficult.

4. Wildlife Habitat

In recent years the lake has had a water-surface area of about 18 to 20 hectares with a swampy margin at the north eastern end about 12 to 14 hectares in extent. The lake lies on a strategic wildlife flight path and has supported a considerable population of Black Swan, Paradise, Mallard and Grey Duck. Pied Stilt, Shoveller Duck and other species of waterfowl also frequented the lake. It was considered by some to be the best breeding ground in New Zealand for the Black Teal.

Te Rotokare also supported a considerable eel population and it appears that some 8 tonnes were harvested commercially in 1972.

5. The Future

There are several options available for the future management of Te Rotokare and these are discussed below:

5.1 Maintain the Lake Bed in a Dry Condition

It is possible that the lake bed could be maintained in a dry condition and the land be farmed.

5.1.1 Proposal

A small pumping station would be required at the northern end of the lake, which would collect runoff from the catchment through a feeder system and discharge to the existing lake outlet drain. A unit of about 250 l/sec capacity would appear to be a realistic choice to cater for normal drainage duty and flood events up to 20 year return period. Such an installation is estimated to cost \$45,000 to \$50,000 including the excavation of feeder drains.

The extent of land reclamation resulting from a drainage scheme, about 35 hectares in all, makes this proposal marginally economic compared to other drainage schemes undertaken by the Board. Some Government financial assistance may be available for a community drainage scheme.

5.1.2 Action Required

Following application from the landowners concerned, Board staff would carry out detailed design and prepare a Board Work Proposal in the usual manner.

A water "Right" would also be required.

5.2 Take No Action

Perhaps the obvious choice is simply to let nature take its course.

5.2.1 What Will Happen?

Without detailed study it is impossible to predict precisely what will happen, however our investigations to date indicate that the lake is unlikely to restore itself naturally.

Given the best possible conditions there appears to be only a 2% - 3% chance that Te Rotokare will restore itself over a 12 month period. Predictions are that the present dry climatic conditions may continue until at least 1986.

Once restored the lake is considered to have about a 40% chance of maintaining itself over a number of years.

5.2.2 Action Required

Should the landowners choose this option the Board would have no further involvement in the area.

5.3 Artificially Refill the Lake

Board staff have considered several ways of artificially refilling Te Rotokare either partially or completely.

5.3.1 Proposal

The most attractive proposition appears to be the use of water from the Tutaekuri-Waimate Stream near State Highway 50, which at its closet point is just 600 metres from the lake. This exercise would involve the construction of a small pumping station and pressure pipe system.

5.3.1.1 Full Restoration

Basic calculations show that, from its present state, using a pump of about 80 l/sec capacity a period of 10 to 12 weeks constant pumping would be required to fill the lake to R.L. 23.25 metres, (about the same level as 1973).

After this initial filling the pump would operate for up to 2 hours per day on average to alleviate the effects of evaporation assuming no assistance from catchment runoff.

The estimated cost of a suitable installation is \$35,000 to \$45,000. Annual running costs are expected to be about \$1,000.

5.3.1.2 Partial Restoration

The proposal for partial restoration would require a similar installation to maintain the same water level, but provides for the reclamation of an area of about 8 hectares in the north-eastern corner of the lake which was previously swampy margin. For this area to become fully productive tile drainage would be required, and a small stopbank would be necessary to contain the lake. This would add considerably to the cost of the project.

5.3.2 Action Required

An option to restore the lake artificially will require a Water Right. Government financial assistance through N.W.A.S.C.A. is unlikely to be available and the full cost will therefore need to be guaranteed by those promoting the option.

Following an application and a guarantee of funding, staff would prepare a detailed proposal.

6. Conclusion

The Board is aware that flood control and drainage works previously carried out may, indirectly, have had some influence on the drying up of Lake Te Rotokare, and wishes to retain some involvement in the area.

It is realised that there may be some conflict between farming and wildlife interests on the lake and the Board will be guided by the wishes and opinions of the owners, who must ultimately make the decision on a course of action.

7. Recommendation

It is recommended that:

- (a) The report be received by the Board,
- (b) Copies be circulated to all the landowners concerned, Wildlife Service and other interested parties, for consideration and comment.
- (c) Staff arrange a meeting of all those involved, to discuss the matter and make a decision on the future of the lake.

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