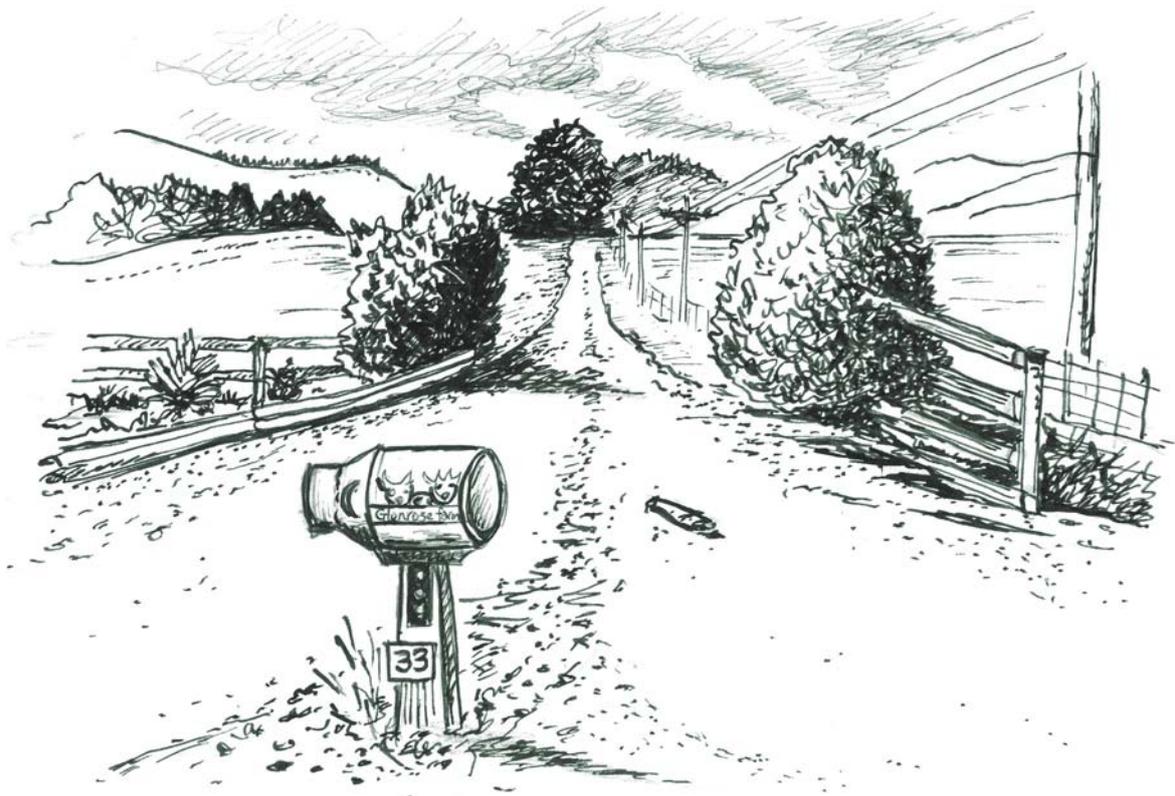


## CASE STUDY 3



**Glen and Rosemarie Reichardt,**  
*Glenrose Farm, Rerewhakaaitu, Bay of Plenty*



**'The two key things for the future are to retain the lake and carry on dairy farming'**



## Key facts

**Farm size and type:** 118ha dairy farm plus a 63ha runoff.

**Production focus:** The main farm is used as a milking platform, with a production average of 1050 kg/ha. The runoff is used to secure winter grazing for the cows and for feeding young stock. They work on the basis of 100 days over winter not having enough grass for the cows so they feed supplements over this time.

**Soil type:** There are three soil types in the Rerewhakaaitu catchment, two are ash soils formed from the 1886 eruption of Tarawera and an earlier eruption, 1800 years ago. The third is mud from Lake Rotomahana, formed

decision-making is done jointly by Glen and Rosemarie, with Glen responsible for day-to-day management. They are active in the Rerewhakaaitu community.

## Main climate features and challenges

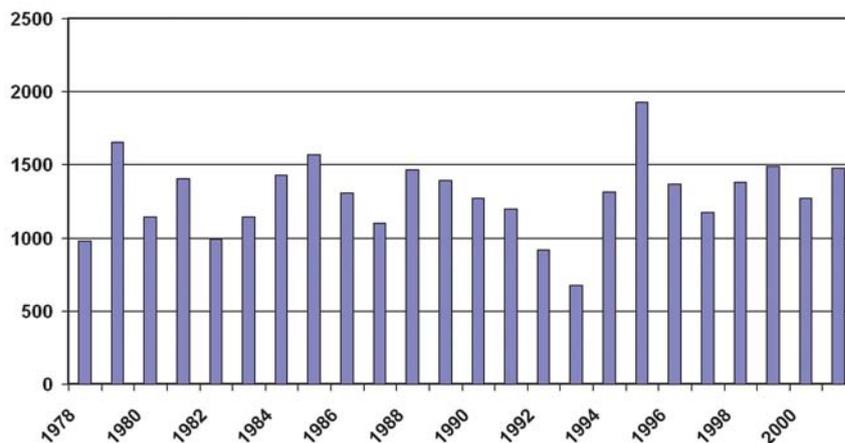
**Westerly winds:** Westerly winds tend to prevail in spring, and can make conditions very dry. This can make a big difference to production levels.

**Summer dry:** They generally have a summer dry period from Christmas through to mid February. In general they are experiencing a shorter, hotter, summer than in the past.

**Rain:** Significant rainfall comes from the north-east. Erosion from high rainfall events is generally not a problem, but waterlogging and pugging have been in the past.

**Southerlies:** They get cold southerlies but are able to move the cows to more sheltered areas of the farm.

Rerewhakaaitu Annual Rainfall, 1978 to 2002

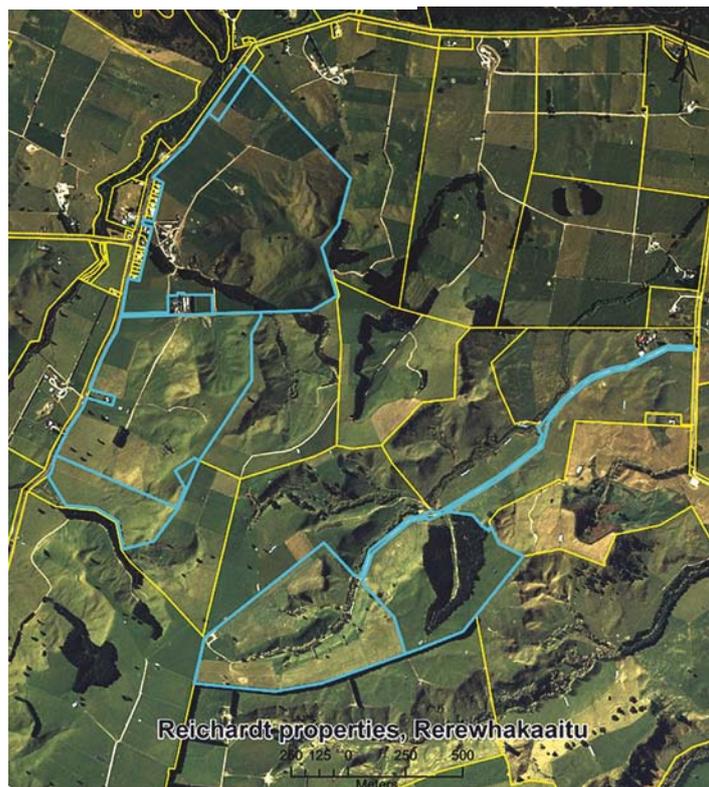


from the 1886 eruption. The soil on the Reichardt farm is Kaharoa sandy loam. There is a hard pan at about 1m depth.

**Climate:** Annual rainfall averages 1294mm (based on records from 1977 to 2002), with a highest annual rainfall of 1928mm (1995) and a lowest annual rainfall of 678mm (1993). July-December is generally the wettest period. In winter they get  $-4^{\circ}\text{C}$  frosts and  $6^{\circ}\text{C}$  days. From mid January through to the end of February daytime temperatures can be around  $30^{\circ}\text{C}$ .

**Water:** They have five springs on the property plus bores. They provide water to the village.

**Social:** Glen and Rosemarie both work full-time on the farm and their son and daughter are fully involved. Overall planning and



## Historical development and influence of climate and weather extremes

The development of Rerewhakaaitu and districts is chronicled in 'Mud, Ash and Pumice', produced by the Rerewhakaaitu and Districts Reunion Committee (1993).

| Period                      | Production focus and major changes<br><i>Climate and weather effects</i>  |
|-----------------------------|---|
| <b>Pre-European to 1886</b> | Bush until the Tarawera eruption in 1886.   |
| <b>1886 to 1930s</b>        | Tussock land had developed in the aftermath of the Tarawera eruption. The land was ploughed and converted to sheep grazing.   |
| <b>1940s</b>                | Used as a training ground by American soldiers during WWII.   |
| <b>1950s</b>                | Glen's father balloted the farm in 1956 and developed it as a sheep and dairy unit.   |
| <b>1960s</b>                | <p>The farm became a town supply farm in 1963 and by 1966 the sheep were gone and the sole focus was dairy production.</p> <p><i>High rainfall events and flooding close to the lake in the early 1960s. There was also some erosion along the Mangaharekeke Stream (not on the Reichardt farm), which led to remedial works by the former Eastern Bay of Plenty Catchment Commission.</i></p> <p><i>There was a major drought in 1967/68. Stock was shifted out of the district through to Gisborne. Cows were dry by early January.</i></p>   |
| <b>1970s</b>                | <p>Ongoing development of the farm.</p> <p><i>In 1974 they had a high rainfall event that led to flooding across the road by the lake. No serious damage resulted. There were a number of big rainfall events in the 1970s, with a lot of runoff.</i></p>   |
| <b>1980s to present</b>     | <p>Progressive intensification of the farm. Glen and Rosemarie took over the farm in 1992. They had a go diversifying into orchids for about six years but it became too expensive. To continue the orchids they needed to move to somewhere with a warmer climate. Their decision was to stay in Rerewhakaaitu, and they subsequently bought the next door farm and runoff to enable the necessary intensification of production.</p> <p><i>They've not experienced any significant climate extremes since the 1970s. They did experience the 1982 drought, but soil fertility and organic matter had been improved. This improvement coupled with more drought-tolerant grass species gave them enough buffering to cope with drought conditions.</i></p> |



## Adaptations to develop the resilience of the farm

There has been a progressive development of farms in Rerewhakaaitu since the 1886 Tarawera eruption. In the mid 20th century, as with most farms in New Zealand, there was a strong development focus. During this time DDT was used for grass grub control. This has subsequently limited cropping options. There was little focus on impacts of farming on the lake. The effects of dairy shed effluent on the lake were evident as early as the 1960s, at which time the old County Council and Catchment Commission required farmers to construct effluent ponds. Along with this historical development context, the 1967/68 drought and high rainfall events in the 1960s and 1970s have shaped to some degree the development of the Reichardt's farm. There has been a strong focus on developing soil fertility, including organic matter build-up, introducing more resilient and productive pasture species, managing effluent discharges, and protecting water catchments. Intensification over the last decade, along with changes in summer rainfall patterns, has placed greater pressure on available water.

Where will things be by 2050? To continue farming with the present system under drier average conditions would require a number of adjustments. Stocking rate would have to be static or lowered if there were restrictions on N fertiliser and phosphate. They may have to look at autumn calving and winter milking, as

is already happening in Northland. In general, Glen feels that they are better equipped with improvements in pasture species and the humus build-up that has occurred over the years. Lake Rerewhakaaitu is currently open to subdivision, so over the next 30-50 years the pressure to subdivide may override other options.

**Forestry/trees:** About 3-4 percent of the main farm has been planted in natives, principally for protection of spring catchments. About 10ha (approximately 15 percent) of the runoff is planted in pines, also principally for conservation purposes. An environmental plan was done about 15 years ago as a Federated Farmers initiative, the focus of which was to protect marginal land and water quality.

**Benefits:** The trees have been planted for conservation purposes. The native plantings on the main farm are to protect the catchment from which the village and farm water supply is drawn.

**Information/support:** This work was supported, and subsidised by Environment Bay of Plenty.

**Constraints/barriers:** There is generally a lack of information. There is also a natural concern about relinquishing control of land to external agencies and loss of land for production, with no compensation and all costs, particularly fencing, being on the landowner.

**Water:** There has been a strong emphasis on eliminating effluent loading to the lake

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There has been a strong emphasis on eliminating effluent loading to the lake and protecting on-farm water sources.

and protecting on-farm water sources. The Reichardts hold water rights on their farm. They're currently pushed to the limit with their springs during summer months. This is a result of both intensification and changes in the rainfall pattern. Over the last 15 years they've tended to get shorter, heavier bursts

of rain with more dry spells in between. Farm bores used to all be down to just over 30m (100'), but most farms now have them down to about 130m (400'). The Reichardts haven't had to do this yet, but it is an option for the future. There is a need for more information on ground-water flows.



Glen and others would like a better picture of water quality, there would also be benefits in getting a better understanding of water supply.

**Soil:** The general focus has been to build up the soil. N inputs have been reduced, with a focus on more strategic applications.

**Pasture management:** Pasture management has evolved significantly over the last 50 years. After the 1967/68 drought lucerne was introduced, but this has disappeared largely through the introduction of vigorous ryegrass species. They re-drill regularly where it is possible and fly-seed most autumns.

**Stock management:** Stocking rates have been doubled from the mid 1950s. The greatest intensification has taken place over the last 10 years.

**Energy:** They've installed solar panels to heat water in the cowshed.

**Waste management:** They've been spreading effluent on the pasture for the past 15 years and were one of the first to put in a spray irrigator. As a result they noted problems with the soil sealing up over time, so they now spike the surface with a 'ground hog'.

## Meso connections

The farm is at the top of its catchment so there are no problems there. In general there is a very positive community in Rerewhakaaitu, with a huge awareness of environmental issues, particularly with respect to the lake. With the trend towards bigger farms, there is, however, a trend towards less reliance on neighbours and a losing of the sense of community. The Reichardts' positive attitude towards their community is indicated by their provision of water to the village, and willingness to protect the catchment that feeds this.

They've had great support from the Regional Council. There are some niggles but in general the people on the ground are good to deal with. There is a concern about the potential for the Regional Council to become more regulatory.

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