greater WELLINGTON
THE REGIONAL COUNCIL

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Committee **Environment**
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Instream habitat assessment for the Waikanae River

1. Purpose

To inform the Committee of the results of an investigation into the available instream habitat in the Waikanae River, undertaken as part of a review programme of the Regional Freshwater Plan minimum flows.

2. Strategic context

This work supports the Take 10 Water success measure that *water demand (is) met without unnecessarily harming our environment.*

3. Background

The Regional Freshwater Plan sets minimum flows for various rivers in the Region. The minimum flow is a guide that provides an indication of the flow in a river that will:

- safeguard the life-supporting capacity of ecosystems; and
- meet the needs of future generations; and
- provide for adequate water quality.

To ensure that these aims are met, and because of the effect that minimum flows have on resource users, the minimum flows in the Regional Freshwater Plan should be periodically reassessed. Thus in 2001 Greater Wellington commenced a review programme, and to date the minimum flows for the Hutt River and the Wainuiomata River have been reviewed.

The purpose of this particular study was to assess whether the current minimum flow for the Waikanae River can safeguard the life-supporting capacity of the river. This was done by assessing the availability of instream habitat at the current minimum flow using the Instream Flow Incremental Methodology (IFIM). The IFIM analysis focussed on brown trout and food-producing habitat, because the Waikanae River is classified in the Regional

Freshwater Plan as a water body with important trout habitat. However, several species of native fish that are found in the river were also included in the analysis.

The Regional Freshwater Plan sets a minimum flow for the Waikanae River of 750 L/s at the Greater Wellington recorder site. Flow in the river drops below this level approximately 3% of the time during the summer months. The mean annual low flow (i.e. the level that the river will drop to once a year on average) is 950 L/s.

4. Method

Two reaches of the Waikanae River were surveyed for the study: the reach immediately upstream of the Water Treatment Plant, and the reach at Jim Cooke Park (downstream of State Highway 1). At these reaches, a number of cross-sections of the river were surveyed, and water depth and velocity were measured. Using software developed by NIWA, this survey information allows us to predict how changes in flow will affect water depth and velocity, and therefore habitat availability.

The IFIM method tells us how changes in flow affect habitat availability in a river. It does not tell us what the minimum flow should be. Thus the challenge in setting a minimum flow is deciding how much habitat is needed for the life-supporting capacity of rivers to be safeguarded. In this report the minimum habitat guideline was used, which has been recommended for deriving minimum flows for small rivers in the Wellington Region. The guideline ensures that the minimum flow is set at a level where brown trout and food-producing habitat availability is comparable to other New Zealand rivers.

5. Key findings

The key findings of the analysis were:

- The flow at which optimum habitat availability occurs varies between species. For adult brown trout the amount of optimum habitat occurs at flows significantly greater than the mean annual low flow.

- Low flow conditions in the Waikanae River have the most detrimental impact on adult brown trout, food-producing and torrentfish habitat availability, compared to the other species studied.

- Compared with other New Zealand rivers, at mean annual low flow the Waikanae River has a high proportion of brown trout fry, yearling brown trout and native fish habitat, but has a relatively low proportion of adult brown trout and food-producing habitat.

- A minimum flow of 810 L/s is required for the two study reaches to meet the minimum habitat guideline, but the appropriateness of this guideline is questionable.

6. Report recommendations

The report recommended that the current minimum flow of 750 L/s be retained. A lower minimum flow would result in an unacceptable degree of food-producing habitat loss, a habitat type that is vital for maintaining a healthy instream ecosystem. Increasing the minimum flow is not justified based on the results of this study, specifically because:

- The current minimum flow provides a high proportion of the habitat which is available at mean annual low flow;
- At the current minimum flow, river depth, width and velocity are a high proportion of the depth, width and velocity at mean annual low flow; and
- The flow required to meet the minimum habitat guideline (810 L/s) is only 8% higher than the current minimum flow and would only provide a small increase in habitat availability.

The recommendation to retain the current minimum is based on flow requirements for instream habitat only. A higher threshold may be necessary to provide for other matters in Part II of the Resource Management Act.

7. Future work

Biological and water quality monitoring of the Waikanae River will continue, to ensure that the suitability of the minimum flow can be continually assessed. The minimum flows for the Waitohu Stream and the Lower Ruamahanga River will be reviewed next, with the fieldwork for the assessment to be carried out in February or March 2004.

Previously the Committee has requested a report comparing IFIM and WAIORA (Water Allocation Impacts on River Attributes). This has not yet been done because WAIORA is still being developed. However, it is intended that the methods be used together when the review of the Waitohu Stream minimum flow is undertaken this year. This will give further insights into the appropriateness of both methods for use in the Wellington Region.

8. Communication

The report will be sent to Kapiti Coast District Council, Fish & Game NZ, and Department of Conservation. Copies of the report are available to Councillors on request.

9. Recommendations

It is recommended that the Committee:

1. ***receive*** *this report; and*

2. ***note*** *the contents.*

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