



Reductions in annual contaminant load after bank retirement.

Agricultural catchments generally have good water quality and stable streambanks where riparian management practices are implemented.

This information sheet outlines the general principles of effective riparian management along with the environmental benefits that it can achieve. It will help land users select a practice which is compatible with farm management. Other information sheets, available from the Taranaki Regional Council's office, give details about how to implement the option selected.

## RETIREMENT FROM GRAZING

Retirement entails fencing off banks so that they are no longer grazed by stock, and re-establishing shrub or tree cover. This practice is suitable for farms on Taranaki's ring plain where:

- pasture on banks is not needed for feed
- alternative stock water supply is feasible.

Retirement is the most beneficial option for improving water quality. It reduces silt entering channels from bank collapse; prevents fouling of water by dung and urine from stock; and helps wetlands inside the fence to purify water, by trapping silt and stripping nutrients from runoff. Where scientists have measured the

effects of complete streambank retirement, they have recorded reductions of 27 to 84% in the amounts of silt and dissolved chemicals entering channels each year (Figure 1, sourced from Smith 1989, Cooper et al 1992, Howard-Williams and Pickmere 1993, Williamson et al 1996).

Aquatic habitat improves, where streambanks are retired. Trees and shrubs shelter water near the banks from sunlight and wind, creating pockets of cool, still water. Water plants grow again on the stream bottom. Aquatic invertebrates - snails, freshwater crays, mayflies, beetles - become more numerous. These in turn provide greater food supply for fish and waterfowl. Terrestrial habitat also benefits. Streambank retirements can link native vegetation remnants together, extending habitat for native birds and creating corridors for migration.

Streambank retirement achieves the greatest environmental benefits but also has some disadvantages for farm management. Apart from loss of grazing and access to stock water, regrowth of species like gorse or blackberry on ungrazed banks can act as a source of seed for weeds colonising adjacent paddocks. Animal pests like possums and rabbits can hole up in the undergrowth. Regrowth needs to be kept in check so that these problems don't arise.

## TREE PLANTING ON REGULARLY GRAZED BANKS

Planting trees at a wide spacing enables livestock to browse between them and drink water directly from the stream. This practice is suitable for Taranaki's hill country farms where farmers:

- need to stabilise banks
- but cannot afford the loss of feed, cost of fences or installation of alternative stock water supply.

Tree-planting achieves at least a degree of improvement in water quality. Even where stock have uncontrolled access to banks, fast-growing, deep-rooting trees reduce the

For further advice or information about sustainable land management contact:

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amount of bank erosion by 50 to 80%, and correspondingly reduce the amount of silt that enters channels. However, the trees have little effect on pollution of streams by any dissolved chemicals in runoff down the banks, and no effect on fouling of water by dung and urine from stock entering channels.

Trees on still-grazed banks enhance fish habitat somewhat, by shading water close to banks, and are also of some benefit for bird habitat, providing cover and nest sites.

While this option is of least benefit for water quality and intermediate benefit for wildlife habitat, it avoids most of the disadvantages for farm management that are associated with retirement or controlled grazing. The main one which remains is that if the wrong kinds of tree are planted, they can collapse and block

the channel. So can the right kinds of tree, if they aren't felled and replaced before growing too old. Some trees can spread like weeds, forming dense thickets along the banks. Careful choice of tree species, and occasional silvicultural maintenance, are needed to overcome these problems.

### **WHERE TO GET MORE ADVICE**

Taranaki Regional Council provides a free advisory service for landowners wishing to manage streambanks. This service includes site visits, preparation of riparian plans and supply of plant stocks. Help is also available to solve any problems with weed and pest control, or channel maintenance.



A row of poplars protects a regularly grazed bank from being undercut.

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