

PART ONE - THE PLAN

1.0 Kopuaranga River & Water Resource Planning

1.1 Kopuaranga River

The Kopuaranga River flows from its headwaters at Mt Bruce until it joins the Ruamahanga River near Rathkeale College, approximately 6 km north of Masterton (see map 1.0). Other tributaries in the catchment join the Kopuaranga River at various points, including the Rangitumau Stream.

There are many values associated with the water resource in the Kopuaranga River catchment. It provides water for farming activities (including seven consented irrigation abstractions), has a variety of cultural values, supports a number of indigenous fish species, and is a significant trout habitat. These values place demands on water resources, particularly at certain times of the year when the flow in the catchment is low. During these low flow periods, conflicts occur between the human needs and the environmental needs of the water resource.

1.2 Water Allocation Plans

Water allocation plans, written for specific bodies of water, are a tool used by Regional Councils to ensure that the management of water resources takes into consideration the needs of **all users** of the river. These plans are based around minimum flows and allocation levels. The minimum flows and allocation levels recommended in various allocation plans are incorporated into the Regional Freshwater Plan. The Freshwater Plan is the main statutory guiding document to enable the Regional Council to manage the regions water resources. Water allocation plans also provide policy guidance in managing the water resource in a catchment, such as guidelines for resolving potential allocation conflicts.

The Kopuaranga River catchment has had a water allocation plan in place since the 1970's. The current allocation plan has minimum flows and allocation levels that are recorded in the Regional Freshwater Plan. It is now appropriate to review the allocation plan as resource use and environmental values of the water resource have changed over the years. It is hoped in the future that any minimum flows and allocation levels that may be changed in the revised allocation plan will be incorporated into the Freshwater Plan. It is also anticipated that the revised allocation plan will provide other forms of guidance to decision makers when decisions are being made on water resource use in the Kopuaranga River catchment.

1.3 What Are Minimum Flows and Allocation Levels?

Minimum flows and allocation levels are set to ensure that the needs of all users are sustained as far as practicable during low flow periods, when conflicts in water use can occur. Minimum flows and allocation levels are proposed in the revised water allocation plan for the Kopuaranga River catchment. They can be viewed in Section 3.0.

A **minimum flow** is a flow level in a river where the effects of water abstractions on environmental needs (e.g. water quality and instream habitat) are avoided or mitigated. Such minimum flows may require restrictions or suspensions on water use. A **core allocation** is the amount of water that can be taken out of a river above minimum flows. If the core allocation is fully taken, then water may be harvested at higher flows. This is called a **supplementary allocation flow level**.

2.0 Reasons Behind Revised Draft Water Allocation Plan

The revised draft water allocation plan for the Kopuaranga River catchment has been developed by considering information collected in three main areas:

1. Assessment of legislation and WRC policy.
2. Consultation with resource users.
3. Field studies and water quantity/quality analysis.

2.1 Assessment of Legislation and WRC Policy

A detailed assessment of the Resource Management Act (1991) and issues, objectives, policies, and methods in WRC planning documents has been made¹. In summary, some of the key considerations given in the development of the Plan are:

- that flow regimes are to safeguard the life supporting capacity and instream habitat requirements of the river;
- water quality is to be managed in the Kopuaranga River for trout habitat/spawning, aquatic ecosystem, and contact recreation purposes; and
- water is to be allocated in the catchment in a fair and transparent manner, and that water resources are used in an efficient manner.

¹ A full account of this assessment can be viewed in Part 2 Section A of the Supporting Information.

2.2 Consultation With Resource Users

The Regional Council has talked to resource users to determine what values are important for various individuals and organisations. This consultation process was undertaken in mid 1999, with a range of interest groups and consent holders who take water from the Kopuaranga River catchment².

From the consultation process, it appears that the river is valued for a variety of reasons. Some of the key features that came out of the consultation process were that:

- there were conflicting views between resource users about the standard of water quality;
- recreational uses including swimming, fishing, and food gathering are valued;
- there are a variety of fish species present in the catchment including trout and torrent fish that organisations would like to see protected during low flow periods; and
- consent holders for abstracting water would like to see justification in terms of scientific data for any minimum flows or allocation levels recommended.

2.3 Field Studies & Water Quantity/Quality Analysis

As part of reviewing the existing Kopuaranga River water allocation plan, extensive field studies were completed in 1998/99 that looked at the flow regime and habitat requirements of various fish species in the river. Data collected from field work was inserted into the WAIORA modelling program that evaluates the impacts of abstractions on habitat requirements for fish species³. The results have been useful in making recommendations on minimum flows and allocation levels. Low flow analysis and results from water quality monitoring were also assessed and form an integral part of the recommendations made⁴.

² More information and outcomes from the consultation process completed can be viewed in Part 2 Section B of the Supporting Information.

³ A full report on the WAIORA modelling completed on the Kopuaranga River can be viewed in Part 2 Section D of the Supporting Information.

⁴ A full report on the water quantity and quality in the Kopuaranga River can be viewed in Part 2 Section D of the Supporting Information.

3.0 Draft Revised Kopuaranga River Catchment Allocation Plan

The Regional Council is aiming to avoid or mitigate the potential adverse effects that water abstractions can have on water quality and instream habitat (particularly trout), through setting appropriate minimum flows and allocation levels in the Kopuaranga River catchment. This is based assessing feedback from the initial consultation process and evaluating Regional Council planning documents such as the Freshwater Plan.

3.1 Minimum Flows and Allocation Levels

(1) Minimum flow - restrictions on abstractions (50% of allocation)	300 litres/sec
(2) Minimum flow - all abstractions suspended (0% of allocation)	250 litres/sec
(3) Core allocation	125 litres/sec
(4) Supplementary allocation flow level	600 litres/sec

Note: All flows are based on the Palmers Bridge gauging site. Only one abstraction (9 litres/sec) is upstream of Palmers Bridge. The effect of this abstraction on minimum flow levels will be minimal.



3.1.1 Explanation of Minimum Flows

The first minimum flow (1) proposes that restrictions be placed on abstractions when the flow falls below 300 litres/sec at the Palmers Bridge gauging site. This flow is above the mean annual low flow (MALF) of 252 litres/sec. When the flow falls below 300 litres/sec, consent holders for taking surface water are required to reduce their allocation by 50%. This could either be a 50% reduction in instantaneous take or a 50% reduction in irrigation hours. Consent holders could expect restrictions on average for 21 days per year, however this could fluctuate in any given year depending on river flows. For example, in one year no restrictions may be applied as favourable weather patterns for good river flow may prevail. However the next year may see 10 weeks of restrictions applied due to adverse climate conditions. In the past four irrigation seasons there would have been no restrictions in both 1994/95 and 1995/96, however during the past two years where low flows have been frequent there would have been 70 days of restrictions (most likely in the latter part of the irrigation season in February and March).

The field studies and WAIORA modelling indicated that when the flow falls below approximately 300 litres/sec at the Palmers Bridge gauging site, some habitat parameters, although not compromised, deteriorate considerably. In particular, dissolved oxygen concentrations increase markedly which has the potential to adversely affect water quality. In the Rangitumau Bridge reach of the river, dissolved oxygen declines below environmental guidelines when the flow falls below 283 litres/sec at the Rangitumau Bridge (taking into account all upstream abstractions). This flow is similar to a flow of 300 litres at Palmers bridge. Algae blooms are likely to increase if dissolved oxygen levels increase. The presence of significant algal blooms can create stress on habitat and affect the recreational use of rivers. Water quality monitoring information on dissolved inorganic nitrates, dissolved reactive phosphorus, and periphyton confirm that the river is under stress in terms of water quality during low flows, and abstractions should to be regulated to mitigate potential effects.

The second minimum flow (2) proposes that suspensions (no abstraction) be placed on surface water abstractions when the flow falls below 250 litres/sec at the Palmers bridge gauging site. This is essentially an environmental bottom line where instream habitat and water quality will be protected from the potential adverse effects of surface water abstractions. Consent holders could expect that on average there would be 10.5 days of suspensions a year, again most likely during the latter part of the irrigation season in February and March. A flow of 250 litres/sec was felt to be an appropriate environmental bottom line for maintaining instream habitat. This is a fairly similar environmental bottom line to the previous allocation plan, which was based on providing adequate water depth for trout at the Ruamahanga confluence.

The minimum flows proposed are not based solely on environmental data and modelling completed from field studies. They also take into consideration other factors that affect water quality and instream habitat in the Kopuaranga River. There are seven discharges into the Kopuaranga River catchment including three dairy shed discharges. These discharges adversely affect water quality during low flow periods as there is less flow to dilute contaminants contained in discharges. Abstractions from the river compound problems that may occur through the lack of dilution.

3.1.2 Explanation of Allocation Levels.

The core allocation (3) of 125 litres/sec is based on the existing level of water allocation in the catchment. It is the Regional Council's opinion that no more abstraction from the catchment can be sustained based on the environmental data and modelling completed. The core allocation level is considered high compared to other catchments in the Wairarapa valley. To allow additional abstraction from the catchment would mean that an increase in minimum flows would be required to ensure instream habitat and water quality are not adversely affected. An increase in minimum flows will create undue pressure on existing irrigation schemes as restrictions would be quite frequent. With the minimum flows proposed, no more than 42% of water will be taken from the catchment at any one time (based on flows at the Palmers Bridge gauging site).

If the core allocation is fully taken, consent holders who wish to abstract water from the Kopuaranga River catchment will only be permitted to take water at higher flows. This supplementary allocation flow level (4) is proposed to be 600 litres/sec at the Palmers bridge gauging site. The river falls below this level approximately one quarter of the time, mostly in summer periods. Supplementary allocations are likely to occur in winter months when river flows are on average higher. A flow level of 600 litres/sec should maintain an adequate river depth during trout spawning periods in the winter months.

It should be noted that when applications for resource consents are received, the minimum flows and allocation levels are not the only matters to consider in assessing any application. The individual effects of abstractions need to be taken into consideration. This may mean that some abstractions may not be sustainable (even if core allocation is not full) due to the location of the proposed abstraction.

3.2 Good Practice Guidelines

The minimum flows and allocation levels provide guidance for the implementation of the revised water allocation plan and assessing resource consent applications. They will have statutory backing when included in the Freshwater Plan in the future.

In conjunction with minimum flows and allocation levels, the Regional Council has developed good practice guidelines that will provide guidance to decision makers when assessing resource consent applications, and also encourage resource users to adopt such practices. The guidelines are consistent with the legislation and WRC policy framework (see Part 2, Section A of the Supporting Information). They also encourage the use of methods that will have the least possible effect on the environment to ensure that the potential effects of abstraction on water quality and instream habitat are mitigated. These guidelines (outlined below) are non-statutory and will not be included as policy under the Freshwater Plan.

3.2.1 Promote Conservation & Efficient Use of Water

The conservation and efficient use of water can be achieved by the following methods:

- Consent Applications - Promoting reductions and appropriate/reasonable volumes of water use at consent renewal stage.
- Compliance Inspection Advice - Advising applicants on water requirements and the most efficient methods of irrigation during compliance visits.
- Consumption Targets - Assessing how much water is required for specific crops at particular locations and allocating water accordingly. Currently the maximum application rate for irrigation purposes is 350 m³/hectare/week as specified in the Freshwater Plan.

The Kopuaranga River is a stressed catchment given that the core allocation is fully utilised. It is therefore essential that the best practical method is promoted to encourage the conservative and efficient use of the water resource.

3.2.2 Encourage the Use of Groundwater Resources Over Surface Water Resources

In many instances the use of groundwater resources is more sustainable than abstracting surface water resources. This is because abstracting groundwater is generally a more secure water supply as there are no water restrictions unless there are clearly identified adverse effects on other bores or surface water flow in rivers or streams. This will be encouraged as a first priority when providing advice to prospective consent applicants. However, there may be constraints to abstracting groundwater in some instances.

3.2.3 Be Fair and Reasonable in Managing Resources

If the core allocation in the Kopuaranga River catchment is fully utilised and other resource users would like to use surface water resources, then the Regional Council will closely monitor water use in the catchment. If consent holders do not use their resource consent in any continuous two year period, then the Regional Council may consider cancelling that particular resource consent and allocating the

resource to a new user. It is unfair to restrict the potential new use of a resource when consent holders “lock up” the resource and do not actively use the water allocation issued under a resource consent.

If renewal applications are received for a cumulative amount that is greater than the core allocation, then the Regional Council will firstly consider each application on its own merit where water use will need to be justified, and effects on the environment considered for individual applications. The Council will then consider how long applicants have held a consent and the effort and consideration applicants have given to other good practice guidelines.

The Regional Council considers this to be the most fair and reasonable approach to dealing with potential conflicts in water allocation for renewal applications.

3.2.4 Encourage Land Based Disposal Methods to Reduce Point Source Discharges

Point source discharges (discharges directly to the river i.e. through a pipe) will be discouraged during the resource consent process. Applicants should investigate alternative land disposal methods that will have minimal impact on water quality and instream habitat in the Kopuaranga River. Where practical, the Regional Council will encourage discharges to land however it is recognised that there will be times when it is not a feasible option. This guideline is consistent with policies in the Freshwater Plan.

3.2.5 Encourage Riparian Management to Reduce Non-Point Source Discharges

The effect of non-point discharges (e.g. runoff from agricultural land) can be minimised with riparian strips of vegetation adjacent to the Kopuaranga River. These vegetated areas will help to maintain and enhance water quality for instream habitat by:

- Reducing surface water runoff (and therefore potential contaminants in water);
- Lowering temperatures by providing shade;
- Reducing erosion of river banks (and therefore level of suspended sediment in water); and
- Providing breeding areas for fish and birds.

The Regional Council will encourage the use of riparian planting to reduce non-point source discharges and improve the overall state of the river.