

Protecting Lake Taupo

A Long Term Strategic Partnership

Foreword

Lake Taupo needs our help. The health of the lake is declining. We need to act now to ensure that it remains a national treasure known for its pristine water quality.

Environment Waikato is working in partnership with Taupo District Council, Ngāti Tūwharetoa and Central Government to find solutions that protect Lake Taupo and maintain the local economy and community. Input from these partners and other stakeholders in the Lake Taupo catchment has contributed to developing this Strategy. This Strategy represents a framework of ideas that will be used to engage the wider community in developing more specific solutions.

“It is vital that we find fair and equitable solutions to this difficult issue, sharing the burden for the future of a Lake which is precious to everyone in our Region and New Zealand. We must find solutions that will sustain both the Lake’s health and the viability of the surrounding community.”

“The benefits of taking action and ensuring a sustainable future for the Taupo catchment far outweigh the costs of doing nothing and facing an irreversible decline in Lake water quality.”

Neil Clarke, Chairman, Environment Waikato

“Taupo District Council endorses the initiative Environment Waikato has taken in preparing this Strategy. I would strongly urge everyone who treasures Lake Taupo to read this document and provide feedback to us to ensure that protection measures that are eventually put in place have the support and backing of the people who live and holiday around Lake Taupo.”

Clayton Stent, Mayor, Taupo District Council

“The government recognises it has an important role to play in the sustainable development of the Lake Taupo catchment. Partnerships such as this are the key to preserving our society and our environment.”

“Reducing the amount of nitrogen entering the lake can only be achieved by people changing what they do on their land. We will be working with local government, iwi authorities and others to agree what needs to be done to achieve the nitrogen reduction target.”

Hon. Marian Hobbs, Minister for the Environment

Table of contents

Introduction	3
A Partnership for Innovation	4
The Importance of Lake Taupo	5
The Threat to Lake Taupo	6
A Call to Action - Reducing Nitrogen Losses	8
Changes to Reduce Nitrogen	9
Barriers to Change	11
A Partnership Strategy - Opportunities for Innovation	13
Strategies for Success	19
Sharing the Cost of Action	21
Opportunities for Public Input	22
Summary	24

Introduction

The health of Lake Taupo is under threat. This document suggests a strategy for the Taupo community to build a more sustainable future. It states an intention for partnership in the catchment and sets the scene for future negotiation and policy development.

Lake Taupo is in trouble. The jewel of the North Island is becoming tarnished.

Slowly but surely, the health of this huge, deep Lake is being compromised as a result of human activity.

The choice we face is a stark one: either the Lake's inestimable value to New Zealand and the world will gradually diminish, or we must find new ways of living in the catchment that will sustain both the health of the Lake, and the viability of the surrounding community.

This document proposes a Strategy for the Taupo community to build a more sustainable future, with the support of local, Regional and Central Government. It is a statement of intent and provides a starting point for all partners. It sets out the changes that are needed to protect the Lake and suggests options for achieving them. Together we will continue to develop these ideas to best meet the needs of everyone affected.

Changes to protect the Lake will come at an initial cost to the local, Regional and national communities. However, the benefits of taking action toward a sustainable future for the Taupo catchment far outweigh the costs of doing nothing and facing an irreversible decline in the Lake's water quality.

Over the coming months, discussions about how to share the cost of change to protect the Lake will continue between Environment Waikato, Taupo District Council, Tuwharetoa and Central Government. Your feedback will help guide those discussions.



Photograph by Marcel Tromp / Destination Lake Taupo.

A Partnership for Innovation

Protecting Lake Taupo requires us to work together. It requires us to find new ways of doing things and new things to do, if we want to continue living and working alongside this beautiful but sensitive Lake without compromising its health. This Strategy suggests some options and opportunities. The door is open for future innovation. Protecting the water quality of Lake Taupo is a part of a wider sustainability strategy for the catchment.



The only way we can protect Lake Taupo is through a 'Partnership of Innovation'. It requires not only finding new ways of doing things in the Lake catchment, but also finding new things to do. This Strategy is the result of several years of investigation and consultation which has involved local and Central Government agencies, tribal authorities, community and sector interest groups and scientific and research organisations. The options and recommendations outlined require a fundamental shift in the way we as a society think about our environment, and how we interact socially and economically.

This Strategy breaks new ground. It asks some hard questions. It also presents some exciting options and opportunities around how we use the land in the Lake Taupo catchment area as a nation and as a community. It identifies new ways of doing things and new things to do, as well as the economic and social implications of each. There is no single answer. Environment Waikato, Taupo District Council and Central Government propose that taxpayers and ratepayers from national and local communities fund the estimated cost of at least \$83.5 million to assist change in the Taupo catchment. There will also be a significant cost to private landowners in the form of lost opportunity as a result of proposed nitrogen restrictions.

The challenge is there for us to work together in new and different ways to protect our natural environment for future generations. We can all contribute to the protection of Lake Taupo through our relationship with each other, with the land and with the environment. This Strategy seeks your involvement and input.

The Importance of Lake Taupo

Lake Taupo is internationally renowned for its deep clear water and valuable trout fishery. It is a taonga to Tuwharetoa, who are the kaitiaki. The Lake is the heart of the local economy, attracting increasing numbers of visitors.

Lake Taupo is one of the great lakes of New Zealand. It is known for its dramatic vistas, deep clear waters, superb trout and volcanic heritage.

Tuwharetoa is the iwi with mana whenua in the Lake Taupo catchment. Generations of Tuwharetoa have lived within the Taupo rohe, and as a result, have developed tikanga and kawa that reflect a special and unique relationship with the environment. Taupo nui-a-Tia, 'the great cloak of Tia,' is their taonga. Tuwharetoa are Treaty partners with the Crown and hold legal title to the bed of the Lake and its tributaries. Accordingly, Tuwharetoa are the kaitiaki of the Lake.

The 'Great Lake' is the focus for a booming retirement population and attracts steadily increasing visitor numbers. It is at the heart of the prosperous local economy, based largely on tourism and forestry – the Gross Domestic Product for the Taupo District in 1998 was \$750 million.

Lake Taupo and its tributaries support New Zealand's important trout fishery, generating approximately \$70 million of economic activity each year. This fishery is regarded as a taonga by Tuwharetoa and requires cool, clear water in order to thrive.

A 1998 community survey identified 14 values about the Lake that are most important to the Taupo community. Tuwharetoa Maori Trust Board and Environment Waikato are working together to protect these values for the future as part of the 2020 Taupo-nui-a-Tia project. This Strategy focuses on protecting some of those values – most importantly, clear water in the Lake, high water quality feeding into the Lake and good trout fishing.



The Threat to Lake Taupo

Scientific evidence shows the health of Lake Taupo is declining as a result of increased nitrogen flowing from surrounding rural and urban land. Nitrogen feeds the growth of tiny algae. More algae reduces water clarity. If left unchecked, these changes could be difficult to reverse.

Scientific evidence gathered over the past 30 years shows conclusively that the health of the Lake is declining. Development of the surrounding rural and urban land has increased the amount of nitrogen entering the Lake through groundwater and rivers.

We have seen an increase in chlorophyll *a* (an indicator of the amount of tiny, free-floating algae) in the Lake's surface waters between 1994 and 2003. There have also been increases in the amount of dissolved nitrogen in the bottom waters of the Lake just prior to winter when the Lake's bottom waters mix with its surface.

Nitrogen is a staple food for plant life, promoting healthy, vigorous growth. The increasing amounts of nitrogen in the Lake are feeding the growth of tiny free-floating algae in the water. More algae in the water reduces the water's clarity. We are also seeing more nutrient-dependent weeds and slimes growing in sheltered waters near lakeshore settlements. Potentially toxic algae have, for the first time in 2001, and then again in Autumn 2003, bloomed unexpectedly in the Lake, resulting in health warnings being issued for Whakaipo Bay and Omori.

All these factors are unmistakable signs that the Lake's health is slowly deteriorating.

The communities surrounding the Lake are becoming increasingly concerned. Residents now report their own evidence of declining lake health over the last few decades. Scientific studies and observations confirm these changes.

Because Lake Taupo is a complex and sensitive ecosystem, the changes we are seeing now are cause for concern. Overseas experience shows that in similar deep, low nutrient lakes, an increasing load of nutrients almost always results in increased algal growth and reduced water clarity. If left unchecked in Lake Taupo, this trend will become increasingly difficult to reverse.

The sustainability of the Lake's internationally recognised trout fishery depends on clean, clear water. Any increase in algae may support more smelt in the Lake, although benefits to trout will depend on where these smelt are. A significant reduction in water quality will affect the ability of trout to feed, ultimately reducing their growth and numbers, in turn affecting recreation and the local economy.



The Cause of the Problem

Historically, the Lake had extremely low levels of nitrogen, which has limited the growth of nuisance plants in its waters. Before land around the Lake was developed, only very low concentrations of nitrogen entered the Lake from rain and areas of bush. Today, groundwater draining from under pine forests and water diverted into the Lake from the Tongaririo Power Development contains low concentrations of nitrogen similar to bush¹. These levels cannot be reduced further.

Over the last 50 years, the change to more intensive land uses around the Lake has increased the amount of nitrogen entering the Lake. Much has been done by landowners over the years to protect the Lake from sediment, through extensive stream fencing, tree planting and land retirement under the Taupo Catchment Control Scheme. Landowners have also planted forestry in the eastern catchment and created lakeshore reserves, which have reduced runoff reaching the Lake. Unfortunately, these efforts haven't been enough to counter increases in nitrogen leaching from agricultural land.

The Lake responds very slowly to the many biophysical processes which control the movement of nitrogen from the land to the Lake. Because of the time lag between what happens on the land and its effect on the Lake, it is only in recent years that the impact of the large-scale land conversion from the 1950s has been seen in the Lake.

In addition to the growth in agriculture in the catchment, urban settlements close to the Lake have contributed to an increase in nitrogen at the Lake's edge. This in turn has encouraged growth of certain weed and nuisance slimes in shallow water. Older wastewater treatment systems were not designed for nutrient removal and studies show nitrogen leaching from older lakeside septic tanks into the Lake. More modern treatment systems remove much more nitrogen although some leaching is still evident in places.



¹ The average concentration of total nitrogen in water in the Tokaanu tailrace in 2002 was 0.08 mg/m⁻³. The Tongaririo River had an average total nitrogen measurement of 0.095 mg/m⁻³ (measured by NIWA), which is slightly higher than the tailrace. All of the other streams flowing into the Lake have average total N concentrations ranging from 0.9 to 0.96 mg/m⁻³ (measured by EW) – higher than the tailrace.

A Call to Action - Reducing Nitrogen Losses

Protecting Lake Taupo is extremely important to the Taupo community. But it is not just a local issue – the Lake is a national treasure and responsibility for action should be shared. The best evidence estimates we need to reduce manageable nitrogen loads to the Lake by 20 percent to maintain water quality. This will mean changes to the way rural and urban land is managed.



Photograph by Marcel Tromp / Destination Lake Taupo.

Protecting Lake Taupo is extremely important to people in the Taupo and the wider Regional community. In a survey², 90 percent of the urban community and 91 percent of the rural community said that preserving the water quality of the Lake is the most important issue for Taupo. Furthermore, 78 percent said that Lake protection should occur ahead of development.

Water quality is consistently identified as the most important environmental priority facing the Waikato Region. A number of the agencies responsible for care of the Lake have developed policy objectives that broadly support taking action to protect the Lake. For example, the Taupo District Economic Development Strategy promotes investigation into low-nitrogen land uses for the catchment.

The Taupo community has given a clear message that they want the water quality of the Lake to be protected. They also agree that the responsibility for action is a shared one. Protecting Lake Taupo is not just a local issue; the Lake is a treasure of national significance that requires a concerted approach by all stakeholders.

Because land and Lake are so intricately linked, we must look to the land, and human activities on the land, for the necessary changes to protect the Lake. There are significant nitrogen sources from human activities that can be managed and reduced.

The evidence available estimates that the manageable nitrogen loads³ to the Lake must be reduced by 20 percent to maintain water quality at its current level. This means that we have to change the way that rural and urban land is managed. Even if we take action right now, the Lake's water quality will probably continue to worsen before it improves. This is because of the time it takes for the effects of activities on the land to reach the Lake.

² Stewart, C., Johnston, D., Rosen, M. and Boyce, W. (2000). Public involvement in environmental management of Lake Taupo: preliminary results of the 1999 survey. *Institute of Geological & Nuclear Sciences science report 2000/7*.

³ Manageable nitrogen is the nitrogen entering the Lake over and above natural sources. It comes from urban sewage discharges and leaching from pastoral farms and can be reduced using management or land use change.

Changes to Reduce Nitrogen

Land use changes needed to reduce manageable nitrogen entering the Lake include upgrading urban sewerage systems, changing farming practices in the catchment and converting some grazed pastoral land to low nitrogen land uses. These changes will come at a cost and could require lifestyle changes for many people.

The general land use changes needed to achieve a 20 percent reduction in the manageable nitrogen load to the Lake include:

- upgrades to sewerage systems around the Lake
- changes to farming practices in the catchment
- conversion of some grazed pastoral land to alternative low nitrogen land uses.

Reducing the amount of nitrogen entering the Lake will be difficult. It will inevitably mean some changes to lifestyles and farming systems for many people who live and work in the catchment.

Upgrades to Sewerage Systems

1 Higher environmental standards for residential development

New residential development could be required to achieve higher environmental standards than previously required under Regional Council rules. Although not mandatory yet, some new developments already use new technologies, which remove nitrogen in the septic tank and use a shallow drip system just under the ground surface where plants take up remaining nutrients.

2 Upgrading community sewage schemes

Taupo District Council already expects to spend at least \$13 million on sewage treatment upgrades for several urban areas around the Lake. These upgrades will increase the efficiency of nutrient treatment in community sewage schemes and use land treatment to reduce the amount of nitrogen reaching the Lake. The proposed work builds on that started in the early 1980s to reticulate sewerage, and most recently involves the planned upgrade of Turangi Wastewater Treatment Plant over the coming summer.

There are other pollutants from urban sources such as stormwater that are having a lesser impact on the Lake. Ways to manage these pollutants will be considered in the 2020 Taupo-nui-a-Tia action plan for the catchment.



Changes in Farm Management and Rural Land Use

To achieve a reduction of 20 percent in the amount of nitrogen entering the Lake from rural sources, significant changes in land use will be needed.

There are two ways to reduce nitrogen from rural land:

- modify farm management systems and practices so that less nitrogen is leached from existing sheep, beef, deer and dairying land uses
- increase the amount of land use with low nitrogen leaching losses (such as forestry, silage crops or new horticultural crops).

1 Changes in farm management

We need to explore and develop cost-effective options to modify farm management systems and practices in ways that reduce the amount of nitrogen leached from the land. Options could include:

- Over-wintering stock outside the catchment or using a feedpad and capturing and storing effluent for disposal over the whole farm.
- Changing feed regimes to reduce the amount of nitrogen excreted by stock.
- Changing the mix of stock in farming systems to reduce the overall amount of nitrogen leached from a property.

2 Changes in rural land use

We also need to find alternative land uses that yield low levels of nitrogen while returning profits comparable to traditional farming returns. There are many different opportunities to be investigated, both for traditional agricultural land uses and new ventures. Currently, alternative agricultural land uses with good returns for landowners include those with:

- good payouts after a long period of investment, such as forestry, and
- potentially good returns but uncertainty about investment costs and future market demand, such as horticultural crops and forage export crops suitable for better land.

At present, forestry and tourism have the greatest input into the Taupo District Gross Domestic Product. They also contribute significantly to employment in the District. Forestry offers excellent potential for those landowners who are able to bear the upfront development costs and the 30 year wait for returns. One of the actions in the Taupo District Economic Development Strategy is to look at opportunities to capture more of the downstream added value benefits from forestry by establishing wood processing industries.

For land near the Lake there may be opportunities to take advantage of growth in tourism and recreation. The Taupo District Economic Development Strategy identifies several business opportunities based on national and international tourism and recreation to complement existing operations.

Barriers to Change

Changes to protect the Lake will require significant investment on behalf of local people. Upgrading sewerage systems is expensive. Changes to farming practices and conversion of pastoral land will affect people's businesses. Maori landowners face particular challenges as tangata whenua.



The suggested land use and management changes will not come without significant challenges and cost.

1 Increased costs for sewage disposal

High performance 'nutrient stripping' septic tank systems are approximately double the cost of standard systems. For people wanting to build near the Lake, this will add to the total cost of their property. For people with lakeshore properties who may have to upgrade old or failing systems over time, there will be upgrade costs which will depend on the ease of retrofitting the septic tank and the type of land treatment system.

2 Nitrogen restrictions make some pastoral farming systems uneconomic

Farm income will be reduced over time if farms are 'locked in' to current levels of farm intensity or forestry land use, and new, low-nitrogen farm systems have not been developed.

Income will reduce further if farms have to reduce current nitrogen losses by 'downsizing' current operations, which may require, for example, reducing current stocking rates. In some cases, income would be reduced to levels where less developed and smaller farms run at a loss. Farm losses can be in the form of loss of capital value of a property and loss of future income. Farmers in the catchment estimate the losses from nitrogen restrictions to be upwards of \$160 million.⁴

3 Some rural land cannot be sold

Not all landowners are able to sell and move their business outside the catchment. Tuwharetoa economic authorities are the largest landholders in the catchment. The Te Ture Whenua Maori Land Act creates significant barriers to selling Maori land, cutting off the option of selling and moving capital outside the catchment. Selling land may not be appropriate for Tuwharetoa as kaitiaki of the Lake and its catchment.

⁴ Thomas, A., Bell, B. and McRae, A. (2002). Assessing the loss to farmers associated with Nitrogen Output Restrictions in the Lake Taupo catchment. Nimmo-Bell and Company Limited, Wellington.

4 Risk with new ventures

Adapting to new ways of farming and having to identify and use business opportunities for low nitrogen land uses brings with it the demand for new learning, access to capital for investment and risk taking.

Before the possibility of nitrogen restrictions, the intended business development pathway for many catchment farmers was to increase production by intensifying traditional grazing systems. Many of these farms have been operating at lower intensities and profitability compared with the rest of the Waikato Region. Many farms also have large areas of streamside land already retired from production, helping to protect the Lake from sediment.

The restrictions on the sale of Maori land under the Te Ture Whenua Maori Land Act makes accessing capital from banks particularly difficult for economic authorities.

5 Treaty of Waitangi rights will be affected

As the Treaty of Waitangi has come to be viewed over time as defining the relationship between Maori and the Crown, the focus has been more on the Treaty principles guiding the action of partners, rather than the letter of the Treaty itself.

The Treaty principle of partnership encompasses ideas about the balance between the Crown's right to govern and Maori rights to collective authority, often described as rangatiratanga or self determination over matters that rightly belong to iwi and hapu. Self determination includes Maori political, social, cultural and economic development.

The forestry and farming activities of economic authorities are an important source of income and employment for Tuwharetoa. They are also vital to the economic and social well-being of the iwi. If land use options are severely curtailed, economic authorities will see not only a loss of income from their land, but also a restriction on rights given in the Treaty of Waitangi. For example, Maori owners of forestry and undeveloped land who cannot sell their land could be restricted to those land uses in perpetuity.

Summary of challenges

The changes suggested to protect the Lake will require significant investment on behalf of local people. Upgrading sewerage systems is expensive. Nitrogen restrictions, changes to farming practices and conversion of pastoral land will affect people's businesses and livelihoods. For rural landowners, existing farming and forestry businesses will be affected, in terms of lost income and possibly capital value, as well removing future development options still open to others outside the catchment.

Nitrogen restrictions imposed on people without any assistance to find new and viable land uses will result in adversity, high compliance costs and an uncertain future for the Lake and landowners who live around it.

A Partnership Strategy - Opportunities for Innovation

The changes required to reduce nitrogen flows by 20 percent have far reaching implications for the people and economy of the Taupo District and beyond. We need to deal with these challenges in innovative ways if we are to achieve a sustainable future for the Lake and its communities. The opportunities for innovative Lake protection include:

- leadership by local and Central Government to achieve the 20 percent reduction required
- research to extend the options and flexibility for land use in the catchment
- linking in with Central Government's greenhouse gas and biodiversity initiatives
- building stronger partnerships between Tuwharetoa and local and Central Government to better address the needs of tangata whenua
- developing low impact recreation and tourism
- new environmental rules for the catchment.

This Strategy suggests different opportunities for achieving change to protect Lake Taupo. We could simply impose rules that reduce the amount of nitrogen lost from rural land, residential development and sewage treatment. However this would mean that the farming community in particular would face significant economic and social costs. Under current farming practices, nitrogen reduction rules would force pastoral farmers to reduce stock numbers to uneconomic levels.

To spread the burden of change more evenly across the community, we propose a more flexible, constructive and co-operative approach.

Opportunities for the transition to more sustainable land use

The partners in this Strategy have identified a range of opportunities to reduce nitrogen loads to the Lake:

- 1 Establishing a joint public fund from local and regional rates and Government taxes to help convert pastoral land to low-nitrogen land uses in the most cost-effective way. The joint fund would be set up to ensure that 20 percent of the nitrogen from pastoral land is permanently removed. This could be achieved through land purchase, covenanting, joint ventures and land swaps. For example, some of the private land in the catchment could be purchased from willing sellers. The land could then be:
 - changed to a low-nitrogen land use, then on-sold with nitrogen restrictions
 - retained as a public forestry investment
 - retained for public use, recreation and biodiversity.
- 2 Assisting in research and development of low-nitrogen farming practices, and providing information and advisory services for landowners.
- 3 Building strong partnerships between Tuwharetoa and local and Central Government.
- 4 Exploring other low-nitrogen land use options, such as native forest, to meet biodiversity goals, and low-impact tourism and recreation facilities.
- 5 Extending the timeframe for changes over a 15 year period, so that they happen at a more manageable pace for the community but not at the expense of the Lake.
- 6 Using Regional Plan rules to restrict but not reduce current levels of nitrogen being lost from land in the catchment.
- 7 Upgrading community sewage systems and requiring landowners with septic tanks to improve maintenance of their older systems.

This is a combination of measures that identify opportunities to reduce nitrogen and underpin them with regulation.



1 Leadership by Central and Local Government - Joint Public Fund

The changes to agricultural systems needed to protect the Lake are far-reaching. It is critical that actions taken to reduce nitrogen entering the Lake do not displace or permanently disadvantage local people. Local and Central Government plan to take a lead role in the transition to more sustainable land uses in the catchment, by using public money to facilitate land use change and provide opportunities for landowners to continue profitable businesses. This approach is consistent with the Government's Sustainable Development Programme of Action (January 2003), which states an intent to work in partnership with all stakeholders to protect nationally significant at-risk water bodies.

Public investment and leadership could provide the benefits of quick gains, certainty in achieving the nitrogen reduction, and long-term community investment in the land. Local and Central Government agencies could achieve most of the 20 percent nitrogen reduction on rural land with no direct cost to existing landowners.

This could be done initially by establishing a Taupo Land Trust to distribute public money to assist with changes to low nitrogen land uses. Land could be purchased or leased by the Trust, with the proviso that financial assistance is available subject to permanent nitrogen covenants being placed on the land. The end use of the covenanted land would be any business opportunities that generate very low nitrogen leaching, such as planted forest.

To support the publicly funded 20 percent nitrogen reduction and ensure nitrogen leaching does not increase in other parts of the catchment, a catchment-wide nitrogen cap⁵ would be implemented using rules in the Waikato Regional Plan. These rules would require that existing land uses do not increase their nitrogen leaching above current levels. New and existing businesses would have flexibility to operate, provided that nitrogen leaching from manageable sources does not increase.

⁵ A nitrogen cap effectively gives people the right to continue with their current nitrogen outputs.





Public cost of land use change

To achieve the nitrogen reduction target of 20 percent, approximately 13,500 hectares of land would have to be converted from pastoral land uses to forestry, or to an equivalent very low nitrogen leaching land use. A conservative estimate shows that, if grazed land is converted to a very low nitrogen land use, such as forestry, the capital value of that land will reduce considerably. In order to guarantee the permanent land use change, the joint fund could support the costs of land conversion by purchase or covenanting. There are also costs to establish and run a joint fund, and to monitor rules to ensure compliance with sustainable land uses.

This approach has a significant net public cost of at least \$83.5 million to local and Central Government and their communities, which would be spread over a number of years. Some of this cost may be recovered over time by resale of higher valued lakeshore land or through long-term investment in land uses such as forestry. There will also be a significant cost to private landowners in the form of lost opportunity from nitrogen restrictions.

Using the Fund to Achieve Permanent Nitrogen Reduction on Farmed Land

A joint public fund from local and Regional rates and Government taxes will be established to help convert pastoral land to low-nitrogen land uses in the most cost-effective way. The joint fund would be set up to ensure that 20 percent of the nitrogen from pastoral land is permanently removed.

A range of options to achieve permanent nitrogen reductions such as land purchase, covenanting, joint ventures and land swaps, is outlined below.

a Private land is purchased and then sold on with permanent nitrogen restrictions

Local and Central Government funds are used to purchase private land as a catalyst for change and then sell it on with permanent nitrogen restrictions, either for:

- forestry land use, or
- more profitable crops such as forage export.

b Retaining land purchased as a public forestry investment

Land purchased is kept in local government ownership and converted to plantation forestry. This could provide an effective investment for ratepayers, who do not rely on a yearly cash surplus from the land.

c Retaining land purchased for public good goals

Land is kept as a long-term public investment but is not required to return a cash surplus. Instead, land is used to maximise other goals such as tourism, recreation and biodiversity. Some of the land purchased could become a recreational asset in the form of public space, walkways or district or regional parks. This could be an expensive option if no land is onsold or converted to productive uses. However, there are many non-market benefits of achieving biodiversity, Treaty of Waitangi and recreation goals.

d Public/private joint-ventures

Public money is used to 'underwrite' joint-venture forestry operations on private land. This would mean that landowners receive a rental for the duration of the forestry cycle and both partners receive a percentage of the return at harvest. It would help address equity issues for land in multiple Maori ownership.

e Land 'swaps'

Treaty of Waitangi obligations are met by swapping existing high producing parcels of public land within or outside the catchment with Tuwharetoa. Ownership remains with Tuwharetoa but they are given opportunities for income from other land. Tuwharetoa land may then be used to achieve recreation, tourism, biodiversity and carbon credit goals.

f Nitrogen credit trading system

To avoid some of the equity issues associated with a nitrogen capping approach, it may be possible to develop a 'nitrogen credit' trading system for implementation in the future. Under such a system, all rural landowners would be allocated an allowable nitrogen emission - effectively their share of the allowable nitrogen load into the Lake. Any land user wanting to increase their nitrogen emissions would have to purchase nitrogen credits from another landowner who didn't require all of their allocated nitrogen (for example, a landowner who wanted to convert to forestry).

Issues of certainty, pricing, allocation, policing and administration would all have to be worked through before such a system was implemented.



2 Research into Practical Low Nitrogen Land Uses and Market Feasibility

As part of the public cost of land use change, a research fund of \$5 million over five years would be established to investigate the viability of farming alternative low-nitrogen crops and market opportunities in the Taupo catchment. This work could build on existing successful low-nitrogen land uses, including field trials and market research for new crops. It could also include development of management systems to reduce nitrogen losses from existing pastoral farms.

Research will help to reduce the cost of Lake protection when changing to new land uses. In September 2002, a three-year Sustainable Farming Fund project to investigate alternative farming methods and crops began field trials in the catchment. The project is led by Puketapu Group - one of the main pastoral landowners in the catchment, and supported by Ministry of Agriculture and Forestry (MAF), local farmers, Environment Waikato and agri-business. New Zealand Trade and Enterprise (NZTE, formerly Industry NZ) has also recently funded local initiatives to enhance economic opportunities for local landowners.



3 Achieving New Zealand's international obligations

The Government ratified the Kyoto Protocol in 2002. This commits New Zealand to reduce emissions of greenhouse gases to their 1990 levels, averaged over the five year period 2008-2012, or to take responsibility for emissions above the 1990 levels if it cannot meet that target. Recent uncertainty in international endorsement of the Kyoto Protocol means that New Zealand may delay its implementation of greenhouse gas reductions.

Planting new areas of forestry or permanent native forest helps address the carbon balance because trees store more carbon than pasture. Under the Government's policies up to 2012, the Government will retain any carbon credits from new commercial forests planted since 1990. However, landowners who establish permanent native forest (for example, by retiring marginal farm land) will have access to the value of carbon credits in return for certain commitments and obligations. If native forest is planted, this also has benefits for New Zealand's international obligations to protect biodiversity.

4 Partnerships Between Tuwharetoa and Local and Central Government

While the Treaty relationship with Tuwharetoa is the responsibility of the Crown, the Resource Management Act and Local Government Act provide local government with guidance about building relationships with Maori and in particular Tangata Whenua.

The Local Government Act 2002 clarifies local government's relationship with the Treaty. As part of recognising and respecting the Crown's Treaty responsibilities, the Act requires local authorities to:

- establish and maintain opportunities for Maori to contribute to decision-making processes
- consider ways to foster development of Maori capacity
- provide relevant information to Maori.

The Treaty of Waitangi assures Maori protection of their natural resources and their management and use rights. Land use solutions that will contribute to a healthy clean Lake are being developed within the Treaty principle of partnership, as an ongoing dialogue between Tuwharetoa and local and Central Government.

5 Enhancing Recreation and Tourism

Tourism and recreation are already major draw-cards in the Lake Taupo catchment. In 1998, tourism was second only to forestry in its contribution to the Gross Domestic Product of the district, at around \$90 million per annum. The Taupo District Economic Development Strategy identifies actions and key agencies for enhancing recreation and tourism, by promoting existing operations and identifying new opportunities.

6 New Environmental Rules

The overall Strategy will be backed up by regulation, monitoring and enforcement, including introducing new rules in a change to the Waikato Regional Plan.

The proposed rules would restrict, but not reduce, nitrogen outputs from land in the catchment. They would also require high standards of sewage treatment for individual and community systems close to the Lake. Rules will help ensure that those people who have contributed to the solution are not carrying the burden for those who have not. Farmers will be subject to rules in the Regional Plan and will have to show that they are not increasing the amount of nitrogen leaching from their land. This might involve the use of nitrogen modelling computer software or farm plans showing use of best management practices.



Strategies for Success

Protecting Lake Taupo will require strong partnerships, clear linkages and good communication between agencies and communities. Everyone needs to have a role in the Lake's future. Providing time for change is important, so we plan to implement the Strategy over the next 15 years. Changes will be supported by education and regulatory backstops.

Uncertainty over future income and employment and the perceived risk of new ventures are significant constraints to changing land use in the catchment. To overcome these and take advantage of opportunities for change, it will be important that:

- agencies and community groups have structured partnerships and linkages and communicate effectively to explore new ideas and initiatives
- sufficient time is allowed for changes
- all of these actions are supported with education, research and advice.

Partnerships, linkages and communication

Environment Waikato, Tuwharetoa Maori Trust Board, Taupo District Council, Taupo Lake Care and many other groups and agencies are involved in developing sustainable solutions for the catchment. Together we have already made progress in establishing partnerships, improving communication and making linkages before any new regulatory regime is decided upon.

There are several different agency-driven initiatives already underway in the Taupo District and Lake Taupo catchment that will contribute to the long-term sustainable development of the catchment. These include:

■ 2020 Taupo-nui-a-Tia

A three-year project to develop a sustainable development action plan for the Lake Taupo catchment by 2004. This project builds on the aspirations of Tuwharetoa Maori Trust Board, the wider community and scientific knowledge. It is funded and supported by local and Central Government, Tuwharetoa Maori Trust Board and the Lakes and Waterways Action Group. The 2020 project addresses 14 different community values for the Lake and its catchment. The Strategy for Protecting Lake Taupo is establishing a framework for sustainable water quality management, which is a sub-set of the wider 2020 sustainable development plan.

■ Ngati Tuwharetoa Environmental Iwi Management Plan 2003

Tuwharetoa Maori Trust Board have completed an Environmental Iwi Management Plan to enable their hapu to participate in the management of the Lake. This is one of the key supporting documents in the 2020 Taupo-nui-a-Tia Project.

■ Vibrant and Sustainable Taupo (VAST)

Taupo District Council, in partnership with a range of community groups, has prepared a vision statement for sustainable development of the District. This vision includes three themes: community vitality, district economy and natural environment.

■ Taupo District Economic Development Strategy

This strategy was funded by the former Industry NZ and completed in September 2002 for the Lake Taupo Communities Economic Partnership Steering Committee. The Lake Taupo Development Company now has the task of implementing the Strategy. It has recently commissioned a Taupo District Land Use Study to identify low-nitrogen land use options that are suitable for available labour skills and known market needs, to help support Lake protection.



Environment Waikato Chairman Neil Clarke, Minister for the Environment Marian Hobbs and Paramount Chief Tumu Te Heuheu meeting together on Lake Taupo, July 2001.

Landowner involvement in managing change

Both pastoral and forestry landowner representatives have indicated a strong desire to be involved with local government agencies in implementing changes on-farm. They recognise that there needs to be an interface between the regulatory roles of Environment Waikato and Taupo District Council, and the actions required on individual farms.

Taupo Lake Care Group has suggested the establishment of a Catchment Land Management Body, made up of landowner representatives and members of the regulatory authorities. Once clear objectives and rules have been defined, the Catchment Land Management Body would:

- Define codes of practice for different land uses to guide best practice under a nitrogen restriction regime
- Assist regulatory authorities in gaining farm level monitoring information
- Liase with the publicly funded land trust that will facilitate nitrogen reduction.

The detail of the scope, membership and activities of the Catchment Land Management Body would require considerable discussion. However, the concept is for landowners to be fully involved in the process of land use change, using their expertise to help achieve a future that makes good use of land and protects both the Lake and rural communities.

A 15-year timeframe to protect the Lake

Allowing sufficient time for the transition to low-nitrogen land uses is critical to smooth the economic impacts on the community. The goal of achieving a 20 percent reduction in nitrogen load to Lake Taupo from manageable rural and urban sources must be a long-term one. It requires a consensus that the economic impact of not saving the Lake will, in time, be much greater than the economic impact of putting this Strategy in place.

Environment Waikato believes that the transition is achievable within 15 years. Lake health will get worse before it gets better because of the time delay in nitrogen moving from the land to the Lake. It is important to prevent nitrogen loads to the Lake from increasing above current levels and this will be achieved with changes to the Waikato Regional Plan. We anticipate that actions to reduce nitrogen loads to the Lake can be achieved over the next 15 years without an additional decline in Lake health.

Supporting changes with education

Environmental education can support land use changes by providing information, best practice guidelines and farm planning advice to rural landowners. These measures can also be used to inform permanent residents and holiday homeowners about everyday actions to protect the Lake, such as avoiding overuse of garden fertiliser. Stormwater can also contain nutrients from overland flow and roads. Although monitoring shows these levels are extremely low, awareness can be raised through environmental education.

Sharing the Cost of Action

Taking action to protect Lake Taupo will come at a cost. But the benefits of taking action far outweigh the costs of an irreversible decline in the Lake's health. Moving toward more sustainable land uses in the catchment will never be cheaper than it is today.

The real challenge is to share the cost of change across the local, Regional and national communities in an equitable way. Environment Waikato, Taupo District Council and Central Government have agreed to negotiate together about how to share this cost. Pastoral farmers and forest owners will also contribute by bearing the cost of nitrogen restrictions in their businesses.

Estimating the Cost

Living and working in the beautiful but sensitive area around Lake Taupo means that we all have a responsibility to protect this precious natural asset. Ensuring that our activities are not harming the health of the Lake comes at an inevitable economic cost.

Our current rates and taxes will already contribute around \$72 million over the next 10 years towards preventing erosion of land around the Lake, undertaking research, managing Department of Conservation reserves and ensuring that wastewater is treated to a high standard. Plantation forestry in the catchment also provides environmental benefits for the Lake.

However, as a community we will need to contribute more if we are to reduce the amount of nitrogen threatening the Lake's health. The benefits of taking action toward a sustainable future for the Taupo catchment far outweigh the costs of doing nothing and facing an irreversible decline in the Lake's water quality.

Based on the best information we currently have, this Strategy suggests a range of actions to reduce nitrogen entering the Lake. While there are many variables that will influence the cost of these actions, we have estimated the additional public funding required to be \$83.5 million at today's value.

This cost is not absolute. It is our best estimate based on changing land to forestry, using current land values. The actions that we ultimately choose to pursue and the timing of those actions will determine the eventual cost we face as a community.

Sharing the Cost

Our rates and taxes already contribute to the work currently being done to protect the Lake. Local and Central Government propose that we share the new public funding required to reduce nitrogen to the Lake between the local, Regional and national communities. Environment Waikato, Taupo District Council and Central Government have agreed to negotiate together about how to share this cost. Negotiations to agree on cost sharing will take place over the coming months and will be subject to formal approval processes for each party involved. The outcomes will determine how the cost of change to more sustainable land use in the catchment will be spread across the local, Regional and national communities.

Pastoral landowners and foresters in the catchment will also contribute to sharing the cost of protecting the Lake by bearing a loss in private capital value and income under the proposed nitrogen 'capping' regime. Tuwharetoa is working separately with Central Government in relation to a range of concerns around protecting the Lake.

To help lessen the impact of this funding on our communities, we propose that both funding and land use and management changes will be spread over 15 years.



Opportunities for Public Input

There will be three formal opportunities to give your input to decision-making about Protecting Lake Taupo:

- Provide us with feedback on this Strategy
- Contribute to public discussions about Environment Waikato and Taupo District Council's Long-Term Council Community Plans in early 2004
- Make a submission in mid 2004 on Environment Waikato's proposed changes to the Waikato Regional Plan, which will suggest rules about the way land is managed in the catchment to reduce nitrogen.

Stage 1: Community input to Strategy ideas (November 2003 - January 2004)

This Strategy outlines a number of options that can be pursued to reduce nitrogen leaching into the Lake by 20 percent over the next 15 years.

The implications of this Strategy for the Taupo community are far-reaching. Public feedback and debate about the options in the Strategy are necessary before formal changes are made to the environmental policies governing the health of Lake Taupo. Tuwharetoa Maori Trust Board, rural landowners and more recently economic authorities of Tuwharetoa, have been involved in developing the Strategy over the last two years because of the implications for their land. These discussions have now reached the point where the proposed options need to be more widely discussed by the local, Regional and national community.

In holding these discussions with the community, we are seeking to:

- Hear your views, values and ideas about protecting Lake Taupo
- Provide you with more information about the Lake and the issues associated with it
- Involve tangata whenua as major landowners and kaitiaki of the Lake
- Consider the options for future management of the Lake and its catchment and how these might impact on community well-being
- Develop a preferred path forward to ensure the future sustainability of the Lake and the people who live in its catchment.

From now until the end of January 2004, we'd like to hear your views on the ideas in this Strategy and what they might mean for you and your local community.

Please take the time to fill out the short survey included with this document and freepost it back to Environment Waikato by **December 12, 2003**.

In January 2004, Environment Waikato will publish a summary of views expressed by the community and make that summary widely available.

Over the coming months, Environment Waikato and Taupo District Council will continue their discussions with Central Government about how to share the cost of change to protect the Lake. The outcomes of this discussion will give us an indication of what this means for local and Regional rates by late January 2004.

Environment Waikato and Taupo District Council will talk with the Taupo community in late January about what this Strategy may mean for local and Regional rates. The Councils will be travelling around the Taupo District in January to gather your input to our Long-Term Council Community Plans (LTCCPs). Watch out in your local newspaper for dates and venues and make sure you have your say.

The feedback you give us will guide our decisions about:

- which options in the Strategy to pursue and include in next year's Long-Term Council Community Plans for the Waikato Region and Taupo District - see Stage 2.
- the best way to support change with rules in the Waikato Regional Plan, which will be proposed in mid 2004 - see Stage 3.

Stage 2: Formal input into Long-Term Council Community Plans (April / May 2004)

Long-Term Council Community Plans are at the heart of the new government/community relationship envisioned by the Local Government Act. They will outline what outcomes the community wants, describe what work councils will undertake to achieve these outcomes and how to fund it. Environment Waikato and Taupo District Council are likely to put forward preferred options in their LTCCPs to protect the Lake and to canvas methods for funding these changes.

Following initial community input, Environment Waikato and Taupo District Council will publish their draft Annual Plans and the Long-Term Council Community Plans in late March 2004.

Your input is important to guide decisions about which land use change options are pursued and how local government contributes to funding that change. You will be able to make formal submissions on the funding proposals outlined in those plans.



Photograph by Marcel Tromp / Destination Lake Taupo.

**You can be involved in all three stages.
We must work together to protect the Lake.**

Stage 3: Proposed changes to Waikato Regional Plan (July 2004 onwards)

To make any rules about the way that land in the Lake Taupo catchment is managed, it will be necessary to make a legal change to the Waikato Regional Plan, which sets the rules for our Region. This change is called a "variation".

After hearing your views about this Strategy, Environment Waikato will develop a variation to the Regional Plan. We will propose this in mid 2004 and invite public submissions so you can tell us what you think about the rules we have suggested. Watch out for information in the local newspaper about how to have your say.

More Information

Copies of this document, as well as further technical information, are available from Environment Waikato's website www.ew.govt.nz. More information about the Lake and its catchment is also available on the 2020 Taupo-nui-a-Tia website www.taupoinfo.org.nz

For more information about protecting Lake Taupo, call **Environment Waikato's Freephone 0800 800 401**.

Summary

The solution to maintaining the current water quality in Lake Taupo is to view the changes as an opportunity for innovative sustainable development.

The challenge is to make changes that support the economy of the Taupo community, protect the assets of its people and move at a pace that can be accommodated by all parties.

Photograph by Marcel Tromp / Destination Lake Taupo.



