

# Impact of 5 m Setback – October 2019

## Waimanu Farm Case Study

Waimanu Farm is a mid-Canterbury dairy and dairy support farm located in Lowcliffe near the mouth of the Rangitata River (Figure 1). Waimanu has approximately 2,700m of spring fed drains, which discharge into the sea and is characterised by low-slope topography, poorly drained soils and low rainfall (~600 mm/year).

Figure 1: Waimanu Farm, Lowcliffe



In 2015, Waimanu farm started working with Canterbury Waterway Rehabilitation Experiment (CAREX), a University of Canterbury research centre established to find practical tools and solutions for improving agricultural water quality. CAREX work with a number of farms to trial scientific solutions for reducing contamination from “hot spots” on farm<sup>1</sup>.

“Hot spots” on Waimanu were identified as direct discharges from the tile drains. Sediment and bacterial discharges due to run-off from the property into waterways is limited, due to the flat topography and low rainfall. Therefore, the plan for the property was to target weed reduction in the streams and treatment of the discharges from the tile drains. Since the partnership started, Waimanu farm has:

- Stabilised and rebattered the banks of the waterways (Figure 2)
- Planted over 3000 plants
- Extended fencing to create setbacks of between 2-3 m
- Installed 3 bioreactors to treat run-off from the tile drainage system

<sup>1</sup> [https://figshare.com/articles/CAREX\\_Toolbox\\_Handout\\_1\\_-\\_CAREX\\_Key\\_Steps/6848522](https://figshare.com/articles/CAREX_Toolbox_Handout_1_-_CAREX_Key_Steps/6848522)

In total, \$30,000 has been spent on biodiversity planting in the riparian zone, with a further \$16,000 spent on fencing. A significant amount of time has been spent by the community assisting the restoration of the stream by providing labour to reduce the costs.

Figure 2: Waimanu Farm Stream Restoration Before and After Rebattering and Planting



Extensive monitoring of the water quality in these drains have shown a significant reduction in temperature and aquatic weeds, however only limited improvements in water chemistry or macroinvertebrates<sup>2</sup>. The reduction in weeds has meant no mechanical clearance of the stream is required anymore, which should result in an improvement in macroinvertebrate communities over time by reducing the amount of disturbance in the stream bed. A lack of change in the water chemistry is likely due to overland run-off being low risk activity on this property in most places.

<sup>2</sup> Note only one season's monitoring was completed after planting

The Stock Exclusion 360 Regulations proposes setback distances of 5 m on properties such as Waimanu Farm. Since Waimanu Farm has already established a setback distance of 2 m on average throughout the property, the existing fencing will not need to be moved until 2035.

The enhancements on the stream bed and riparian zones at Waimanu have already improved ecosystem health as much as they can and extending the setback distances will not result in further improvements in water quality. We estimate extending the setback distance by a further 3 m would involve the following:

1. Replacement of existing fencing (5,400 m both sides of drain, ~\$16,000)
2. Further riparian planting (Additional 3,200 plants @ \$9/plant - \$28,800)
3. Loss of 1.62 ha of productive land (\$72,000)
4. Loss of on-going production from land (\$18,000 per year)

In total, extending the setback distance on Waimanu Farm will result in a loss of capital of \$116,000 and a further \$18,000 per year in lost production, with no evidence to support further improvements in aquatic ecosystem health from these changes.