



# **Riri A Te Hori 2**

## **Wetland Restoration**

### **Development**

### **Final Report**



**Prepared by**

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## 1. Introduction

Riri A Te Hori 2 Ahu Whenua Trust received funding in 2013 to investigate the feasibility of restoring a historic tuna (eels) wetland on their native reserve, located in a very prominent location facing State Highway 3, just 2km south-east of Putiki, Whanganui.

The link to this report is <http://www.waimaori.maori.nz/research/past-projects/documents/Riri-A-Te-Hori-Wetland-Feasibility.pdf>. It is advisable to read to give full context and view the original images of where this project began.

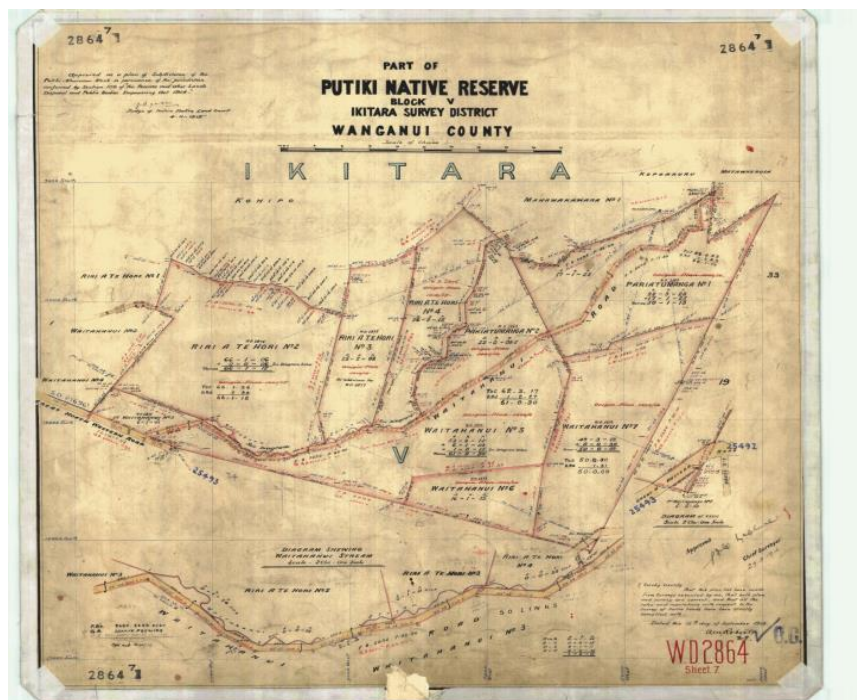
The outcome of the feasibility clearly stated it was viable to restore. The following statement from the report says it all, at that time these were visionary words of the potential of the restoration.

**"This wetland project has the potential to become the biggest and most public within the local community and Iwi. It holds true to the traditional and special Maori values of food gathering whilst holding to the belief of sustainability and guardianship of the land for future generations. It has vision. It is viable. It will be visibly impactful."**

In 2014 a funding application for development was approved based on the findings of the feasibility and also the positive relationship that had been built, that provided confidence in the delivery of further project deliverables.

## 2. Brief History

Riri a Te Hori No 2 is 66 acres of Freehold Maori land within the historic Putiki Native Reserve. It is one of the larger freehold blocks left remaining in Whanganui region. The whenua has rich history having been a defensive pa in the 1800's with signs the land was inhabited, as kumara pits are among the archaeological sites that remain (archaeologist report available). The owners found the whenua in 2011 in an unacceptable poor condition, and leased at well below market value, and therefore took action, and it is now back in owner/trustee management as of late 2012. They just knew that things were not right and something needed to be done, to bring the mauri back into balance for the survival of our native species and natural environment, as our tupuna would have expected and wanted. This was enough of a driving force to take action, whether having the skills or not.



### 3. Cultural significance

Historically Maori relied on wetland and waterways as a valuable resource providing:

- habitat and spawning grounds for native plants, birds and fish
- Traditional source of food such as tuna (eel), whitebait, mullet and watercress
- Building and weaving materials such as raupo and harakeke (flax)
- Medicines (Rongoa) and dyes (Paru)
- For seasoning timber and restoring precious artefacts

Our tupuna had strong cultural, traditional and historic links with wetlands and inland waterways, including lakes, rivers, streams and springs. These taonga (treasures) are spiritually significant and closely linked to the identities of the tangata whenua (people of the land). Water is the life giver; it represents the blood of Papatuanuku, and the tears of Ranginui. Waterways are home to many taniwha (spiritual beings) that look after the people and ensure their physical and spiritual protection.

### 4. The Original Site

This image below shows the original area approximately two acres of swampy whenua that was leased for decades and modified for agricultural pastoral farming with repeated unsuccessful attempts to drain. As green as it looks here, there are numerous individual artisan springs as well as ground level is low to the natural water table. In summer you can be ankle to knee deep in cold artisan spring water. Across in the distance is the boundary that also follows the Awarua stream across this whenua. This stream is a significant factor to this wetland, because it is the fish passage from and to the Whanganui awa.



## 5. Aim of the Riri A Te Hori 2 Wetland Development

On the findings of the feasibility report and its accompanied wetland design, (prepared by Moari Bailey and Consultant Ian Moore) the next wetland development phase of this project started, recreating the freshwater natural habitat.

Our initial investigations identified the individual water sources (spring puna outlets) and the underlying strata that had the capacity to hold water permanently. A series of eight small individual “ponds” showed that the terrain had a high organic layer with an underlying basement ( of the old Whanganui River ) that would both hold water and promote active regeneration of native plants from sedges through to larger trees like kahikatea.

The funding enabled the proposed works for the development:

- **Construct detox /settling ponds (2)**
- **Clear spring outlets**
- **Realign tracking**
- **Construct side stream ponds (approx 10)**
- **Create major ponds (3)**
- **Construct Spreader channels**
- **Create solid overflows**
- **Construct bridges and board walk (replaced with stock proof fencing)**
- **Plant filter reeds and other suitable plants**

## 6. Restoration Development First day



After months of hui, whenua visitors, communications, and report writing the day had arrived for the actual excavation to start. Appropriately, and prior to commencing we held a near dawn karakia with Iwi Tohunga, John Maihi. The karakia was to acknowledge our tupuna, and in case we unearthed anything in the excavations, as wetlands were historically known to hide or prepare timber for carvings and sometimes as urupa. We chose the defensive pa site as it has a commanding view of the whenua and strong wairua.

This was attended by a mixture of our community, the Wanganui City Councillors (they are also Whanganui river enhancement trustees), Council CEO and staff, archaeologists, local kura principle, staff and tamariki, iwi representatives, geologist, civil contractor and friends who had been involved or supportive of the project. It was an incredibly special moment for us as descendants and the attendees as this was really the first time we had invited a group to share the beginning of the positive direction our whenua was embarking on. Some of those attending had not actually visited the whenua before and were extremely surprised at how prominent and empowering our whenua is. After scones and tea in the cowshed HQ, all left seemingly privileged to have taken part and are keenly monitoring progress and the exciting future ahead.

## 7. Excavations Begin

Daren Bendle of Camtract is our chosen civil contractor for pond excavation, he started with clearing eight known springs to help us understand the volume and flow of water we could expect to see from any or all of the springs. We waited and monitored these over a number of weeks all the springs cleared, filled which was a pleasing result. This then gave us the confidence to proceed to full wetland pond development.



At the southern boundary two long channelling detox ponds are constructed, in the future a inlet will be connected from the Awarua stream. This will let water flow in and have silt/sediment/pollutants sifted out via the raupo, before connecting around to the other series of ponds, which will be then connected to inlet/outlet back to the Awarua. This process we hope will contribute to improve the water quality of the Awarua tributary that connects to the Whanganui awa.



## 8. Excavation

The full wetland pond development started. A larger machine was used (a 24 tonne, 141/2m reach excavator), ideal for this work.



A week into excavations, tons of black rich organic matter and clay is moved and moulded to create the dam walls and ponds. The occasional tuna are seen amongst the loads all juvenile and now in a larger and improved environment, rather than the small shallow overgrown springs they had remarkably survived in previously.



The excavation continues from the southern end of the whenua and starts to make an impact with the scale and size of the pond development (spot Daren the driver running across back to digger).



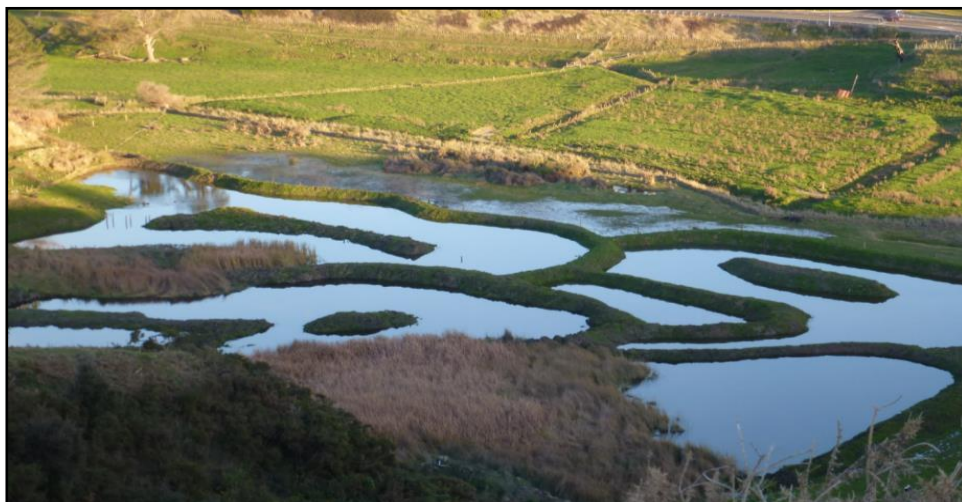
The development of the first island has a nice ascetic addition, but is also of great ecological value as a safe haven for breeding and nesting birds; particularly ducks and the additional perimeter can be planted with overhanging vegetation for spawning inanga. The opportunity is taken while we have the excavator to ram posts in for both the planned bridge and stock proof fencing.



Large pieces of petrified native timber were unearthed a red/brown fibre and quite knotty. Our geologist was puzzled by its type and origins, we fondly referred to it as 'a taniwha' due to its creature like form. Owners also recalled trees and a large pond down at the 'swap' as this was their childhood playground.



The excavations of thirteen ponds of various sizes from large to small and of varying depths and configurations are completed and rye grass seed is spread over the outer dam walls to grow and suppress the growth of weeds, internal walls will be planted and allowed to regenerate more naturally.



## 9. Wetland Takes Command

The aim has been to create a diversity of aquatic environments that give a range of water depths and temperatures. The water quality appears to be of a very high standard and even though the construction is only days old, the dams are filling rapidly.



Some overflows have been directed through raupo and native sedges as silt traps and water purifiers. Other overflows have been constructed with “novaflow” to protect the dams from storm event downpours.



## 10. Wetland Planting Days

With the ponds completed, we then turned our attention to planting and recreating the native plant habitat to foster fisheries, particularly tuna. After much wetland plant research we selected a variety of native grasses, sedges, harakeke, miniature toi toi, oioi rushes, cabbages trees and a few kahikatea to form groves. These were supplied and some donated by the local Kaitoke prison nursery and Horizons council (Clare Ridler), who were very happy to help and be involved. Two planting bees were held on a Sunday, where 10 to 15 volunteers helped plant over 2500 plants. This turned into a project on its own, as it was larger than first anticipated, but we got there in the end, and were very grateful for the volunteers help.



Above left: Trustees Moari and Julian Bailey. Above right: whanau and wetland friends planting bee.



Above left: Newly planted ponds.

Above right: Taitoko Tamehana Bailey



Above: Tuna release pond

## 11. Connecting Our Future Generation

As anticipated for some months, we have had 57 of our own tamariki from Te Kura Kaupapa Maori O Te Atihaunui-A-Paparangi come and visit the wetlands to plant a Pā Harakeke. The kura is keen for the tamariki to develop a lifelong relationship with the whenua and wetland, and for the tamariki to learn from an early age the significance of native freshwater species and plant life. As you would expect, the tamariki were all very excited, full of energy and questions and happily worked in little groups to plant their harakeke. In the future we hope to work on special projects that incorporate the wetland and tuna. DOC and fish and game representatives also visited during this trip, who took the opportunity to interact with the wetland and the tamariki. As a result, we have had interest and enquiries from the wider community to visit the wetlands.



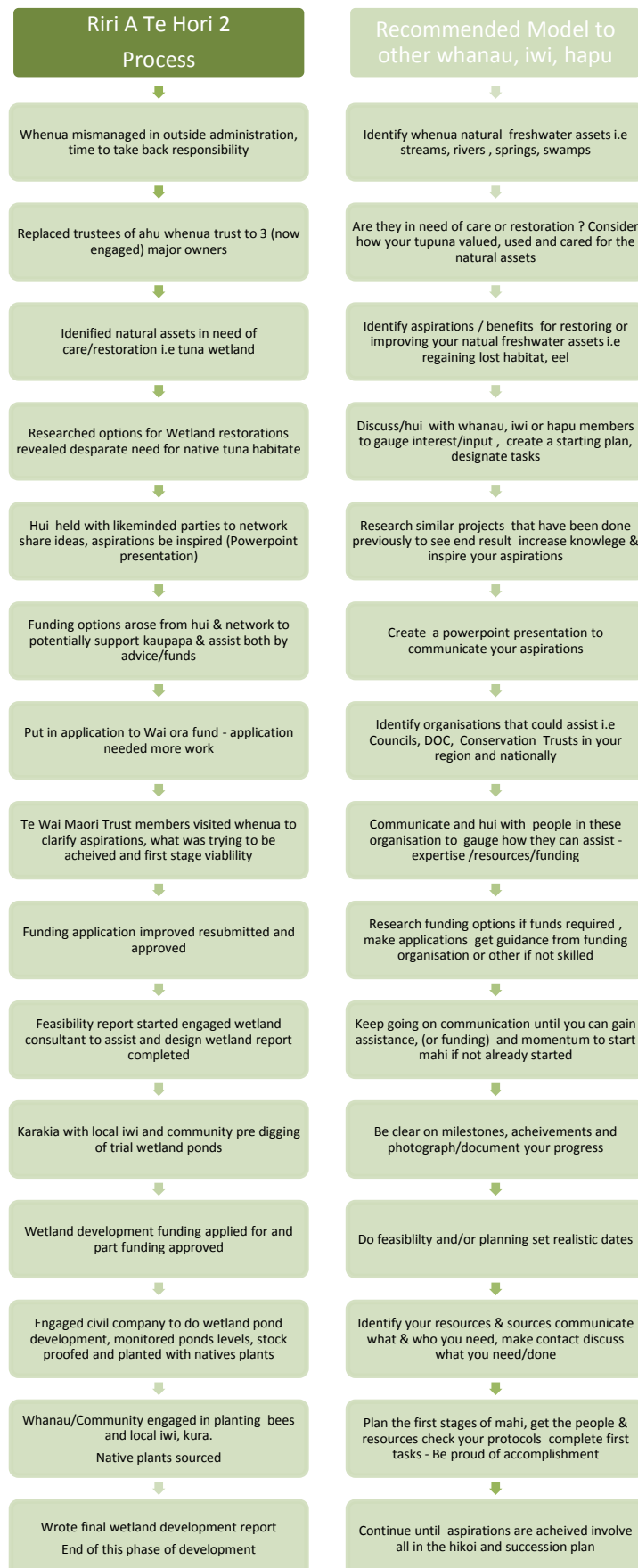
## 12. Tuna Released into Ponds

A small hīnaki was used to catch tuna in the Awarua stream and release them into the ponds, until we open the fish passage properly this summer. This was to give our manuhiri and rangatahi a closer look at a tuna and envisage what the wetland will look like in years to come. Having tuna in the Awarua stream that links to the wetland gives us confidence that tuna and other fish species will enter the wetlands once the fish passage is opened. The tuna were released into one of the larger ponds that have beautiful clear spring water and edged by a large crop of raupo, ideal tuna habitat. We are now working with the NZ Transport Agency to plant a riparian corridor along the Awarua stream that runs alongside the motorway between the wetland and the outlet to the Whanganui River. That section is frequently sprayed with chemicals and obviously detrimental to what we are trying to achieve.



### 13. Model for others to engage in Freshwater Restoration Projects

The Riri a Te hori 2 trustees started out with limited skills that they felt prepared them for this project, and therefore wanted to share this process for others to follow. The model has been developed to assist others in a similar position. The left hand side depicts the process of the wetland restoration project. The right hand side is a recommended process.



## 14. Conclusion

The project started with a couple of irate owners (Julian and Moari Bailey) on a rescue mission of their Māori Freehold land reserve as a result of poor treatment via leasing to an external administration. They listed some high level aspirations for their whenua, and very quickly realised there was definite opportunities to do something positive. This was to return it to its more authentic origins, a wetland, with a particular focus on the environmental conservation of freshwater species. The project aligned with the owners' cultural values grounded by what they envisaged their tupuna would approve of. Overwhelmingly this project has achieved in 6 months what was envisaged to take potentially the 5 years.

The benefits and surprising highlights of this project include:

- Working with people who are as passionate, committed and excited as you are, and seeing the project reveal.
- The interest, curiosity and support from a community audience you did not know existed
- Seeing the birdlife arriving as if they knew you were making them a new kainga
- The surprised and wowed look on people's faces when they look down over the wetland for the first time
- Meeting so many conservation minded people happy to volunteer time/advice
- The support, encouragement and praise received for taking a stance and 'doing' what's right on many levels
- Seeing everyone (particularly whanau/tamariki) enjoying the wetland and being back on the whenua
- Learning and applying all aspects of wetland restoration, native plants and freshwater species
- Knowing with the right support, people and determination, owners/descendants can overcome challenges and create opportunities, (including conservation projects) for better care, utilisation and benefits for our Maori land, our people and a positive future for all.

The future is very positive for Riri a Te Hori 2, there is still a large ongoing project with the next lot of tasks already identified and waiting ahead. We now leave the wetland to settle in, plants to get established and grow, and change our focus to other solutions. These include:

- Fish passage development to the Awarua stream
- Plan and erect new fence to prevent stock entering the stream
- Investigate and plan development of road access to and from motorway
- Plan overall walking routes for wetland, where boardwalks, viewing platforms, seats and bridges are required.
- Plan site for a cultural conservation centre building

We are very pleased with what has been achieved (as we hope our tupuna would be), and extremely grateful to the many wonderful people and agencies that have contributed and helped. We can all be proud, knowing we are delivering on the promise to give the whenua and inhabitants a clean protected native environment. Our whenua is environmentally richer for it, and our iwi and people of all ages have somewhere to come, learn and actively engage with natural tuna habitat. Our landowners and community are positive because they can see progress and prosperity on this prominently located Maori whenua reserve.



Final word: Happy Haru says **"Nau mai, Haere Mai come and see us at Riri a Te Hori 2 tuna wetland"**