

Before a Hearings Panel of the Canterbury Regional Council

Under Resource Management Act 1991

In the matter of applications for Regional Council Resource Consents to take and use water in the Upper Waitaki River Catchments

BRIEF OF EVIDENCE OF JOHN BRUCE MURRAY

1. My full name is John Bruce Murray. I have been farming on my own account at The Wolds Station since 1977 and prior to that graduated with a B.Agr.Sc. from Lincoln College. Irrigation water became available to The Wolds in 1978 and we have been irrigating ever since with a total of 310 ha now. I am not an applicant or a submitter for any consent in this hearing, but am here because I believe my experience qualifies me to comment on irrigation in the Mackenzie Basin . I am convinced of irrigation's overall benefit to the land and the community that looks after it and has to pay the bills.
2. The Wolds is situated in the middle of the Mackenzie Basin at 600m with a rainfall of 550 mm. It is quite exposed to westerly winds. The soils on The Wolds are quite vulnerable to wind erosion with cultivation as the soils are "structureless" (by this I mean that with cultivation the soil breaks down to something resembling cement, rather than to breadcrumbs with a well structured soil).
3. To minimise the potential for soil losses we almost never plough because it leaves only soil on top which is vulnerable with further cultivation. Surface cultivation leaves clods and trash on top and is less likely to blow.
4. Direct drill where possible, we really only cultivate now to fill in rabbit holes and break in new ground.
5. Avoid cultivation in the northwest season in the spring doing most in early and late winter when soil moisture is better and there is less wind. If conditions are not right delay cultivation which usually means waiting until the following year.
6. Improve soil structure by increasing the organic matter in the soil. This requires nutrients in short supply to be added. The natural soil nutrient levels are low in the Mackenzie basin, in particular phosphorous, sulphur and nitrogen are very low. Irrigation improves organic matter levels and soil structure dramatically. This results in a soil which has a higher water holding capacity, breaks down on cultivation easier (fuel saving) and into larger particles (less likely to blow). High soil organic levels also greatly reduce nitrogen leaching because nitrates are held by the Organic component of the soil. . After thirty years of irrigation on The Wolds the resulting soil has been measured at 11% organic matter and the topsoil is now 30 cms plus in depth compared to 8-12 cms before.

7. Irrigation water applied before or during cultivation can help reduce the likelihood of soil blowing away and the chances of a good strike. A good plant establishment means greater economic benefit, less likely soil erosion and longer lasting pastures which also reduces the chance of soil losses.
8. These strategies have been successful and I have not lost more than some surface dust in thirty years of farming.
9. The use of irrigation on The Wolds is integrated with the dry land and both complement the other on a sheep and beef property. Irrigation provides feed at times of low growth (winter as well as drought). This removes grazing pressure from native and improved pastures when they are most vulnerable. This avoids close grazing which can cause plants to die in a drought, so indigenous plants are more likely to survive. A reliable winter feed supply of hay and silage is produced by shutting up irrigated paddocks in spring. After silage, the irrigation is used to grow out young stock and later on to flush ewes before mating and then provide feed into early winter. The higher quality of feed produced enables The Wolds to fatten all cattle and some lambs.
10. When bare ground is re-colonised after drought, non-indigenous and weed species are dominant. As well, shorter vegetation and more bare ground increase soil erosion by runoff in heavy rain. Irrigation removes the need to graze as hard by providing an area which is still growing and far less vulnerable.
11. The question has been raised as to whether the applicant farmers can implement a management plan for fertiliser. If my experience is anything to go by I believe they can. The Wolds has implemented its own fertiliser strategy which involves annual soil testing on the irrigated area and regular soil testing of the dry land. A programme for the year is then developed in conjunction with outside experts using these test results. The programme is very tailored to “what is required where”. The fertiliser application on the irrigation is split over two or more applications per season to minimise the loss of easily leached nutrients such as sulphur and luxury uptake for potassium.
12. As a farmer I am well aware of the consequences on the environment of untimely or too high an application of fertiliser. Fertiliser is applied when plants are growing and not when watering is planned or heavy rain forecast. Aside from the environmental considerations fertilisers are an expensive and limited resource

and should not applied unnecessarily. In most years The Wolds would like to apply more fertiliser than it can afford.

13. Irrigated land can have lower nutrient loss at times. Because irrigated land does not stop growing in a drought, the soil microbes and root hairs are still active and recycling nutrients. On non-irrigated land these both die with nutrients still being added from animals. Consequently with heavy rain at the end of the drought, there is a higher nutrient loss from the dry land pastures versus irrigated. Buying in feed makes this situation even worse by adding more nutrients to dry land.
14. Irrigation usually improves the financial resources of a farm and economies of scale come into play. This means the proportion of income spent on weed and pest control reduces as a percentage of gross income meaning an irrigated farm can afford to spend more on rabbit, broom and wilding tree control for example, and is less likely to have to reduce weed and pest expenditure in drought years. On The Wolds we have been able to get on top of a huge broom problem along the Irishman River and have spent considerable sums on rabbit and wilding tree control although the latter are winning at present.
15. Irrigation could be considered the lesser of two evils. Accept some change, and increased nutrient loss etc on a relatively small area (less than 4% in the Mackenzie Basin) and look after the rest better. The alternative is to face continued degradation, soil and biodiversity loss and more weed and pests over the whole area.
16. Bearing in mind the obvious value people put on the views in the Mackenzie Basin, The Wolds has endeavoured to keep development away from State Highway 8. Tussock grassland adjacent has been left. This has been able to be done because like most properties The Wolds has considerable scale and in most cases development could be placed out of sight..
17. Haeracium has become a real problem in the dryer parts of the basin. By out-competing other plants for nutrients and water, it reduces biodiversity including tussocks and scrub even. Up to 30% bare ground can result leading to more erosion of soil. Haeracium is palatable but much less productive (400Kg/Ha/year compared to 1000-2500Kg/Ha year in pasture). In the early 1990's The Wolds had to remove 2800 SU as a result of Haeracium and rabbits and it took a

considerable investment in irrigation and oversowing to be able to get back up in stock numbers.

18. I am also concerned that the assimilative capacity rights of people who are not in the process are being lost. I think each catchments should be allocated a per ha assimilation of N, P K and S etc. If this does not happen when we go to renew or do further development, we may find the assimilative capacity of our catchment is gone or may even need reducing placing an unfair burden on existing users.
19. Also why should renewals face higher mitigation than an initial application next door.