

# Plantation forestry has been restricted in water-short South Island catchments

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## Introduction

In October 2001 Environment Canterbury (ECan) produced a discussion draft of the Canterbury Natural Resources Regional Plan (NRRP). The purpose of this draft was to promote consultation and discussion about the NRRP prior to its formal notification.

The discussion draft was released in the form of separate chapters, each dealing with a specific resource issue. An entire chapter (chapter 7) was devoted to questions relating to water quantity; i.e. surface river flows and volumes of groundwater. This is not surprising because water is a big issue in Canterbury. Approximately 60 percent of New Zealand's irrigated area is found within the Canterbury region (Robb 2000). The enormous amount of ground and surface water used for irrigation needs to be balanced against the needs of other water users such as Maori, fishermen, and recreationists.

## Plantation forestry was singled out

More surprisingly, ECan also chose to release a separate chapter (chapter 6) entitled "Impacts of afforestation on water" (ECan 2001). This chapter acknowledges that in general plantation forestry does not have a significant effect on water quantities in Canterbury. Forestry is restricted to approximately three percent of the region's land area, compared to the national average of 6.5% of land area. Furthermore, much of the region's water resources originate from high altitudes along the main divide, and are sustained by snow and glacier melt during summer periods. However, chapter 6 did identify catchments that might be subject to reduced water flows if substantially forested with plantations. These "sensitive" catchments have the following characteristics:

- They originate in hill areas and summer flows are sustained by rainfall, not snow or glacier melt. Therefore they have limited ability to maintain base flows in dry summer months.
- Substantial areas of the catchments occur below 600 m altitude, the approximate limit for radiata pine afforestation in Canterbury.
- These catchments may be locally important for irrigation and domestic water supply. In many cases, surface water takes from these catchments are fully allo-

cated and allowable takes may be limited during periods of low flow.

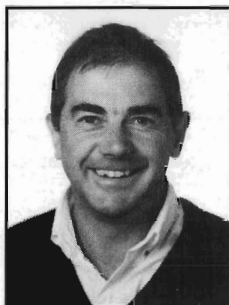
Not all parts of the "sensitive" catchments are important to minimum flows. Most summer rain is lost to evaporation, and summer river flows originate from storage areas within the catchment. Afforestation, therefore, only needs to be controlled in both the storage areas and those parts of the catchment that replenish the storage areas during times of rainfall. These are referred to as "high yielding areas".

ECan proposed to identify these "high yielding areas" by mapping low flows in sensitive catchments, and by use of hydrological models to estimate the impacts of afforestation on low flows within these catchments. Where afforestation was likely to have a significant adverse effect on minimum flows (presumably within the "high yielding areas"), ECan proposed to restrict forestry by regulation.

Submissions were made to the chapter 6 discussion document by the NZIF amongst others. NZIF submissions were based on criteria suggested by Perry (2000) and by Perley in a submission to Southland Regional Council (Perley 1996). The key NZIF submissions were:

- Change all references to afforestation, forestry, plantation or coniferous forest, to appropriate references to "woody vegetation" or "change to woody vegetation". The effect of tall woody vegetation on stream flows is more or less independent of species.
- Consider the issue of water yields in the wider context of use of waterways. A change to woody vegetation and retirement from grazing may benefit water quality and in-stream values, by providing shade, riparian stability and excluding pollution from agricultural sources. The need to maintain water allocations for irrigation should be balanced against these other values.
- Consider alternative methods of solving problems related to over-allocation of water for irrigation.
- The balancing of the needs of irrigators with other land users should be based on consultation with all affected groups, and should encompass technical debate. The Institute was willing to participate in this proposed consultation group.

The NZIF submitted that singling out plantation forestry was inappropriate when a change from pasture to any form of tall woody vegetation would result in reduced water yields. ECan's focus on plantation forestry was because Section 30 of the Resource Management Act allows ECan to regulate an activity like tree planting. However, ECan is unable to regulate landowners who passively choose to let pasture revert to woody vegetation such as gorse or wilding conifers. Notwithstanding, the



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issue is clearly one of change from pasture to tall woody vegetation, and plantation forestry needs to be addressed within that context.

Further to its submissions, the NZIF was invited to a science workshop convened by ECan. Two important conclusions from the workshop were:

- It was not possible to use hydrological models to reliably estimate the effect of afforestation on mean annual low flows (MALF). MALF values for the critical "high yield" areas within sensitive catchments needed to be painstakingly identified by field gauging. (Note: MALF rather than average flows are the best measure of water availability during peak irrigation periods.)
- Present and likely rates of change to woody vegetation needed to be assessed on a catchment basis. That is to say, not all "sensitive catchments" would be equally at risk of reduced low flows from afforestation and scrub reversion.

### **ECan's response to submissions**

ECan staff then prepared an amended discussion document in October 2002 and submitted it to the ECan Environment and Planning Committee for approval in principle (ECan 2002). If approved, the discussion document would be the basis for a chapter of the NRRP to be formally notified in 2003.

The revised discussion document was definitely a "plan of two halves". The introductory section and the section outlining the issues took good account of submissions by the NZIF and other parties. In particular most but not all references to "plantation forestry" were amended to "forests" or "tall woody vegetation". The discussion of issues contained a balanced account of the benefits of forests to water quality and soil conservation.

In contrast, the section on issues resolution and regional rules seemed to fly in the face of the conclusions of the Science Workshop and submissions by forestry groups, including the NZIF. In particular, policy WYD1 in the amended discussion document was changed so that:

- New and existing plantation forestry in sensitive catchments was to be a discretionary activity; i.e. consent could be refused for new planting *and* replanting of existing areas. (Note: after a strong response by forestry interests, existing forests were re-classified as a permitted activity.)
  - Small-scale forestry was permitted to a maximum of 5% by area of any one land title.
  - The entirety of the sensitive catchments was covered by this rule, rather than the critical high-yield areas.
  - Reference to identification of critical sub-catchments by hydrological models was dropped - sensibly enough, since the models could not reliably estimate changes in MALF caused by afforestation. However, all references to targeting regulation to areas identified by resource investigation were dropped also.
- In contrast policy WYD1 in the original document

states that regulation in the NRRP would be restricted to critical sub-catchment "management units", which would presumably be the "high yield" areas on which summer low flows depended.

The amended document proposed that plotting of MALF isohyds to identify "high-yield" areas would be done as part of the resource consent process - not as part of the plan. There is no explanation of why the original policy was changed in this way. If the original proposal to identify critical sub-catchments in the plan was not feasible, this is not stated in the amended document.

Apart from the unexplained differences between the first and second discussion documents, it is also instructive to look at the differences between the ECan proposals and the equivalent plans relating to the Moutere catchment in Tasman District

### **The Moutere Water Management Plan (WMP) and the Tasman District Regional Policy Statement**

These two documents provided for restrictions on plantation forestry to safeguard low flows in the Moutere catchment, where a fully-allocated groundwater resource was critical to horticulture. These restrictions survived an appeal by forestry companies to the Environment Court (*Carter Holt Harvey Forests Ltd v Tasman DC W7/98*). Indeed, the permitted area of forestry per land title was reduced on appeal by a local orchardist (*Wratten v Tasman DC W8/98*). However, there are some sharp distinctions between the TDC and ECan plans:

- The TDC plan treated all existing forestry as a permitted activity, and also new afforestation to a limit of 20% of any one land title (compared to a 5% limit in the ECan document).
- The restrictions were limited to well-understood groundwater recharge areas, where the hydrologic effect of further afforestation was clearly going to affect groundwater levels (compared to blanket restrictions over whole catchments).
- It is unlikely that afforestation of less than 20% of a catchment will affect streamflows in South Island catchments (C. O'Loughlin pers. comm.) This 20% threshold is also stated in the ECan discussion document, and appears consistent with the Moutere WMP.
- Therefore ECan's adoption of a 5% limit to new afforestation can only be justified on a precautionary basis. However, the Environment Court ruled that a precautionary approach was not warranted in the Tasman WMP (*Wratten v Tasman DC W8/98*).

### **Implications for Canterbury forest owners**

At this stage, the proposed policies and rules in the amended chapter 6 are most likely to affect farm-foresters and smaller forest companies. The largest forest company in Canterbury has not been expanding its forest estate, and with existing forests now treated as a permitted activity, is unlikely to be directly affected by the ECan proposals.

The implications for farm foresters and smaller forestry companies are more serious. Many Canterbury hill properties have marginal areas that are suited to trees. Afforestation of these areas may be important to the economic future of these properties (Etherington 2002). Even if most proposed forestry areas in the hills are likely to gain consent, the costs and delays created by the consent process are seen as just one more obstacle for the weary farmer.

More generally, if ECan is prepared to create restrictive regulations on a precautionary basis, it does not help the confidence of the forestry investor. The regulatory approach taken by TDC may not have pleased the forestry companies, but at least the restrictions on forestry were specifically targeted rather than precautionary.

At the time of writing, ECan are still receiving submissions on the amended chapter 6 discussion document. It remains to be seen whether ECan will respond to the views of forest owners and farm foresters. If ECan chooses to notify chapter 6 as a proposed plan in its present form, some private landowners have indicated they are prepared to challenge the proposed

plan in the Environment Court.

#### References

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## Local community attitudes to plantation forestry, Gisborne/East Coast region

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### Background

Forest Research and Lincoln University are collaborating in a study of the social and economic developments of communities experiencing land-use change. A survey was carried out in 1999/2000 in the Gisborne/East Coast area (Fairweather *et al.* 2001) to determine the attitudes to land-use change and development, and to assess attitudes towards specific industries such as forestry.

The attitude survey used a random sampling technique and included questions similar to those of an earlier attitude survey conducted in the East Coast region in 1994 (Wall & Cocklin 1996). The views of Māori (42% of the Gisborne/East Coast population, Statistics New Zealand 1998), non-Māori, rural (35% of the population), and urban participants were analysed and compared. Changes in community attitudes to forestry over the 6-year period since the earlier survey were examined. This article provides a summary of the results that relate specifically to forestry.

### How did we seek community attitudes?

People from the Gisborne/East Coast community were randomly selected from the 1999 Māori and General Electoral Rolls in five selected rural areas centred on

small towns (Te Araroa, Ruatoria, Tokomaru Bay, Tolaga Bay and Te Karaka) and the urban area of Gisborne. For ease of analysis, it was assumed that the views of those on the Māori Electoral Roll would reflect those of Māori in the area.

The selected people were approached by telephone to organise face-to-face interviews, which were generally conducted by experienced women from local iwi. People interviewed were not known by the interviewers. The questionnaire was designed with structured quantitative and qualitative questions rather than more informal discussion to ensure no one was led by the bias of an interviewer. Only 25% of selected rural and 28% of selected urban residents completed an interview. This was mainly because a large number of people had no telephone listing (41% rural and 32% urban residents). Many were thought to be living in a house where the telephone was listed in another person's name or where there was no telephone. Some people had moved out of the area; others were away, unavailable, or unwilling to participate. The results presented here may be biased towards the views of those who were available and willing to be interviewed.

In all, 280 interviews were completed: 148 in five rural areas and 132 in the Gisborne urban area. The rural sample consisted of 68 General Electoral Roll and 80 Māori Roll people. Rural interviewing took place over 14 days in December 1999. In the Gisborne area, there

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