High-Country Wetland & Waterway Protection Project Final Report

For the last three years, North Canterbury Fish & Game Council (NCF&G), in conjunction with the Ministry for the Environment (MfE), Environment Canterbury (ECan), New Zealand Salmon Anglers Association and Rakaia River Fishing Promotions, secured funding in 2021 from the MfE "Freshwater Improvement Fund", to work with the use of a bequest left to Fish & Game by James McIntyre, to enhance the salmon fishery in the Rakaia and Waimakariri rivers. This funding employed two staff for three years, Steve Terry and Belinda Bull, with three governors appointed to oversee the project.

The projects aim was to secure, enhance or re-establish 60ha of streams and wetlands through a minimum of 10km of new fencing around high-country streams, thereby improving the habitat for species within these ecosystems and enhancing down-stream water quality. Through negotiations with landowners in the High-Country, the project "High-Country Wetland & Waterway Protection" (HCWWP) has exceeded these targets, with the retirement of approximately 370ha, utilising existing fences, along with over 20km of new fencing, with individual projects summarised below.

The project has been endorsed and supported by a number of high-country stations, along with several project partners. ECan has provided water chemistry analysis on ten streams in the Rakaia catchment, which facilitated regular discussions with landowners around efforts to protect water quality through fencing and land retirement. The Cawthron Institute has also provided technical support and analysis, Rakaia River Fishing Promotions has provided $70,000 in funding for fencing on Double Hill Station, in conjunction with Manawa Energy funding an additional $50,000. These two funds combined to retire 77ha of wetlands and waterways on the Station. The QEII Trust and ECan provided wetland ecologists giving advice and assessing wetland species present in the blocks of land retired on Glenariffe Station. Canterbury University masters student Karina Kelly has written a thesis on the efforts required to restore wetlands and waterways and this is currently being reviewed internally. NCF&G have also provided both expert and administerial support for this project.

Key benefits to the North Canterbury Fish & Game include;

- All the Glenariffe catchment streams are now fenced
- 121ha of wetlands have been created in the Glenariffe catchment ensuring water quality remains pristine in Glenariffe Stream
- Landowner relationships have improved, with landowners approaching Fish & Game to offer wetlands for retirement

Below is a summary of wetland and waterway protection projects achieved.

Part 1: Glenariffe wetland restoration

In collaboration with the landowners of Glenariffe Station, a 44ha wetland area on the East Branch of the Glenariffe Stream in the Rakaia River headwaters is being re-naturalised restored. NCF&G have purchased 30 hectares of land to facilitate the regeneration of the wetland. A further 14 hectares of land adjoining this area on Glenariffe Station has also been retired by the landowner. Many ephemeral waterways and small streams run through the areas retired. ECan wetland ecologists have mapped the wetland noting where various wetland species are, with ongoing monitoring planned in future years.

As part of this project, a land valuation was required before the North Canterbury Fish & Game council proceeded to ensure the land was of a reasonable value. Secondly a surveyor was contracted to subdivide the land to enable a title to be issued for the purchased land. Four resource consents were required to divert the South Branch of the Glenariffe Stream back to its original course, formerly the East Branch, with the whole single stream now named Glenariffe Stream. The formal processes took longer than anticipated to finalise, including budget issues.

For the last 70 years the East Branch was diverted into Double Hill Stream mid-way down the stream to drain the wetland that Fish & Game have purchased. The increase in flow in Double Hill Stream below this point was not suitable for adult spawning or juvenile sportsfish rearing. This re-naturalisation has improved flows in both the Glenariffe and Double Hill Streams and thus the habitat for instream life.

A bridge has been constructed over the new stream pathway which is owned by the landowner and all maintenance will be carried out by the landowner. Some landscape planting around the bridge area has been completed. Plans to plant various sections of the enhanced waterways are being developed.

Karina Kelly, a Masters of Water Resource Management student at the University of Canterbury, has been working on a project investigating ecological changes along Glenariffe and Double Hill Streams, following a land-use gradient. This work will help to provide baseline data to inform future monitoring of the wetland restoration, and to predict potential improvements following land retirement, fencing and re-wetting. Karina is currently processing invertebrate samples and completed her studies at end of 2023, with a report due mid-2024.

Canterbury University have captured LIDAR imagery in the upper Rakaia catchment funded by MfE through the HCWWP project. The data has been received and stored at F&G. Canterbury University have completed the initial processing of point data and imagery as an in-kind contribution to the project. Reducing the costs associated with the initial processing has allowed us to capture a larger geographic area than initially planned and increases the potential of the data for higher level research/analysis. An example of the flow modelling can be seen below. Glenariffe and Double Hill Stations have viewed data on their stations and will use this when looking to further protect areas of their stations when future money is available. The data has also been used to show neighbouring landowners that increasing the flow in the Glenariffe East branch will not cause additional flood risk on their properties.

The LIDAR image below is an example of how this data can be used to map flood flow pathways when the mainstem of the Glenariffe floods.

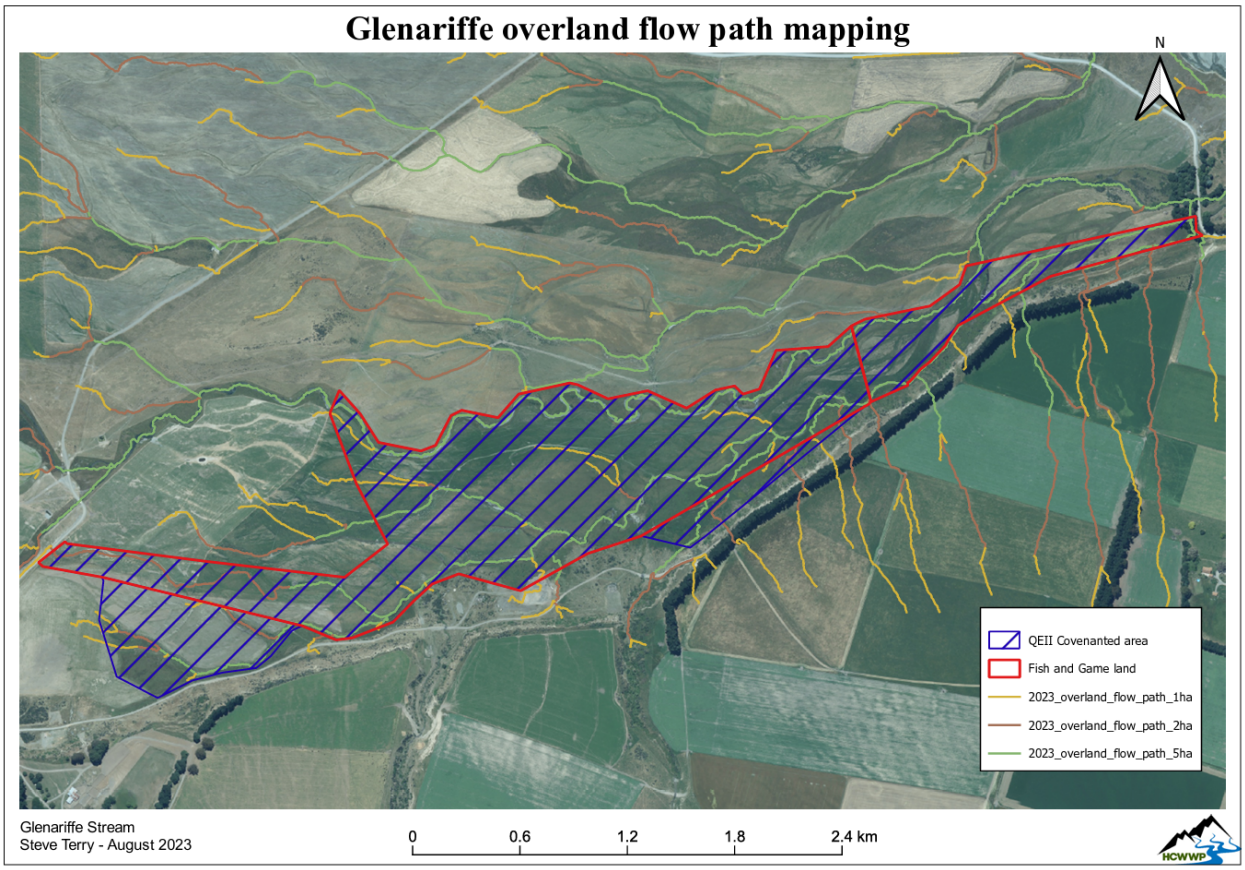


Photo sowing the Glenariffe South Branch re-directed into the East Branch (now one stream named Glenariffe Stream

Photo below showing regeneration on the purchased wetland on Glenariffe Station 2 years after land retirement.

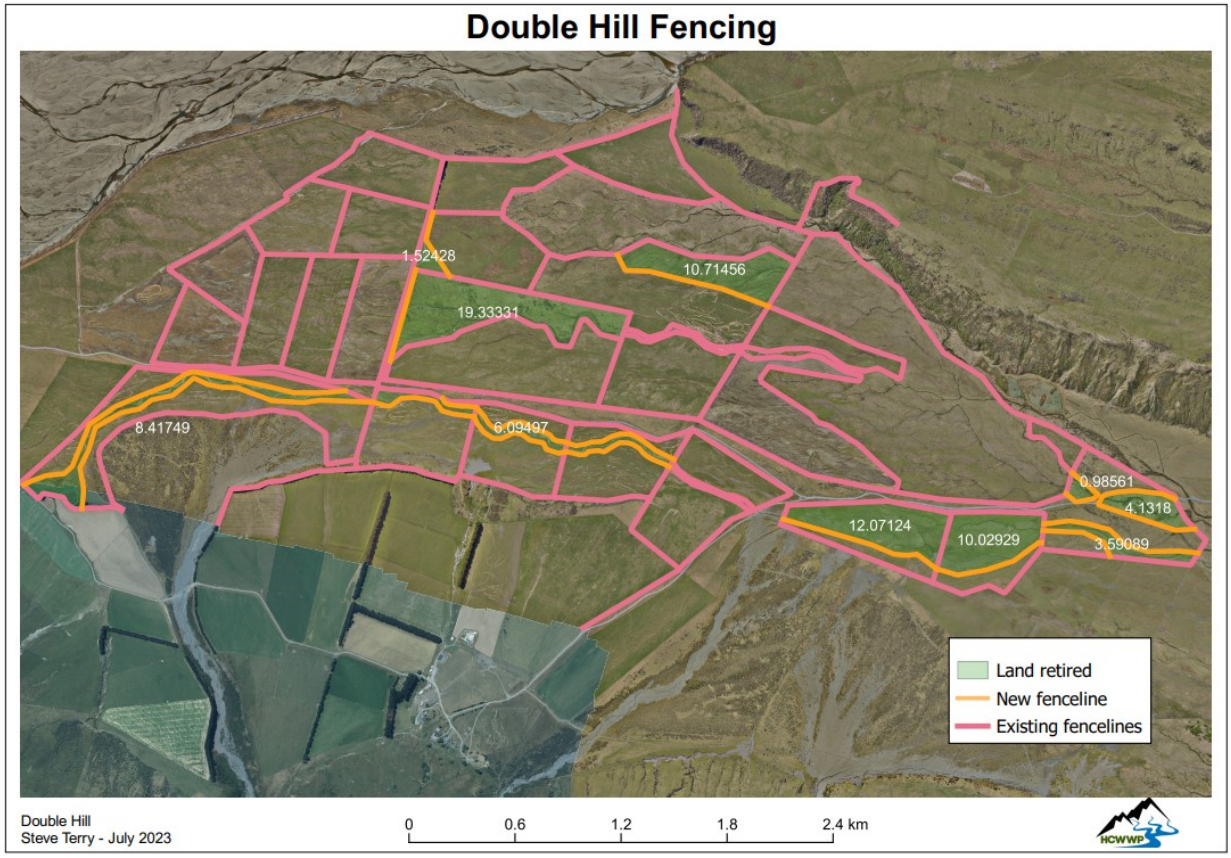
Part 2: Double Hill Station habitat protection

Fencing and wetland retirement on Double Hill Station

Through negotiations with the landowners at Double Hill Station, a number of streams and wetlands have been protected through the HCWWP. We would like to thank Rakaia River Fishing Promotions for their contribution of $70,000 (excl gst), along with Manawa Energy's Rakaia Environment Enhancement Fund $43,478.26 (excl gst), towards 11.3km of fencing, establishing riparian buffers around wetlands and waterways (spring and hill-fed), in the Double Hill/Glenariffe stream headwaters on Double Hill Station. This funding has contributed to retiring around 77 hectares (originally only 37ha planned) of wetlands and waterways from farming, encompassing three large reserves.

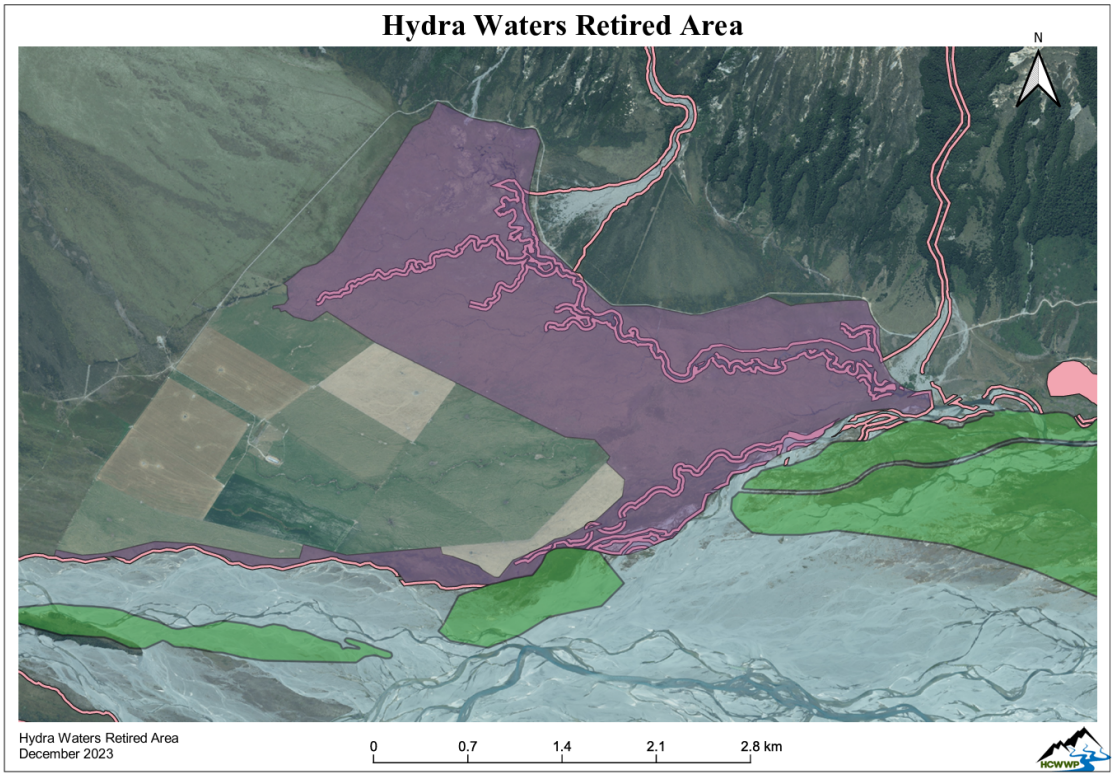
Double Hill and Glenariffe stations have many headwater wetlands, springs and small tributaries forming part of the Double Hill/Glenariffe stream catchments. These vulnerable wetlands host many native plant communities and are typical of headwater systems in farming environments. Reducing the flow of contaminants from these source areas is an important component of looking after the Double Hill/Glenariffe Stream system and the Rakaia River. These riparian areas have critical influence on in-stream conditions by buffering the impacts of neighbouring land use such as erosion, loss of shade through removal of riparian vegetation, and increased flood intensity through drainage of neighbouring wetlands for land intensification. Over the last decade, Double Hill Station has completed significant stream/wetland protection work without external funding and these recent externally funded works help to protect remaining areas from the effects of adjacent land use, as well as protecting native plant communities within the reserves and riparian areas.

The map below shows the new fence lines and wetland areas in the Glenariffe headwaters protected.



Part 3: The Hydra Waters, Mt. Algidus Station in the Rakaia headwaters.

Discussions with the landowner of Mt. Algidus Station in the Rakaia headwaters over a number of years, has resulted in a QEII covenant being placed on a 200+ha block, including the Hydra Waters, a complex system of spring-fed streams and wetlands, accounting for around 20-30% of salmon spawning in the Rakaia. This area has not been grazed for around 40 years now, with this additional level of protection ensuring future landowners continue to protect this area.

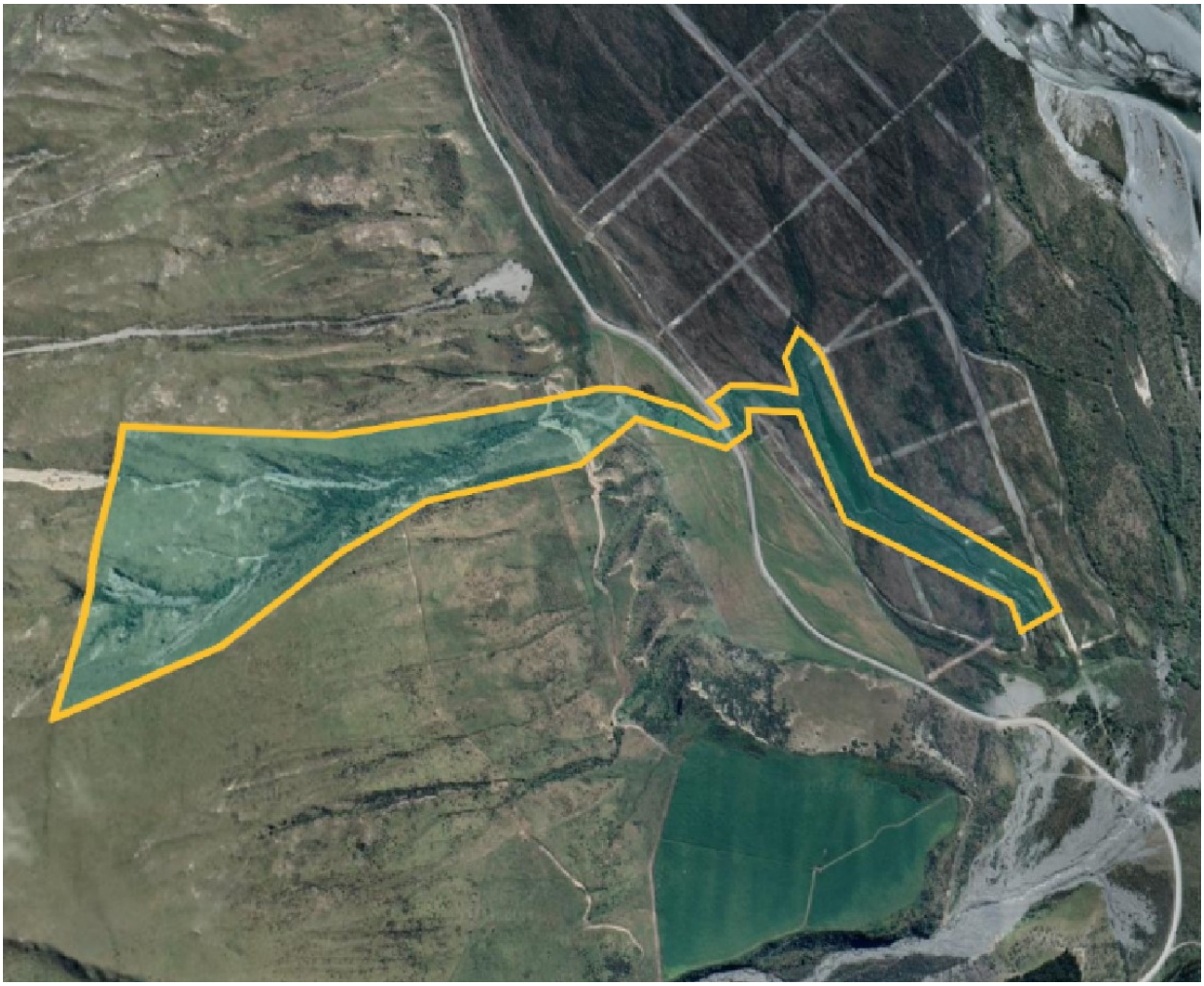


Part 4: Redcliffes Station

In July 2023 the HCWWP was successful in securing $72,000 from Manawa Energy's Rakaia Environment Enhancement Fund, to fence 4.5km and 24ha of wetlands, along with a vulnerable hillside valley and vegetation on Redcliffes Station, located opposite the Trust Power (now Manawa Energy) Lake Coleridge power station. This fencing project has been completed.

A further application for $73,500 has recently been granted with Manawa Energy's Rakaia Environment Enhancement Fund for stage two of this restoration work, with a further 24ha planned for retirement by the end of September 2024.

The image below shows stage one of the redcliffes wetland retirement



The photo below shows the prtected wetland on Redcliffes Station

Table showing external funding granted additional to the MfE budget

Double Hill Station (fencing to retire 47ha Glenariffe headwater wetlands)	**Rakaia River Fishing Promotions**	**$70,000**
Double Hill Station (fencing to retire 30ha Glenariffe headwater wetlands)	**Manawa Energy**	**$50,000**

Redcliffes Station (fencing to retire 24ha wetlands and eroding fan)	**Manawa Energy**	**$72,000**
Redcliffes Station (fencing to retire 24ha wetland and native bush)	**Manawa Energy**	**$73,500**