

COMMUNITY SUSTAINABLE LAND MANAGEMENT FOR

# Waikato Lakes Catchments

JUNE 2011

This project is about you,  
your catchment and the lakes  
on your backdoor step.

Peat Lake Powwow, Lake Ngaroto.

THIS IS THE FINAL NEWSLETTER FOR THE COMMUNITY SUSTAINABLE MANAGEMENT FOR WAIKATO LAKES' CATCHMENTS PROJECT. INSIDE IS A SUMMARY OF THE THREE YEAR PROJECT – WHAT THE PROJECT WAS ABOUT, THE TYPES OF ACTIVITIES CARRIED OUT AND PUBLICATIONS PRODUCED. THE NZ LANDCARE TRUST REMAINS COMMITTED TO WORKING WITH WAIKATO FARMERS AND WIDER STAKEHOLDERS ON SUSTAINABLE LAND MANAGEMENT AND IMPROVING THE HEALTH OF OUR SHALLOW LAKES. READ ON TO FIND OUT ABOUT THE NEW THREE YEAR PROJECT STARTING THIS YEAR AT LAKE NGAROTO.

Project supporters:



# Project Round-Up

## COMMUNITY SUSTAINABLE MANAGEMENT FOR WAIKATO LAKES' CATCHMENTS

A starting point for this three year project was the knowledge that the Waikato region possesses a combination of unique natural resources and a strong farming industry. Balancing the two is not easy.

However change doesn't take place overnight, and change also requires investment both of time and money. What motivates people to make changes will always cover a spectrum; for some it may be compliance or to make savings, for others there may be a desire to protect waterways and wetland areas. To get a better handle on this, the starting point of the project was a series of face to face meetings with farmers, sharemilkers and farm managers in a range of shallow lakes catchments. A total of 37 people shared their views, described their on farm activities and understandings of sustainable land management with NZ Landcare staff.

We've used bi-annual newsletters to keep in touch with the wider community linked to the project. As well as farmers, there are agency representatives (WRC, DOC, and District Councils), Scientists, Iwi, community volunteers and reps from rural industries who receive the newsletter – a total of around 300 people.

Targeted workshops have been an important outcome; bringing everyone together to share knowledge on some of the topics identified by farmers as important. Workshop topics have included silt and drainage management, shallow lake ecology and restoration methods, farm and catchment planning. The workshops have sparked a lot of interest – attendance for all workshops combined has been around 280 people. Further presentations on water quality and sustainable land management have been given to Dairy NZ, schools, tertiary institutes, societies and district councils.

Newly developed silt trap showing first settling pond on main entry drain. Lake Kaituna.



A series of publications has evolved over the course of the project, gathering up existing information on topics around sustainable land management and showcasing farmers who have put the theory into practical action with great results. These have been very popular – more than 200 copies of the Guidelines for Landowners in Peat Lake Catchments and nearly 750 Best Management Practice Case study booklets have been snapped up primarily by farmers and agencies.

Farm and catchment planning have been a logical step in the development of the Community Sustainable Management of Waikato Lakes' Catchments project. Whole Farm Plans were carried out on two dairy farms which form the catchment for Lake Tunawhakaheke/E (Horsham Downs). A detailed economic analysis for one of the farms shows that milk production can be maintained with reducing stock numbers and modifying the amount of external inputs. This has meant reduced costs (less fertiliser and supplementary feed required) with the additional benefit of a lighter footprint on the land – clearly a win-win situation that could be repeated on many other farms throughout the region.

The Catchment Action Plan takes a broader view covering key areas such as

- protecting lake edges
- improving water quality in open drains
- enhancing biodiversity
- farm management

Both the Farm and Catchment Plans summarise a list of actions which are rated according to their priority level (low, medium, high). Costs of the actions are also included along with the best time of year for carrying out the action.

Ground truthing location of new fence around Lake Tunawhakaheke/E.



## COMMUNITY SUSTAINABLE MANAGEMENT FOR WAIKATO LAKES' CATCHMENTS

### PROJECT ACHIEVEMENTS

#### Publications:

- Best Management Practices booklet for enhancing water quality in the Waikato, with farmer case studies
- Best Management Practice Fact sheet on silt trap and drainage
- Case Study on Hayes' Dairy Farm and wetland restoration
- Guidelines for Landowners in Peat Lake Catchments
- Twice yearly newsletters

#### Practical research:

- Survey with major landowners adjacent to Lake Ngaroto
- Surveys with landowners in priority shallow lake catchments

#### Workshops and tours:

- Peat Lake Powwow (Lake Ngaroto)
- Practical Farm planning workshop at Lake Tunawhakaheke(E), Horhsam Downs
- Resource Managers Tour of Waikato Shallow Lakes
- Catchment water quality field day in Te Pahu (in conjunction with Te Pahu landcare and farm discussion groups)
- Silt trap and drainage management workshop, Lake Kaituna(B), Horhsam Downs
- Lake information day at Lake Serpentine (Waipa)

#### Farm and catchment plans:

- Catchment Action Plan for Lake Tunawhakaheke(E)
- Whole Farm Plans for two farms in the Lake Tunawhakaheke(E) catchment



Discussions at Peat lake Powwow, Lake Ngaroto.

## Focus on Ngaroto

### New Project: Community Action Plan for Lake Ngaroto

The NZ Landcare Trust has recently gained funding from the Community Environment Fund through MfE to carry out a three year project around Lake Ngaroto. The overall purpose of this project is to improve the overall health of the catchment, and ultimately slow the decline of lake water quality. The project will be coordinated by Melinda Dresser and Nardene Berry.

Building constructive dialogues through face to face meetings with farmers around developing Whole Farm Plans is the starting point of the project.

The second part of the project focuses on developing a community-led Catchment Action Plan similar to the project carried out on Lake Tunawhakaheke but on a much larger scale. The Catchment Action Plan will involve District and Regional Councils, recreational users, iwi and other major stakeholders and will support the wetland restoration and enhancement efforts.

### The Lake

Ngaroto is one of the Waikato's busiest lakes, used by picnickers, dog walkers, joggers, yachtees, kayakers, bird watchers and others.

### Lake Stats

Lake surface area: 108 ha. Maximum depth: 4m, average depth <2m. The lake is hypertrophic meaning that nutrient, microscopic algae (phytoplankton) and suspended sediment levels are very high, and water clarity is low.

Waipa District Council led a major restoration project in 1995, fencing and planting a buffer around the lake. Silt traps have been constructed to slow the rate of unwanted nutrients and silt entering the lake, making it shallower and more turbid as well as encouraging nuisance plant growth. A boardwalk was built by Te Awamutu Kiwanis Club creating access to and around the lake.

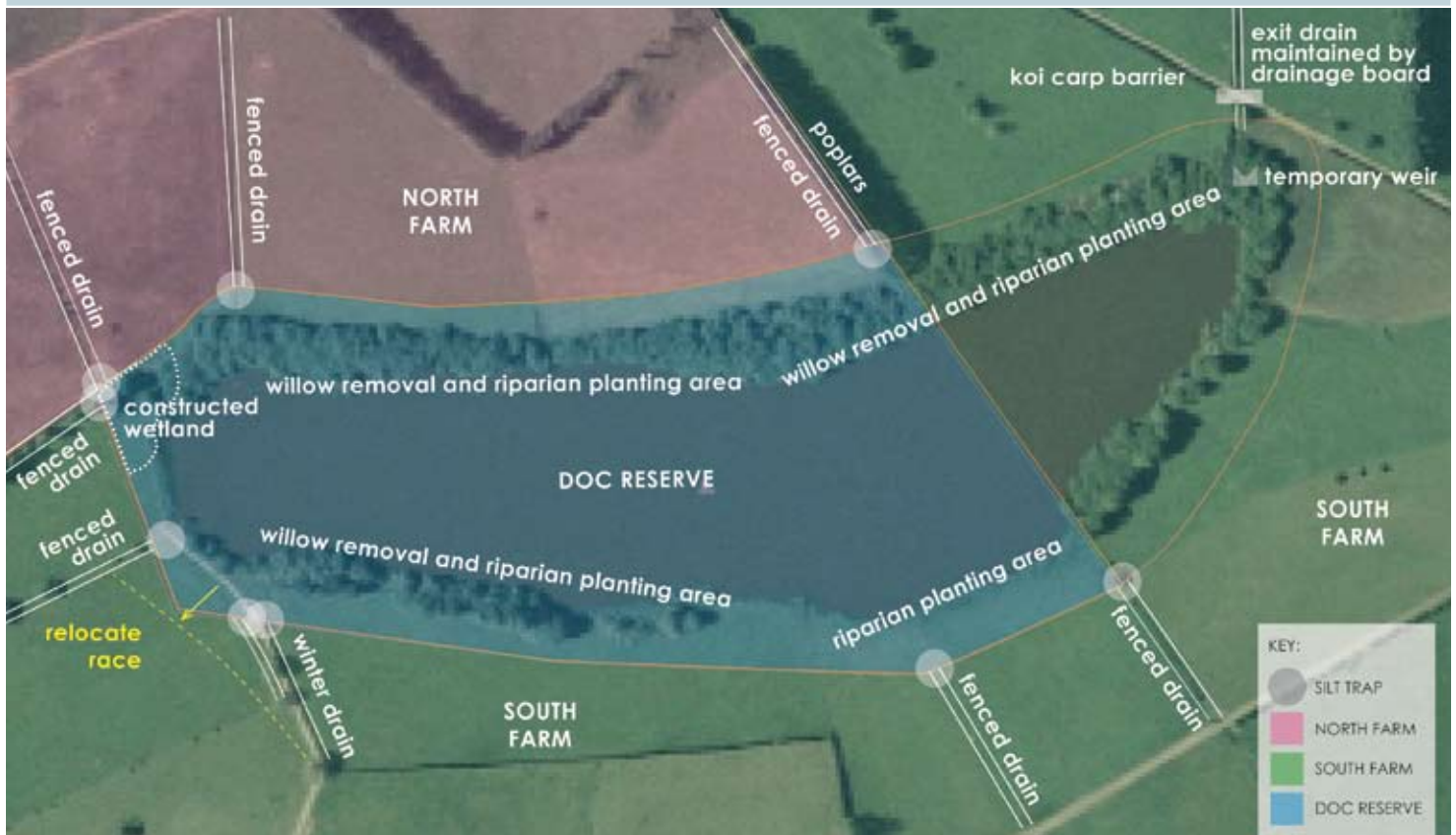
The lake has a significant catchment area (1846ha) which includes the smaller Lake Ngorotoiti as well as a portion of Ohaupo township.



# Planning for Action

## ON THE FARM AND IN THE CATCHMENT

This diagram shows some key actions included in a typical Whole Farm Plan and Catchment Action Plan.



### LAKE EDGE PROTECTION

Lake level

- Set with WRC and DOC – use existing weir until then

Install fence and move race

- Build new five wire fence approx 20m from lake edge
- Ensure vehicle access for weed control and planting
- Relocate race away from lake edge

Willow removal

- Shred dead willows, use excavator mulching head
- Spray willow regrowth using handgun or boom if poss
- Confirm funding and location (along cleared lake front)

### BIODIVERSITY ENHANCEMENT

Restoration planting

- Planting of natives in 20m riparian zone at lake edge
- Creates a buffer between pasture and lake water
- Plant low growing coprosmas, flax and cabbage trees
- Plant forest trees in clumps (kahikatea, puketea)
- Fence and plant wet areas/ponds to act as filters

Constructed wetland

- Install a constructed wetland with sediment trap

### IMPROVE WATER QUALITY IN OPEN DRAINS

- Install sediment traps in drains entering the lake
- Size relates to drain width, traps need to be 1 to 1.5 m wide, 3 to 4m long

### FARM MANAGEMENT

Soil

- Avoid peat shrinkage by limiting cultivation and drainage
- Establish crops using no or reduced tillage
- Avoid heavy stock pressure and pugging of wet soils
- Continue to make the best use of winter feed pad for supplementary feeding and standing cows off

Nutrients

- Maintain the current restricted N fertiliser use policy including use of Smart N
- Consider lower overall stocking rate and reduced importation of high protein supplements
- Monitor soils for Cadmium as part of good risk management for the future

Effluent

- Balance imported feed, fertiliser and effluent application to achieve a maximum of 150kgN/ha/yr
- Increase effluent application area and storage capacity



Alison Dewes leads a discussion on Whole Farm Plans.

## Recent Workshops

### PEAT LAKE POWWOW

3rd May 2011, Lake Ngaroto Yacht Club

The aim of the Peat Lake Powwow at the Lake Ngaroto Boat Club was to share up to date information about the lake including research, current management and how best to engage the community in a catchment-wide project.

Dr Deniz Özkundakci (University of Waikato) gave a presentation on improving water quality using case studies from other Waikato shallow lakes.

Tony Roxburgh (Waipa District Council) spoke about the restoration of Lake Ngaroto. He detailed key achievements since the project began in 1995 with land retirement, fencing and riparian planting with natives. A weir was installed and lake levels set.

Stuart Kneebone (Councillor for the Waipa – King Country Constituency for Waikato Regional Council) spoke from the perspective of the new Council.

Information on two other catchment scale initiatives was collectively given by Project Coordinators from the NZ Landcare Trust using examples from a large scale river catchment in the South Island – the Aorere, and a local peat lake with a small catchment – Lake Tunawhakaheke/Lake E.

### PRACTICAL FARM PLANNING

22nd February 2011, Heritage Valley Farms, Horsham Downs

This workshop provided an overview of the Whole Farm Planning (WFP) process and how WFPs link with the wider catchment.

The history and development of Whole Farm Planning was presented by Bala Tikkisetty, from Waikato Regional Council. Alison Dewes then gave a presentation and ran a discussion on Whole Farm Plans (WFPs). They are more comprehensive than Nutrient Budgets or Nutrient Management Plans.

Alison carried out a WFP on Heritage Valley Farms. She made the point that it is important to get a clear picture of what success means to the farmer and their family in order to build a plan around what they want and feel is achievable. WFPs are a comprehensive look at the whole farm system, based on a thorough look at how a farm is operating, from an economic, environmental and physical performance perspective.

Richard Henderson of Heritage Valley Farms provided background and the reasons why they decided to start work to improve the condition of the lake. This, in turn, led to a WFP being carried out. He spoke about his experience of having a WFP done and the amount of work involved. A key driver for him was “looking over the fence at the neighbouring Hayes’ farm, seeing work going on Lake Kaituna on their property and finding out more about what was involved.” What he thought was just going to be a two to three week project for restoring Lake E, he now realises will take a lot longer – around 15 years!

John-Paul Praat (PA Handford & Associates) then presented on the Catchment Action Plan which had been drawn up in order to improve the water quality of Lake Tunawhakaheke/Lake E. (See example on previous page)

Copies of presentations from both workshops and detailed summaries can be found on our website: [www.landcare.org.nz](http://www.landcare.org.nz)



# Research

## THE BENEFITS OF LAKE RESTORATION AND CONSTRUCTED WETLANDS

Rebecca S. Eivers, Postgraduate Student, University of Waikato

Waikato peat lakes are under increasing pressure from elevated sediment and nutrient loads associated with intensification of agriculture. To support peat lake restoration end-of-drain treatment systems (such as constructed wetlands and silt traps) have been implemented as management tools to reduce sediment and nutrient inputs. While designed to attenuate pollutants, treatment systems also provide habitat for aquatic communities.

As part of my PhD research I am studying 26 treatment systems in six shallow peat lake catchments in the Waikato. Preliminary results indicate sediment and nutrient loads frequently exceed treatment capacity based on treatment system volume to sub-catchment size ratios. However, total suspended solids, total nitrogen and total phosphorus concentrations are reduced in some systems despite suboptimal sizes.

Aquatic communities vary across sites and include three native fish species (short fin eel, common bully and the regionally significant black mudfish), three exotic (pest fish) fish species (mosquito fish, goldfish, and koi carp), as well as tadpoles of the Green and Golden Bell frog.

An unexpectedly diverse range of aquatic insects and zooplankton species have been identified across all study sites.

Further analyses aim to determine important environmental drivers shaping the aquatic communities within these systems as well as possible methods of enhancing nutrient and sediment reduction.

CONSTRUCTED WETLANDS attempt to mimic natural wetlands' ability to store, assimilate and transform contaminants lost from the land before they reach waterways.

SILT TRAPS are often placed at the end of drains, with a deep pond area which slows water flow to allow silt and sand to settle out.

NOTE: some end-of-drain treatment systems incorporate various combinations of constructed wetlands and silt trap designs.

Silt trap Lake Kainui.

## RETAINING EXCESS NUTRIENTS ON FARMS

Peter Dunn, Agricultural and Erosion Solutions

Trials for retaining excess nutrients on farms at Telford Rural Polytechnic have recently started as part of the Pastoral 21 Programme, in association with AgResearch. The aim is to capture nutrients before they leave the farm and enter waterways using a cellular erosion solution, Soil Cells. These are a clip together plastic stripping which makes terraced cells into which vegetation is planted and a filtering product called Ultra Phos-Filter is used. For more information visit <http://www.soilcells.com/Trial.html>

## CARE GROUPS IN THE WAIKATO

Helen Ritchie

A review of Care Groups was recently conducted for the Waikato Regional Council and provides a snapshot of some of the 42 groups in the Waikato Region, their aims and achievements to date. The kinds of support groups receive, the challenges they face and the value they provide is also discussed. From Eyesore to Asset – Care Groups Review is available from Bala Tikkisetty for those interested. Email [bala.tikkisetty@waikatoregion.govt.nz](mailto:bala.tikkisetty@waikatoregion.govt.nz) or phone 0800 800 401.

## SAVE THE DATE

NZ Landcare Trust National Conference 2012

"Landcare In Action" 29 February –1 March 2012

<http://www.landcare.org.nz/conference>

### Visit our Website....

The Landcare Trust website ([www.landcare.org.nz](http://www.landcare.org.nz)) also houses the project home page with links to newsletters, workshop summaries and publications.

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