

Appendix 15: Water Allocation

1. Introduction

Until recent times, the Waikato region generally (with the exception of the Pukekohe area) has not had major issues allocating water, with relatively high water availability and modest demand (Environment Waikato, 2005). However, as stated in Environment Waikato (2008), *“in recent times the method by which surface and groundwater is allocated in the region has come under increasing scrutiny and sometimes criticism from both political and technical perspectives. The Ministry for Agriculture and Forestry and Ministry for the Environment (2002) recently projected a 202 percent increase in demand for irrigation water by 2010 in the Waikato region (an increase of 9,100 hectares over the present 4,500 hectares of irrigated land). In addition, there is also an increasing demand for water for community supplies, industry and stock water supplies. More and more frequently issues of resource scarcity and the equity and fairness of the present allocation strategies are being questioned in consent hearings and before the Environment Court.”*

The key issues around water availability for the purposes of this Study are that policies and rules related to allocation need to support the restoration actions proposed, particularly in respect to taangata whenua (people of the land) values, ecological flows and water quality (e.g., dilution of contaminants) while at the same time allowing for reasonable consumptive and non-consumptive uses.

2. Water takes

As described above, there is the general recognition that in many parts of the region, demand for surface water and groundwater resources exceeds, or has the potential to exceed, the available resource. Therefore a carefully managed water allocation regime is necessary.

The proposed variations to policies and rules in Environment Waikato’s Regional Plan Variation 6, addresses many of the implications of water take in respect to restoration. These include the implications for ecology, assimilative capacity and dilution of contaminants, taangata whenua values, water supply, efficient use of water, hydro-electric power generation, water contamination, holistic management and cumulative effects (Environment Waikato, 2008).

Variation 6 seeks to establish allocable and environmental flows for surface water and rules for how the allocable proportion will be allocated. Priority for consideration for allocation has been given to water for domestic and municipal supply and

continuation of existing uses. Rules and policies have been proposed to ensure that water is available to:

- Meet the reasonable needs of individual and communities.
- Ensure continued water supply such that there is no reduction in the energy generating capacity of the hydro dams.
- Ensure water is available for instream requirements (i.e., 'ecological flows') during water shortages and droughts.
- Ensure consideration is given for sediment transport, flushing and erosion.
- Ensure that decisions on water allocation take account of the contaminant assimilative capacity of water bodies and take into account taangata whenua values, including mauri (life force) of the water.

Policy and rules are also included which seek to ensure the efficient use of water by maximising re-use and minimising wastage. In addition there are proposed restrictions around the use of water for crop and pasture irrigation in the catchment of the Waikato River above the Karaapiro Dam and in the catchments of some peat and riverine lakes and wetlands. Consents for such takes will require nutrient plans because the use of water for crop and pasture irrigation can result in increased discharges of nutrients to either surface water or groundwater. These proposed rules are designed to benefit the water quality and sustainability of shallow lakes and wetlands.

With controlled or discretionary takes, Environment Waikato seeks to control a number of matters including the following of direct relevance to restoration:

- Measures to satisfy the intake screening requirement to protect aquatic fauna.
- Effects on any waahi tapu (sacred place) or other taonga (treasured) sites.
- Effects on the relationship of taangata whenua and their culture and traditions with the site and any waahi tapu or other taonga affected by the activity.
- Effects on the ability of taangata whenua to exercise their kaitiaki (caretaker) role in respect of any waahi tapu or other taonga affected by the activity.

Overall, the Study team concluded that Variation 6 covers most of the biophysical implications of water take on restoration. There is one exception and this is elaborated on below. However, there seems to be inadequate recognition of the status of taangata whenua and the priority that should be accorded to Maaori aspirations for the awa (river). This apparent lack of appropriate recognition would

seem to run counter to the Settlement Act with Waikato-Tainui and the Deeds of Settlement with other river iwi.

3. Land use change – a need to recognise its influence on flows

Low flows are not only affected by water takes but also by land use change. This is not explicitly stated in Variation 6. Appendix 24: Flow Effects concludes that land use change between forest and pasture alters the flow regime because vegetation type affects evaporation, interception losses of incident rainfall and soil moisture, which in turn affects run-off and groundwater recharge. Changes in flow have additional implications for sediment and nutrient yields and resulting water quality, assimilative capacity, flushing sediment transport, flooding, instream habitat, and aesthetic and cultural values. They will also affect the availability of water for water take and power generation.

A review of relevant information indicates that major land use change from pasture to forestry will reduce low and flood flows substantially (see Table 1). Both pine or native afforestation of catchments reduces run-off, but the impact of land use change to pine forest appears to be in the order of five times greater than native forest (see Table 1). Riparian forests have a small but possibly significant effect as well.

Table 1: Effects of land use change on flows.

Action	Low flow	Annual run-off reduction	Maximum flood flows in < 100 km ² catchments
Pine afforestation of pasture	minus 50%	minus 300-400 mm (~35-45%)	minus 30% (~5-50%)
Native restoration of pasture	plus 10%	minus 70 mm (~7%)	minus 20%
15 m native riparian buffers	minus 3%	minus 30 mm (~3%)	minus 10%
5 m riparian buffers	minus 1%	minus 10 mm (~1%)	minus 3%
Wetland restoration effect per 1% increase in catchment area as wetland	plus 8%	nil	minus 4%

Therefore, the impact of potential land use change (particularly) and riparian planting as part of the restoration plans may need to be considered in deciding on acceptable water takes. Default allocable proportions of total flow are given for catchments in the Waikato Region in Variation 6 (Environment Waikato, 2008). The allocable flows are based on environmental flows and are typically within the range zero to 30

percent of the one-in-five-year seven-day low flow (Q5).¹ Land use change from pasture to pine (particularly) and native forests and extensive riparian planting may reduce Q5 by similar or greater amounts (see Table 1) so may significantly reduce allocable flows in catchments where such conversion is large. This needs to be considered when classifying water takes as controlled, restricted discretionary, discretionary or non-complying activity, and in calculating Q5 used to define environmental flows and allocable flows.

5. Recommendations

The Study team recommend the following actions for water allocation:

- The Waikato River Authority ensures that policies and rules included in the final version of the revised Regional Plan Variation 6 are consistent with the restoration objectives of Te Ture Whaimana.
- When considering consent applications for water takes the effects of the proposed take on reaching water quality and habitat restoration targets need to be considered – water takes that negate the benefits of these restoration actions should not be granted.
- Setting of environmental and allocable flows in catchments takes into account the potential flow effects of land use change that may occur as part of the priority restoration actions, particularly the wide-scale afforestation of pasture.

6. References

Doak, M. (2002). Water Markets. MAF paper presented to conference on Water: The lifeblood of New Zealand, Wellington, 23 July 2002. Zuur, B. (2002). Planning for water use. MFE paper presented to conference on Water: The lifeblood of New Zealand, Wellington, 23 July 2002.

Environment Waikato (2008). Proposed Waikato Regional Plan Proposed Variation No. 6 – Water Allocation. *Environment Waikato Policy Series 2008/14*.

Environment Waikato (2005). Assessment of Improvements to Environment Waikato's water allocation processes and procedures. Report prepared by Aqualinc Research Ltd. *Environment Waikato Technical Report 2005/10*.

¹ The stream flow at any point that has a 20 percent chance of occurring in any one year (or a likelihood of occurrence of once in every five years, also termed a 'five-year return period'). The Q5 is calculated from the lowest seven consecutive days of flow in each year.