

# WAIROUA

## WAIROUA RIVER - NORTHLAND

**CATCHMENT AREA** 75,000 ha total  
5,300 ha Okarika Pocket -  
focus area for Living Water

**Site focus: Reducing sediment loads into the Wairua River using solutions that both improve hydrological functioning and build ecological resilience of the catchment**

Map 1st Edition - OCTOBER 2021

### Waimā, Waitai, Waiora

The Waimā, Waitai, Waiora partnership includes eight partners (Living Water, Ngā Kaitiaki O Ngā Wai Māori, Te Roroa, Te Uri o Hau, Integrated Kaipara Harbour Management Group, Northland Regional Council, Reconnecting Northland and Sustainable Business Network).

The partnership's vision is "a healthy and productive catchment" and is delivering a range of projects to reduce sediment and improve water quality.

Te Kawa Waiora is the mātauranga Māori element of the project. The objective is to research areas of importance to iwi, hapū and whanau and develop meaningful knowledge that will be used to inform Farm Environment Plans of the Wairua catchment, creating tangible change.

**Progress:** Mana Enhancing Agreement for the partnership was signed in 2017. Total funding over five years (2017-2022) of \$2 million to deliver Farm Environment Plans and complete fencing and native planting projects on farm, support Te Kawa Waiora and develop stories to engage the community with the project.

### On Farm Biodiversity Assessments

Farm Environment Plan (FEP) templates are currently available from various councils, consultants, and through industry to help farmers identify environmental risks, record good management practices and document actions for improvement. Living Water identified that most of these templates omit or have limited scope for biodiversity assessments and related actions. This project piloted the effectiveness of completing specialist biodiversity assessments for farms as a way of increasing on-farm biodiversity protection and enhancement activities.

**Progress:** Each farm was provided a comprehensive report of their property with maps and photos and provided with financial and technical support to complete at least one of the highest priority actions identified in their assessment. The priority actions most often identified through the assessments included stock exclusion, control of pest plants and enhancement of fish passage. Better biodiversity assessment options have now been incorporated into the Fonterra FEP app.

### Ecosystem Services

Ecosystems services are the benefits gained from a healthy, natural environment, for example: a bee pollinating an avocado flower allows us to have avocado on toast for our breakfast.

The purpose of this project was see if landowners and stakeholders would be more receptive to enhancing native biodiversity on farm if we took an "Ecosystem Services Approach" to farming. We were particularly interested to see the ecosystems services values of wetlands.

**Progress:** The final report provided useful information on the potential role of detention bunds that subsequently resulted in a Living Water trial of two on-farm detention bunds. Unfortunately, the study was not able to quantify the value of the ecosystem services of wetlands. Further work is needed to really understand and quantify the value that ecosystem services provide.

### Low-cost wetland construction

On-farm wetlands can improve water quality (if placed in the correct areas) and can create habitat for native wildlife. In 2015 Living Water partnered with Northland Regional Council and Fish & Game to hold an open day, demonstrating the construction of three small on farm wetlands.

The Hikurangi floodplain is located at the top of the Kaipara Harbour and was once a huge wetland. Over time it has been drained and developed for agriculture with a network of flood pumps used to manage water levels. Hikurangi has a range of major wetland functional types, including marsh, swamp, fen and bog.

The Otakairangi and Wairua wetlands are still relatively intact and various fragments of wetland remain. The Wairua River flows through the Hikurangi floodplain and into the Kaipara Harbour, the largest enclosed harbour in the Southern hemisphere. The straightened rivers and drainage of surrounding wetlands has led to high levels of sediment in the harbour which is an extremely important nursery for juvenile fish and sharks. It is known as the 'food basket' of Ngāti Whātua.



**LIVING WATER** is a 10 year partnership between the Department of Conservation and Fonterra, focussed on finding game-changing and scalable solutions that will enable farming, freshwater and healthy ecosystems to thrive side by side.

We are working across five regions.



# LIVING WATER



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### Detention Bunds

During periods of high rainfall, soils quickly reach maximum moisture capacity, meaning there is limited ability for absorption and significant surface runoff occurs. Detention bunds temporarily pond water during rainfall and let it out slowly, reducing erosion and trapping sediment behind the bund. If placed in the right locations, detention bunds could reduce in stream sediment by slowing high water flows, allowing time for sediment to settle before water continues its way into the Wairua River.

**Progress:** Monitoring of two detention bunds constructed in 2018 is now complete. One of the bunds was found to be effective at retaining water during intense rainfall and significantly reducing sediment and nutrient inputs. The second bund was less effective as it was not sized correctly for the catchment area. We're now working on sharing the results with farmers, councils and land managers to help with the knowledge base for the design and installation of these types of solutions.

### Catchment Condition Survey

In 2018 we completed a baseline Catchment Condition Survey of all the properties within the Okarika Pocket, looking out for key water quality and ecological issues. This information showed us where to prioritise interventions. Based on tools testing, we can share results, lessons learnt and cost them for others to use. A major benefit of undertaking a catchment condition survey is that it's cost effective and easy to repeat to measure change over time. We will repeat the survey in 2022.

### Monitoring by Ngā Kaitiaki O Ngā Wai Māori

Ngā Kaitiaki O Ngā Wai Māori is a hapū collective that is very active in the Hikurangi Repo, working directly with landowners and agencies to support freshwater improvements, especially for Long-fin Tuna (eel) habitat and to support Tuna migration. They have been working with Living Water and NIWA over several years to develop monitoring skills and also sharing their mātauranga with Living Water.

**Progress:** Hapū members worked with DOC staff on a voluntary basis over two years to learn the methods of the Living Water monitoring within the Okarika Pocket. They took over the monthly water quality monitoring in January 2021. The contract also includes bi-annual fish surveys and cultural assessments using the newly developed WAIora app.

**Long-fin Tuna (eel)** at-risk/in-decline, due to loss of wetlands and modification of agricultural waterways.

### OKARIKA POCKET FOCUS AREA

Black Mudfish

### Okarika Pocket Transformation

The Okarika Pocket is home to a vast mosaic of peat-accumulating wetlands including swamps, fens and bogs that are fed by water from rainfall and groundwater. The pocket is surrounded by dairy farms with modified drains that flow through the wetland. Living Water is supporting a catchment approach through collaboration with farmers, community, iwi and stakeholders to identify, codesign and prioritise projects that improve freshwater outcomes.

**Progress:** 12 Farm Environment Plans completed. Over 5000 metres of fences and approximately 100,000 native plants planted. Hydrological research completed in 2019 that identified where significant sediment issues were. Along with the Catchment Condition Survey, this information helps us to target action within the pocket.

### Otakairangi Swamp Baseline Information Project

This 2.6km<sup>2</sup> swamp is a remnant of the rare fen wetland so it's important to protect it from drainage and nutrients from run-off. Living Water funded projects to find out where the threats were coming from and how to minimise them. Part of this has been increasing communications with landowners and mana whenua about the project.

**Progress:** Three reports have been completed including recommendations for a restoration plan. The area has been mapped allowing us to identify and control invasive weeds. The reports informed our water quality monitoring plan and has opened discussions with adjoining landowners.

Swamp koromiko

Heart-leaved kohukohu

### Wairua Oxbow Restoration

Oxbow "lakes" are visible on the Hikurangi floodplain, they are the remains of the natural meanders of the Wairua River that has been straightened over time. This was done in the 1970s as part of a government subsidised drainage scheme to reduce flooding by building stop banks and pump stations. These isolated oxbow lakes have impacted habitats and native flora and fauna. The project area was being grazed by cattle and invaded by animal and weed pests even though two threatened native plants, Hikurangi swamp koromiko and heart-leaved kohukohu, were growing there.

**Progress:** Living Water contributed funding to Whangarei District Council and worked with Ngā Kaitiaki O Ngā Wai Māori, Northland Fish and Game, and a neighbouring farmer to retire the 74ha project area for restoration which included creating wetlands, reconnecting the two oxbows and pest eradication.