

## ADAPTING TO A CHANGING CLIMATE: CASE STUDY 19

### ENVIRONMENTAL MONITORING OF LAKES AND RIVERS TO INFORM FUTURE CLIMATE CHANGE ADAPTATION

# NGĀTI TŪWHARETOA WAI ORA

## NGĀTI TŪWHARETOA

- The Ngāti Tūwharetoa tribe is generally situated in the central plateau of the North Island of Aotearoa and has more than thirty hapū (sub-tribes).
- Taupo Moana and its rivers and tributaries are significant taonga tuku iho (ancestral taonga) of Ngāti Tūwharetoa. This connection is reinforced by the fact that the Tūwharetoa Māori Trust Board (TMTB) is the owner of the Lake Taupo bed on behalf of the iwi and owner of the beds of many of the rivers of Lake Taupo on behalf of ngā hapū ō Ngāti Tūwharetoa. The TMTB's role, amongst others, has been to act as a tribal advocate for Ngāti Tūwharetoa on a range of issues including resource management.
- In 2006 the TMTB established the Tūwharetoa Asset Management Unit (TAMU), whose role is to provide capability to the TMTB in a range of key environmental and commercial areas. TAMU has established a range of environmental programmes aimed at providing support to hapū in addressing their environmental priorities.

Ngāti Tūwharetoa understands their responsibility to protect and enhance the waterways within their tribal rohe (traditional territory) and want to be “hands-on” with the management of their tūpuna awa (ancestral rivers). Over time, it has become clear to the tribe that their waterways have changed which is attributed to climate change, to some degree. Ngāti Tūwharetoa believe that the monitoring of waterways will lead to a stronger relationship with tribal taonga and provide the information needed to better adapt to the impacts of climate change and carry out their responsibilities as kaitiaki.

Increasing awareness of erosion and flooding on and around Lake Taupo and its tributaries has caused alarm over recent years and are of concern for the Taupo District Council and Environment Waikato (EW). A draft erosion and flood strategy was formulated by the Taupo District Council and EW to guide future management of erosion and flooding. The strategy identifies roles and responsibilities, funding arrangements, and an action plan. Several research documents were also commissioned which identified the impacts of climate change and how to plan for erosion and flooding.

## ENVIRONMENTAL CONCERNS FOR TŪWHARETOA

The Tūwharetoa Asset Management Unit (TAMU) held many hapū and iwi hui (meetings) to better understand and address the environmental concerns of the groups. These meetings revealed that water was a main priority. Hapū know that this taonga is being affected by the changing climate and they wish to find ways of addressing the problem.

Water flows in some areas have reduced, water quality is decreasing and erosion is accelerating. These issues were previously highlighted in a series of hui held in the late nineties regarding the re-consenting of power generation activities.

## THE CHANGING CLIMATE

Some of the projected impacts of climate change on the Central North Island include a rise in annual temperatures in the central and eastern parts of the North Island, which have already risen by up to 0.25 °C in the last twenty years. As well as increasing temperatures, more frequent and intense rainfall is expected along with stronger westerly winds. This will affect Lake Taupo and could lead to increased erosion along the lake's shores.



Taupo Moana.

Erosion and flooding is impacting on a number of areas, including cultural sites of significance. Accelerated erosion of ūrupa situated close to water ways is a prime example of one of the negative impacts that has occurred and some of this could be attributed to climate change over the last two decades. This, coupled with a lack of vehicle access due to the erosion of roads and tracks, is increasing awareness amongst tangata whenua on the likely cultural impact of climate change.

The flooding of papakāinga lands is also of concern to Ngāti Tūwharetoa in terms of the local community's resiliency to these impacts. Economic impacts include the loss of development potential on lands that were once productive and now under water.

## CLIMATE CHANGE ADAPTATION – THE WAI ORA PROGRAMME

The Wai Ora Programme is a water monitoring project established by TAMU, jointly funded by Te Puni Kokiri and EW.

It is a multi-purpose approach to climate change adaptation and provides a vehicle to support activities in each hapū rohe. Through this programme, capability has been built and the place of climate change

in the wider understanding of the environment for Tūwharetoa hapū has been identified. This is a long-term project that will need ongoing support but has created a way in which Ngāti Tūwharetoa can identify the impacts of climate change and guide the appropriate adaptation.

Ngāti Tūwharetoa kaumatua, Rangikamutua Downs formulated the iwi vision for the Wai Ora Programme:

*Kai Rangahau i nga Awa, kia mohiotia ai, Te Horomatanga o ia Awa, o ia Awa*

*Researchers of Water, so that the purity of the streams, rivers and springs are assured.*

The Wai Ora Programme utilises the Stream Health Monitoring and Assessment Kit (SHMAK) to monitor the western science components of the water. The SHMAK was designed for farm families to monitor the "health" of the streams that flow across their land. It allows farmers to keep a record of long-term trends (whether streams are improving, degrading or staying the same) and also of short-term impacts. It provides a way to help farmers to assess whether their land-use practices are affecting their waterways. These were considered more than appropriate for hapū use.



Turangi children assisting with measuring water velocity on the Hungarito River.



Another important tool is Dr. Gail Tipas' Cultural Health Index (CHI) formulae which supported Ngāti Tūwharetoa in understanding how to appropriately underpin mātauranga Māori into a water monitoring programme.

TAMU facilitated a workshop which enabled the hapū participants to learn how to operate these kits to monitor their waterways. Each participating marae, hapū, kura or trust received a SHMAK kit, templates for recording the data, a cultural health index template and facilities to store the data in a central place. The TMTB later distributed laptops to participating hapū to store the data on the marae.

The pilot programme attracted fourteen marae, two trusts and two kura kaupapa, around 50 percent of TAMU's targeted participation in the Ngāti Tūwharetoa rohe (region).

After the first year it became clear that the involvement of a programme facilitator was important so funding was secured from EW to develop a summer position and enable University of Waikato student, Tredegar Hall (Ngāti Rauhoto, Te Arawa) to gain some experience in environmental project management.

The TMTB now facilitates the monitoring of more than 40 sites across the rohe. The role of kaitiaki and understanding changes in Ngāti Tūwharetoa waterways is helped by GIS technology, digital photography and ongoing support from the hapū.

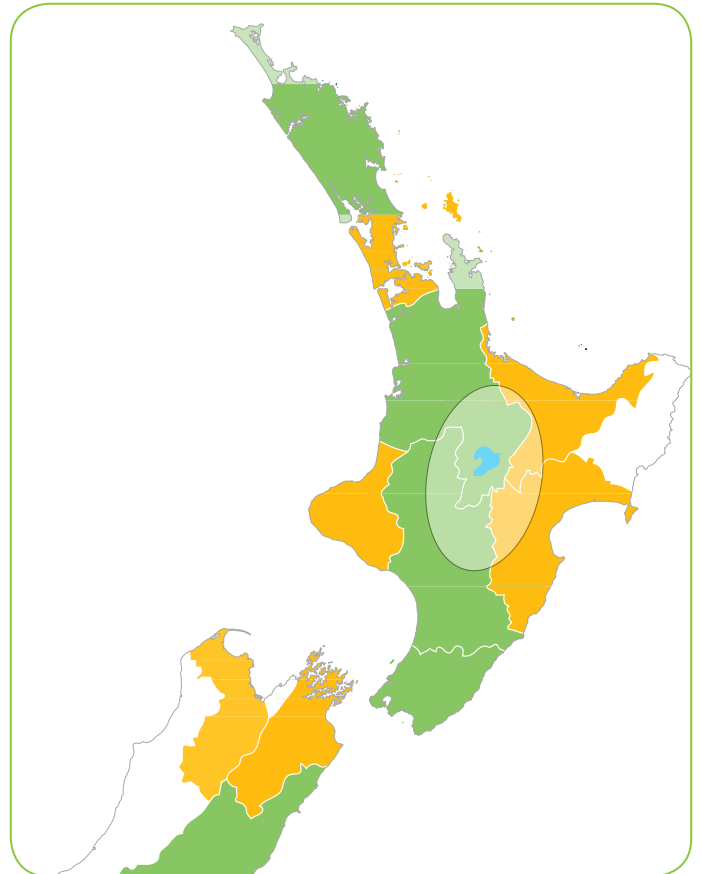
## OUTCOMES

The revitalisation of the relationship, and deeper understanding of the synergies between kaitiaki (guardians) and their waterways, is one of the key outcomes from this programme.

This relationship provides systems for detecting the early warning signs of change and can provide meaningful indicators to monitor and provide information with which to plan.

By being involved in planning, hapū have developed a greater appreciation of climate change. This has provided an opportunity to integrate the data analysis into iwi and hapū plans. Strategic planning aimed at managing significant environmental taonga at an iwi level will now include work around adaptation to climate change – in particular, how land use is influenced by climate change and how it impacts Lake Taupo. For example, protecting land around the lake from increased erosion must include the Wai Ora Programme so as to appropriately understand the wider impacts of these projects on the water itself.

Knowledge gained from the Wai Ora Programme will also be communicated to other related parties such as local iwi Trusts and Incorporations. Hapū can use groups like Tūwharetoa Māori Trust Board, FOMA and farming clusters to better educate their Māori economic authorities on the impacts of climate change and how to adapt.



The Wai Ora Programme workshop at Otukou marae.



Ngāti Tūwharetoa hapū members learning to use the SHMAK kits.

This information will feed into submissions on developments and monitoring programmes that may otherwise lack proper engagement with iwi data. Many council policies, for example, the Draft Flooding and Erosion Control Report and the EW Water Allocation do not currently have a strong iwi perspective on the

issue of climate change. The Wai Ora Programme invigorates this debate from Ngāti Tūwharetoa perspective and provides more capability for the hapū to access evidence to support their views and advocate from that platform.

### **THIS IS ONE IN A SERIES OF CASE STUDIES CALLED ADAPTING TO A CHANGING CLIMATE**

Published by Ministry of Agriculture and Forestry  
PO Box 2526, Wellington 6140.  
Freephone: 0800 008 333  
Web: [www.maf.govt.nz](http://www.maf.govt.nz)

#### **DISCLAIMER**

The Ministry of Agriculture and Forestry (MAF) does not accept any responsibility or liability for error of fact, omission, interpretation or opinion that may be present, nor for the consequences of any decisions based on this information. MAF does not necessarily endorse any expressed view, opinion or methodology.

### **FOR MORE INFORMATION**

- To find out more about the SHMAK kits visit [www.mfe.govt.nz](http://www.mfe.govt.nz) or [www.niwa.co.nz](http://www.niwa.co.nz)
- To find out more about the Cultural Health Index visit [www.mfe.govt.nz](http://www.mfe.govt.nz)
- Tūwharetoa Māori Trust Board [www.Tuwharetoa.co.nz](http://www.Tuwharetoa.co.nz)
- Federation of Māori Authorities [www.foma.co.nz](http://www.foma.co.nz)
- Te Puni Kokiri [www.tpk.govt.nz](http://www.tpk.govt.nz)
- Taupo District Council [www.taupodc.govt.nz](http://www.taupodc.govt.nz)
- Environment Waikato [www.ew.govt.nz](http://www.ew.govt.nz)
- Climate change [www.climatechange.govt.nz](http://www.climatechange.govt.nz)