LANDCARE
A PRACTICAL GUIDE
ACKNOWLEDGEMENTS

NZ Landcare Trust would like to recognise the broader landcare and sustainable land management movement, and the work carried out by other agencies. A number of publications and websites provide information about this subject. ‘Landcare: A Practical Guide’ explores similar material with the aim of engaging farmers and landowners. Key agencies and publications include Department of Conservation – From Seed to Success, NZ Farm Environment Awards Trust – Learning from Leaders publications, DairyNZ – Clean Streams booklets.

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And finally thanks to the landowners who have shared their stories.


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SPONSORS STATEMENT

Transpower is proud to support the ‘Landcare: A Practical Guide’ resource and congratulates NZ Landcare Trust on this superb addition to its ‘action on the ground’ initiatives.

Transpower has been a major partner of NZ Landcare Trust since 2000. As the owner and operator of New Zealand’s high-voltage electricity transmission grid, Transpower has an interest in responsible land use and supporting communities which host the National Grid.

By working in partnership with NZ Landcare Trust and supporting this guide, Transpower supports landcare at a national level. This landcare resource will help farmers, landowners and rural communities achieve sustainable land management to ensure economic, ecological and social benefits for the future.

Disclaimer: All information contained in this publication has been provided in good faith. However the authors NZ Landcare Trust and other contributing writers accept no responsibility on any grounds whatever, including liability in negligence, for the use or misuse of the information contained in this document.
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1 Aims.

Farmers and landowners have an opportunity to act as leaders...

The challenge is to maintain profitable production levels without undermining the capacity of the land to recover and regenerate.
Farmers and landowners are passionate about their land and want to ensure that it continues to be healthy and productive in the future. The growth in farm based technology has enabled productivity to increase to previously unimaginable levels and the pressure for further intensification continues. The challenge is to maintain profitable production levels without undermining the capacity of the land to recover and regenerate. This idea is at the core of landcare and a driving force behind ‘Landcare: A Practical Guide’.

The guide has been designed for farmers and landowners who are interested in managing their land sustainably. It offers a straight talking perspective that outlines the basic principles of landcare. Plenty of useful accessible information is included, with additional content available online if needed. A key feature is the recognition that sustainable land management is a critical ingredient in the economic future of New Zealand. Our primary products have an excellent international reputation and we have a celebrated position as a beautiful, unspoiled tourist destination. Therefore continued economic success can be linked with long term sustainability.

So what will you find in ‘Landcare: A Practical Guide’. As the title suggests, the emphasis is on useful, practical information. A large section is devoted to a series of case studies that provide a valuable insight into the motivations, challenges and success involved with a landcare based approach. There are many opportunities for improving the sustainability of a farm and the guide offers a helpful reminder of the key areas where changes can be made. This not only applies to farmers working on smaller farms but also larger scale commercial operations where farming might not be the only source of income. Finally the guide contains practical advice on how to set up and maintain a Landcare Group.
2 What is Landcare?

Landcare is about you caring for what is in your backyard...

However large or small that backyard may be.
What is meant by the term landcare? In simple terms landcare is about putting people in control of their local environment. If we take the idea further, it can be seen as enabling people to manage their land in a sustainable manner ensuring economic, ecological and social benefits for present and future generations. Land management issues don’t respect property boundaries therefore a landcare based approach can also help draw people together by encouraging shared solutions. This is how landcare groups are formed and the many benefits of such an approach are explored in later chapters of the guide. In practice hundreds of farmers and landowners have reviewed and improved their approach to land management; trees have been planted, waterways protected, pests controlled and native species encouraged in an effort to maintain a sustainable landscape.

Within New Zealand a number of agencies are involved with promoting a sustainable approach to land management. NZ Landcare Trust undertakes a critical and unique role as the only independent, national, non-government organisation working with the land user community to encourage and actively support sustainable land management.

At a practical level NZ Landcare Trust supports landowners, farmers and community groups to carry out sustainable land management projects. Our Regional and Project Coordinators work closely with rural people, gaining a good understanding of local issues and helping to turn ideas into actions. The Trust helps establish projects by assisting with facilitation and negotiation with local councils and other agencies. Our experience dealing with funding requests can help inject valuable financial assistance to get a project started and our relationships with the scientific and agricultural communities ensure workshops and field days are really useful. We also assist in maintaining longer term project momentum and increasing the scope of already successful projects. In a nutshell, NZ Landcare Trust is about ‘action on the ground’, encouraging and helping communities to make a real difference. This is the landcare approach.

NZ Landcare Trust unifies diverse interest groups, such as production, environment and recreation. The Board of Trustees includes:

- Federated Farmers of New Zealand
- Fish and Game New Zealand
- Ecologic Foundation
- Federation of Maori Authorities.
- Rural Women New Zealand
- Royal Forest and Bird Society
- Federated Mountain Clubs
Many farmers and landowners are already taking a landcare approach.
This chapter contains examples from a range of farmers and landowners who have taken the plunge and invested in a more sustainable approach. These are practical, economically viable land management solutions that provide long term benefits to the farmer, landowner and the wider community.
### Turning to totara.

Northland farmers are working with scientists and the NZ Landcare Trust to explore a sustainable industry based on farm grown totara trees.

#### PROJECT PROFILE:

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<th>Name:</th>
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<td>NZLT role/involvement:</td>
<td>Project coordination, facilitation, translating science into practical sustainable land use options</td>
</tr>
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<td>NZLT Regional Coordinator:</td>
<td>Helen Moodie, <a href="mailto:helen.moodie@landcare.org.nz">helen.moodie@landcare.org.nz</a></td>
</tr>
</tbody>
</table>

#### PROJECT BENEFITS:

| Farm benefits: | ✔ Diversified income stream |
|                | ✔ Slope stability |
|                | ✔ Stock shelter |
|                | ✔ More attractive farms |
|                | ✔ Improved water quality |
| Environmental benefits: | ✔ Stream shade |
|                       | ✔ Reduced soil erosion and stream siltation |
|                       | ✔ Food/nest sites for birds |
|                       | ✔ Wildlife corridors |
|                       | ✔ Carbon uptake |
| Social benefits: | ✔ Local industry/employment opportunities |
|                  | ✔ Farm profitability |
|                  | ✔ More attractive rural landscape |
Weaving a rich tapestry.
Kaeo landowner and landscape architect, Paul Quinlan, has an eye for the big picture when it comes to sustaining both our rural vistas and the farming industry.

In the winterless north where he lives, regenerating totara is part of today’s rural landscape. Up there totara regenerates so freely in pasture that it’s almost considered a weed by farmers.

Totara is a native tree, but these stands and treelands aren’t typical of the original forest that would have clad the Northland hills. According to Paul:

“The changes we have made to the land, past clearance, and introduction of stock, has changed the nature of regeneration, favouring totara over other native species and creating a ‘novel’ forest type.”

Paul sees in this highly modified landscape an opportunity for sustainable land management, particularly on Northland’s poorer soils and aspects.

He reckons that instead of constantly fighting nature – controlling totara regeneration to keep paddocks clear for stock – we should work with nature. If farmers were sure they could harvest trees in the future, Paul says they would value and nurture the totara that pops up on their land.

Regrowth totara could be combined with livestock farming in an agri-forestry regime – it would be a practical way to weave native trees and biodiversity back into our farming landscape.

Seeing the wood in the trees.
Totara has long been valued for its timber. Maori used the light but durable wood for canoes, whare posts, and carving. Europeans also valued its durability, ideal for railway sleepers, wharf and house piles, telegraph poles and fence posts. Today, some of those old fence posts have found a new lease of life in rustic furniture and ornaments.

As a modern day timber resource though, its popularity has waned.
- Environmental concerns have fuelled a preference for plantation or recycled timber
- Council rules control native vegetation clearance
- The Forest Amendment Act of 1993 limits milling of native species to timber from sustainably managed indigenous forests

For landowners like Paul, finding a market for totara and legally harvesting it will require culture shifts and law changes – perhaps an acceptance that harvesting totara for timber will at least mean the trees are in the landscape for decades, rather than whipped out of the ground as seedlings before they become a liability.

Pulling the threads together.
Paul wasn’t the only one who saw the potential. A field day at his place in 2005 to discuss the issue was packed with farmers and scientists.

Helen Moodie of NZ Landcare Trust also attended. Being a natural ‘match-maker’, she immediately started weaving the threads. She contacted the right organisations, sourced funding, and brought together landowners, researchers, law makers and local authorities.

In 2006, the Northland Totara Working Group (NTWG) was formed. Coordinated by NZ Landcare Trust, the Group includes; landowners, Farm Forestry Association, Far North District Council, Northland Regional Council, MAF, wood millers and processors, Tane’s Tree Trust, NZ Forest Owners Association and research institute Scion.

Regrowth totara could be combined with livestock farming in an agri-forestry regime...
The good weed.
The NTWG aims to encourage productive use of farm grown and planted totara – turning a perceived weed into an asset.

They already knew that totara would be an ideal species for farm forestry, given its strengths:

- A pioneer tree species – ecologically suited to grow in open land
- Stock-resistant – survives in grazed pasture
- Abundant natural regeneration – no planting needed
- Responds well to silviculture – pruning and thinning
- Significant regional resource – enough to be commercially viable
- Potential for sustainable management

However, not enough was known about selection, management and sustainable logging and there was no organised market for the timber. That is where the Northland Totara Working Group is concentrating its efforts.

Top tip.
Take advantage of nature’s free supply of totara. Combine with livestock farming for a practical way to weave native trees and biodiversity back into our farming landscape.

Paul sees in Northland’s highly modified landscape an opportunity for sustainable management.
Trees with a silver lining.
When farmers and scientists combine forces you can bet there will be a good outcome – a marriage of practicality and ‘can-do’ attitude, teamed with solid data.

The working group have begun to:
- Evaluate wood quality, both in the lab and with the millers and woodworkers
- Measure the volume of timber on regenerating land using aerial photography and GIS technology
- Establish silviculture plots (growth measurements, pruning and thinning trials) in planted and natural stands
- Compare growth rates and wood quality from naturally regenerating totara with plantation totara

The silviculture trials are showing promising results and dispelling the notion that natives are slow-growers, with trees in pruned and thinned stands putting on 3 times more growth than in untreated stands.

In Northland young totara can ‘grow like the clappers’ and develop straight trunks of several metres in a decade if they are encouraged to reach for the light. Paul believes with the right management we can get millable trees with six metre butts in decades, not centuries.

Culture of change.
Perhaps the greatest barrier to creating a totara timber industry in New Zealand is our recent culture of completely separating production and conservation – viewing stands of native bush as good only for ‘locking up’.

Paul however, sees a potential to integrate native trees into the pastoral environment, to weave the natives back into our highly modified production land.

“In this country we have a tradition of spatially separating conservation and production. There are still a lot of negative associations around cutting down any native trees. But perhaps this a limiting paradigm as we look to improving environmental performance and getting more native trees onto the farm?”

Large tracts of Northland were originally developed into pasture by clearing bush, and where stock pressure has eased because of low returns and lack of fertiliser, totara has come back. However, the rules that aim to protect existing stands may be deterring landowners from letting new seedlings take hold.

Allowing sustainable harvest of recently established trees could be a better way forward.

Perhaps the greatest barrier to creating a totara timber industry in New Zealand is our recent culture of completely separating production and conservation...

Helen Moodie, NZLT Project Coordinator
**Super tree.**

Totara is more than just a timber tree; it’s something of a super-hero. Growing well on river levees and steep slopes, and fairly tolerant of stock, this tree is a true multi-tasker, performing many functions:

- Stock shelter
- Slope stabilisation
- Stream shade
- Sequestering carbon
- Silviculture

Add to that, it’s a fantastic food larder for native kukupa and tui.

Perhaps we should let the totara trees grow. Let the birds feast on them, let the stock rest beneath them, let the soils stay on the land, let the rivers run clear. Then, sustainably harvest them and let their legacy live on as beautiful furniture.

Paul, meanwhile, has obtained a 50 year term sustainable forest management plan under the Forests Act to manage and harvest small stands of regenerated totara on his Kaeo farm. The next half century will likely see him busy tending his crop, thinning and releasing them from the competing species, and selecting the trees with the best form and growth rates for pruning. With the help of NZ Landcare Trust, a generation can enjoy the idyllic vista.

For more information about this Project see:


**Heart of the Matter.**

*Ruia taitea, ruia taitea, kia tu ko taikaha* – ‘Cast away the sap but let the heart remain.’

Our lofty totara was the ideal tree to describe the solid standing and enduring power of chiefs (likened to the robust heartwood of the totara), compared to the fleeting existence of the common solider, like the soft outer sapwood that easily decays.

One of our native conifers, lowland totara (*Podocarpus totara*) can grow an impressive 40m tall, with a girth of 6m. The great ‘grand daddy’, Pouakani, near Pureora Forest, is an awesome 1800 years old.

Podocarp literally means ‘foot fruit’ referring to the fruit-like base that holds the seed. This is eaten by birds which then distribute the seed.
Of dairy cows and mussel shells.

Dairy farmers in the Aorere Catchment are taking ownership of their environmental performance, to protect local waterways, the future of their own farms and the Golden Bay aquaculture industry.

**PROJECT PROFILE:**

**Name:**
Aorere Catchment Group

**Location:**
Golden Bay, Tasman District

**Property Size:**
33 dairy farms in the catchment

**Main objectives/issues:**
Employing a ‘farmers as leaders’ approach to environmental stewardship in reducing faecal runoff issues, thus future-proofing both local dairy operations and marine farms. Also to share the philosophy widely within rural communities and beyond.

**Investment:**
The project is supported through the Sustainable Farming Fund and stakeholder investment. The 19 properties participating in detailed environmental plans so far have committed over $2M to on-farm environmental best management practice improvements.

**NZLT role/involvement:**
Project coordination, facilitation, financial management, publicity.

**NZLT Project Coordinator:**
Gretchen Robertson
gretchen.robertson@landcare.org.nz

**PROJECT BENEFITS:**

**Farm benefits:**
- Understand Best Practice for local conditions
- Moved from compliant farming to Best Practice
- Riparian fencing provides greater stock safety
- More attractive farms
- Dairy industry co-exist with shellfish sector

**Environmental benefits:**
- Cleaner rivers
- Cleaner marine environment
- Increased biodiversity in riparian zones

**Social benefits:**
- Closer communities
- Secure jobs in aquaculture
- Better environment to live and work in
**From relaxed river to raging torrent.**

Living in the Aorere Valley means living with water. In a torrential downpour, the unpredictable Aorere quickly becomes a torrent. With a 4 metre annual rainfall, flooding is a reality the long-established dairy farmers in the catchment are well accustomed to.

Flowing from Kahurangi National Park, the river empties into the nationally significant Ruataniwha Estuary near Collingwood, in the sweeping arch of Golden Bay – home to a shellfish industry turning over up to $15M per year. With each big downpour, the shellfish were at risk of contamination from bacteria washed off the land.

**Something in the water.**

In early 2005, a meeting was held to discuss the levels of *E. coli* entering Golden Bay. Local marine farmers were facing closure due to deteriorating water quality – opportunities to harvest were as low as 28%. The marine farmers had always stopped harvesting after heavy rain to avoid potential shellfish contamination. Unfortunately high *E. coli* levels were proving impossible to predict – occurring even in periods of low rainfall.

Being filter feeders, shellfish concentrate whatever is in the water, including bacteria and it can take days for the bugs to flush out – days on which harvesting is banned. If harvest is delayed, the shellfish may be past their best when finally hauled in.

With harvesters unable to work and factories not guaranteed a constant supply of product, the viability of the aquaculture industry and many local jobs was at risk. The marine farmers had no choice but to raise their issues publicly.

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**The dairy farmers recognised that the shellfish operators were farmers too...**
**Centre stage.**

When the community started searching for answers about the source of the contamination, the Aorere dairy farmers became the centre of attention. With long family connections to the area and having always been proud of their farms, they were initially shocked at the suggestion that they might be the source. However, they also recognised that the shellfish operators were farmers too, so rather than go on the defensive, all of the 33 dairy farms elected to take positive action to pinpoint the cause and find solutions for the sake of the whole community.

The NZ Landcare Trust offered to assist by applying for Sustainable Farming Fund support - something the landowners saw as an opportunity to improve their industry and their community's future. The Aorere Catchment Project was born.

**Source of the problem.**

Unsure exactly what was causing the water quality issues in the Bay, the farmer-led Catchment Project commissioned a scientific investigation.

The Aorere River turned out to be relatively healthy, with no evidence of nutrient enrichment, yet bacteria was getting into the waterways – computer modelling showed that the source was most likely runoff from paddocks. Given the sensitivity of marine farms to contamination, the dairy farmers recognised the need to reduce the levels of bacteria reaching waterways.

The Project members openly shared the results with the local council and marine farmers, and held a problem solving field day – farmer-led discussions with support from leading technical experts to agree on best management practices for the catchment.

**Dairy farmers elected to take positive action to pinpoint the cause.**
Top tip.
Take time to explore ideas and technologies for a lasting result rather than a quick fix.

Codes of practice.
The marine farmers realised it’s impossible to completely eliminate bacterial runoff from farmed catchments; they just wanted to be able to consistently harvest during fine periods.

So the dairy farmers developed a set of best management codes:

1. Keep stock out of waterways – fences, bridges and culverts
2. Don’t irrigate effluent on saturated soils – have the ability to store effluent for about 3 months
3. Reduce effluent application rates – use low-rate application to land effluent irrigation systems to reduce bacterial runoff
4. Find runoff ‘hotspots’ – avoid direct runoff to drains/waterways (e.g. via clever laneway drainage and capturing standoff area effluent)

With assistance from an independent advisor, many of the farmers have now prepared individual farm plans to minimise bacterial runoff. Happily, they found that what’s best for water quality is often also best for the farm. Having more storage for effluent, for example, allows the farmers to apply it at a lower rate during dry periods in the growing season – when the soils and pasture need it most. This approach also maximises fertiliser benefits by keeping nutrients in the root zone.

Celebrating with cream and chowder.
The shellfish industry is also celebrating – their harvest has jumped from 28% in 2002 to around 79% today!

The marine farmers have congratulated the dairy community for confronting the issue and showing a high degree of leadership through its catchment-wide approach. As marine farming spokesperson, Bill Wallace said: “The Aorere dairy community have certainly earned our respect”. In 2008, the catchment group members shared a lunch of shellfish chowder and fine cheese – a perfect marriage of dairy cows and cockle shells!

The rest of the community has jumped aboard, with Golden Bay Streamcare Group, comprising Collingwood School, Forest & Bird members, fishing enthusiasts and local businesses raising native seedlings and undertaking riparian planting and maintenance.
Catchment groups – working together from top to bottom.

During the Project the group learnt a lot, not only about cows and creeks, but about how ordinary kiwis can make a difference. One of the project members, Michelle Riley, has reflected on some of the key project lessons:

- A catchment community approach shares the load
- Move past emotion, engage in high quality discussion
- Earn back lost respect
- Take time to explore ideas and technologies for a lasting result rather than a quick fix
- Invite others to interact with your group for two-way learning
- Farmers need to be supported with science (‘experts on tap not on top’)
- Keep the process open – it is never too late to come on board
- Communicate well with your members – ask what they need and how they want to receive it
- Acknowledge the problem/s and consider how other businesses are affected
- Build collaborative networks with outside agencies – accept their support
- Promote emergent leadership – include your younger members
- Tell your story in a positive way – substantiate your claims through action and results
- Celebrate success! Make it social and fun
- Evaluate outcomes and plan the group’s future
- Start where you are, do what you can, use the gifts you have

A glittering future for Golden Bay.

The Aorere Catchment Project has demonstrated the success that can come from a community-owned approach – without heavy handed tactics, finger-pointing, or destructive arguments between friends and neighbours. The whole community has pitched in, and the whole community is the winner from the best management actions already taken.

In 2009, local MP and Environment Minister, Nick Smith and 70 guests from the local community, Fonterra, DairyNZ, Fish & Game, Tasman District Council, Forest and Bird, and the Ministry of Agriculture and Forestry, attended another celebration of the great work undertaken by the community, and the launched the booklet: ‘Aorere Our River Our Future’.

While the farmers are thrilled at the great result, they know it is not the end. They hoped to extend their project well beyond its initial 3 year tenure – and to their great delight, at the booklet launch the Ministry of Agriculture and Forestry announced a further $259,000 grant over 3 years! The money will be spent continuing the good work in the Aorere Catchment and widening the ‘farmers as leaders approach’ within the Rai catchment (Marlborough) and wider Upper South Island.

For more information on this Project see: www.landcare.org.nz/regional-focus/upper-south-island/aorere-catchment/
# Farming to the lake.

The Hayes family put their heart, rather than their runoff, into the lakes bordering their Waikato dairy farm.

## PROJECT PROFILE:

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<td>Minimising nutrient runoff into rare peat lakes, restoring lake margins and wildlife habitat</td>
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<td>Investment:</td>
<td>Lake Kaituna and Lake Komakorau Care group, DOC and Environment Waikato, Sustainable Management Fund</td>
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<tr>
<td>NZLT role/involvement:</td>
<td>Lake Kaituna and Komakorau Care Group committee member and technical advisor, Coordinator for rare wetland plant re-establishment trial and sustainable land management in shallow lakes catchments projects</td>
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<tr>
<td>NZLT Regional Coordinator:</td>
<td>Monica Peters, <a href="mailto:monica.peters@landcare.org.nz">monica.peters@landcare.org.nz</a></td>
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## PROJECT BENEFITS:

**Farm benefits:**
- Improved productivity on less land
- Reduced fertiliser costs
- No more stock lost in boggy margins
- Greater water retension in low paddocks during dry periods

**Environmental benefits:**
- Better lake water quality
- More native plants and animals
- Rare wetland ecosystem restored

**Social benefits:**
- Farmers and agencies working together to improve the environment
- More attractive environment to work and live in
- Valuable educational facility for other farmers, schools, tertiary institutes local and overseas visitors
- Research site for universities
The Hayes family is now a role model for other farmers in peat lake catchments.

Winning ways on the farm.
Retiring 10% of your dairy farm for wetland conservation while keeping your stocking rate the same is a pretty impressive piece of farming.

Little wonder then, that Andrew and Jenny Hayes and their four sons have received a national Green Ribbon Award, on top of a regional Ballance Farm Environment Award for their sustainable farm management practices.

Sitting on peat.
The Hayes’ dairy farm lies amid a string of rare peat lakes, tucked behind a broad bend of the Waikato River north of Hamilton.

Over the last 20,000 years these lakes, once nestled in extensive raised peat bogs, provided habitat for plants, animals and insects adapted to very low nutrient and acidic conditions.

Today, most of the 33 remaining peat lakes are severely degraded – including the two bordering the Hayes’ Horsham Downs farm – Lakes Kaituna and Komakorau. When the family realised their farming practices were harming water quality in the lakes, they decided to change how things were done.

As Andrew says, “if you’re aware, you care”. He likens their new management practices as “farming to the lake”, not literally of course, but taking a landscape approach to ensure their farm works around the lakes’ needs, without losing productivity.

A farm that does no harm.
Seeking to first minimise their impact on the lakes, the Hayes fenced out the stock and retired the land around the lakes, creating a wide buffer of wetland vegetation to trap silt and nutrients.

Andrew didn’t want the boggy areas for summer grazing, as they only ever produced low quality and weedy feed. Fencing off those wet areas means no more bogged down stock and no nutrients wasted on feeding nothing but willows!

All drains were also fenced and managed to protect the valuable peat soils. Modifications include:

• Keeping drains shallow and wide to reduce rates of peat shrinkage
• A grass sward on either side to trap nutrients and sediments
• Drain-side planting to shade the water and prevent nuisance aquatic weed growth
• Minimal drain clearing - mostly with herbicide rather than diggers
• Sediment traps and vegetation filters like raupo and sedge beds on all drains entering the lakes, keeping stocking rates moderate to avoid compaction and pugging

The Hayes family is now a role model for other farmers in peat lake catchments.
Mind your P’s and N’s.
The Hayes then started working on reducing their fertiliser rates.

Annual nutrient budgets help them balance the inputs and outputs, and soil testing is carried out annually to maintain optimum nutrient levels.

With areas of low productivity retired, nutrients are targeted on higher productivity areas and the savings have been huge.

- Annual nitrogen application has dropped by a staggering 80%, from around 150 tonnes per hectare, to less than 30
- Super phosphate use has gone from 900 kg/ha to 650 kg/ha, and now applied in December for better uptake of nutrients and less runoff
- Nitrogen leaching is minimised through irrigating effluent over the whole farm and retaining wide margins on drains and the lake
- Effluent application depth is also monitored

These and other practical on-farm changes save the Hayes time and money – resources they now spend on restoring the lakes.

Tortured by willow.
In 1999 both lakes were hidden by a thicket of invasive grey and crack willows. The dense summer canopy shaded out any undergrowth, so no runoff was trapped – but plenty of stock were, often needing a ‘block and tackle’ to haul them out.

The lack of food pushed ducks out onto the paddock, competing with stock. A thousand or so chainsaw hours later, the Hayes, and the Lake Kaituna and Lake Komakorau Care Group they formed to help restore the lake, have finally cleared more than 16 hectares of willow jungle, and reinstated native plants around the margins of both lakes.

Native sedges, rushes and shrubs flourished once free of the willow stranglehold. They help the wetland work like a sponge – keeping adjacent paddocks drier in the winter as the soil and plants soak up floodwaters, and moister in the summer as the stored ground water is slowly released. All up this means greater productivity in adjacent paddocks.

With funding from Environment Waikato, the Department of Conservation and a lot of volunteer work, the Care Group has also:

- Installed sediment traps on all inlet drains to both lakes
- Cleared away 30 truckloads of household rubbish from the lake edge
- Dealt to privet, blackberry and other weeds
- Controlled animal pests including possums and feral cats
- Re-planted native species
- Developed areas for wading birds
- Installed teal nesting boxes
- Created a walkway around both lakes

...fenced out the stock and retired the land around the lakes, creating a wide buffer of wetland vegetation to trap silt and nutrients.
Birdlife bounces back.
One pleasure of restoring the lake is seeing the native wildlife come back now that food and shelter has improved.

- Grey teal use the nesting boxes
- Several Australasian bittern are regular visitors
- New Zealand dabchick have been seen on the lake
- Rare native black mudfish have been released into the wetland
- DOC is considering the lake as a site for brown teal release
- The lake is also a habitat for eels and common bullies

Leading by example.
The Hayes family is now a role model for other farmers in peat lake catchments. Their property is often used as a demonstration and inspiration site for field days run by NZ Landcare Trust, Federated Farmers and other agencies like Environment Waikato. Schools, farmers, community groups, government ministers, TV crews and even David Bellamy have visited the lakes, which are also featured on the National Wetland Trust’s web-based directory of wetlands to visit.

A walk around Lakes Kaituna and Komakorau off Bankier Road, 20 kms north-east of Hamilton, provides a great opportunity to see landowner driven sustainable land management in action.

Top tip.
Retire boggy lake margins and you won’t waste expensive urea feeding unproductive land.

For more information on this Project see:
**Upper Taieri Water Resource Management Group.**

Taking the lead in community-based water management.

<table>
<thead>
<tr>
<th>PROJECT PROFILE:</th>
<th>PROJECT BENEFITS:</th>
</tr>
</thead>
</table>
| **Name:** Upper Taieri Water Resource Management Group | **Farm benefits:**  
- Security of water supply  
- Better farm planning  
- Greater flexibility in accessing water |
| **Location:** Upper Taieri Catchment, Otago | **Environmental benefits:**  
- Open process for setting environmental flow levels thus wide buy-in  
- Open discussion and buy-in for the protection of water quality |
| **Property Numbers and Size:** 150 partially irrigated, generally large stations | **Social benefits:**  
- More united irrigation community  
- Shared vision established for stakeholder groups  
- Community-derived allocation and management regimes to promote sustainable communities long term |
| **Main objectives/issues:** Developing an equitable and enduring water management solution for whole of community good | **NZLT role/involvement:**  
Project coordination, facilitation, securing funding, financial management |
| **Investment:** The project is supported through the Sustainable Farming Fund and local stakeholder groups | **NZLT Project Coordinator:**  
Gretchen Robertson  
gretchen.robertson@landcare.org.nz |
Water, water...
We drink it, wash in it, cook with it and swim in it. Yet of the 1,360,000,000 km³ of water there is on Earth, less than half a percent is available in our rivers, lakes, and ponds!

World-wide, agriculture is the biggest user of freshwater, and here in New Zealand irrigation now uses almost 80 per cent of the water allocated for human use.

The low volume Taieri waterways have never been an insurance against drought for sheep and beef farmers in the Upper Taieri, but irrigation is crucial to the sustainability of Upper Taieri farms. Like other water-short catchments nationwide, the pressure on water resources and the degree of public scrutiny of water management is increasing. Wide community involvement and open discussion is crucial to reaching consensus on how best to manage water for the whole of community good long term.

Pressure on water use is continuing...

"it is far better to openly and honestly discuss issues and ideas from day one, rather than battle through environment court"

Valuable as gold.
The amount of rain water that falls in the Upper Taieri each year wouldn’t even come up to your knee.

In this dry region, river water is crucial for irrigation, but the sheep and beef farmers aren’t the only ones who value it. The Taieri waterways also support an important sports fishery and significant natural ecosystems. Competing interests for water have led to protracted battles in the environment court and increasingly voiced public concerns over river health.

The regional council allocates water takes, balancing the needs of the environment, farmers and other users. The Taieri River is currently ‘over-allocated’ - there is no spare water for any new applications. What is available gets shared out among 150 or so users, who either hold a permit from the council or an old mining right dating back to the 1860’s gold-rush days.

Mining rights gave holders a ‘first-come first-served’ right to water. They are chattels attached to a person rather than associated with a farm, although they have often been handed down through the generations. They have become almost as valuable as the land itself and although issued in perpetuity, were deemed at the advent of the RMA to expire in 2021, causing concern among the holders about their future access to irrigation water.

Yet the deadline has also presented a golden opportunity to develop a whole new, community-based water allocation model – one that is coordinated and collaborative, rather than ad hoc and divisive.
Working together for good.

Motivated by the 2021 deadline, the irrigators joined forces in 2007 and formed a project to re-design water allocation in the Upper Taieri. While other collective allocation models exist, the point of difference with this group is they brought aboard everyone with an interest, to create an enduring water management and allocation system managed by, and for the good of, the whole community.

Coordinated by NZ Landcare Trust, the Upper Taieri Water Resource Management Group includes farmers, the Department of Conservation, Fish & Game New Zealand, iwi, local government and researchers.

A key concept is to roll all of the individual consents into a single collective one, with a fair and transferable allocation arranged by the group, rather than by the council.

Under this model:

- The community decides what is fair
- Individual water rights are given up for a group consent
- Sub-catchments draw up supply agreements among users
- A ‘whole of community’ group ensures cohesion and the protection of healthy waterways and a thriving community

Specifically, the group hoped to:

- Avoid a 2021 bottleneck and provide security for permit holders
- Form a stronger united voice – to determine how water is best managed to meet local values
- Determine their own destiny – present an agreed allocation regime to the council for approval, rather than have one imposed on them
- Establish ‘supply agreements’ – to maintain the priorities established through mining rights, and formalise ‘gentlemen’s agreements’ (like stock drinking water access)
- Reduce consent fees – by applying for a single collective consent application instead of individual applications
- Allow for water transfers under the collective consent – managed by agreed rules to ensure equitable use, and to meet environmental requirements
- Benefit from economies of scale – e.g. share the cost of buying and servicing water meters, or jointly funding bulk water storage and infrastructure
- Obtain a long-term consent (e.g. 35 years) – by presenting a strong case to the regional council based on evidence of clear community agreement
Runs on the board.
Money secured from the Sustainable Farming Fund (SFF) enabled the group to contract experts to project manage and offer technical assistance.

A series of meetings and public field days allowed all of the parties to clarify their interests and needs for the Taieri water, whether extraction for irrigation, or leaving water in the river to provide for conservation or recreation.

Once wide support for a community water resource management approach was achieved, the next steps included:

- Working out fair and sustainable allocation regimes and draft ‘supply agreements’
- Developing bulk water storage options
- Teaching users how best to monitor their water use
- Establishing a collaborative catchment management group to represent wide community interests

Watertight solution.
The project has developed a three-tiered ‘Community Self Management Model’:

1. **Central and Regional Government** sets the polices, rules, and standards.

2. **The Upper Taieri Water Resource Management Group** is an umbrella group, liaising with the regional council, and discussing and gaining consensus/developing policies for water right transfers, reporting, monitoring, low flow rationing, and infrastructure development.

3. **Four sub-catchment groups** operate under single consents, managing and transferring water within their area, while meeting environmental standards, rules and consent conditions.

As the model is achievable right now, under the current legislation, the group anticipates setting up an effective community-led and agreed allocation model well before the 2021 deadline.

A community band together to address an issue...

Gretchen Robertson, NZLT Project Coordinator
Role models.
The Upper Taieri project has come up with a system for water allocation which results in:

- Better community and agency relationships
- Cost efficient, transparent resource monitoring
- Smoother RMA processes
- More efficient use of water
- Better environmental outcomes
- Secure outcomes for everyone

Along the way, the group realised it is far better to openly and honestly discuss issues and ideas from day one, rather than continue to battle over a scarce resource through hearings and environment court.

Their model of broad involvement, involving stakeholders other than irrigators, is an approach that can be used by others in over-allocated catchments.

This leadership has not gone unnoticed by those working on water allocation models at the national level. Following a visit from Agriculture and Forestry Minister, David Carter, and Alastair Bisley, Chair of the Land and Water Forum, the Ministry asked the Project to host a national workshop for national policy makers and water stakeholders in March 2010.

NZLT Project Coordinator Gretchen Robertson says, “It is great to see a community band together to address an issue that could just as easily be put into the too hard basket. The upper Taieri community are showing great courage to step back and ask ‘how best can we manage water resources for whole of community benefits’. It is an honour to be involved”.

Top tip.
Include all stakeholders from the start and let everyone have their say to develop a lasting result.

For more information on this Project see: www.landcare.org.nz/regional-focus/lower-south-island/upper-taieri/
# Weathering the storms.

Farm management practices in Northland to increase resilience to climate change.

## PROJECT PROFILE:

<table>
<thead>
<tr>
<th>Name:</th>
<th>Towards Resilient Farm Businesses in Northland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Rural Northland</td>
</tr>
<tr>
<td>Main objectives/issues:</td>
<td>Research and knowledge sharing to identify and develop farm practices that will avoid or minimise damage from extreme weather events</td>
</tr>
<tr>
<td>Investment:</td>
<td>Sustainable Farming Fund, Northland Regional Council</td>
</tr>
<tr>
<td>NZLT role/involvement:</td>
<td>Convenor, Project coordination, facilitation</td>
</tr>
<tr>
<td>NZLT Regional Coordinator:</td>
<td>Helen Moodie, <a href="mailto:helen.moodie@landcare.org.nz">helen.moodie@landcare.org.nz</a></td>
</tr>
</tbody>
</table>

## PROJECT BENEFITS:

| Farm benefits: | ✔ Reduced farm damage |
|                | ✔ Reduced stock loss |
|                | ✔ Reduced profit loss |
| Environmental benefits: | ✔ Cleaner streams |
|                       | ✔ Less soil loss |
|                       | ✔ Reduced pugging |
| Social benefits: | ✔ Safer families |
|                  | ✔ Stronger communities |
|                  | ✔ Reduced repair costs |
|                  | ✔ Productive communities |
Year of turmoil.
At 8.40 am on Wednesday 28 March, 2007, the New Zealand Met Service issued a severe weather warning for Northland. By the next day, more than 400mm of rain had fallen.

- Farmland was inundated
- Livestock drowned
- Farms suffered from silting, fence damage, slips and pasture loss
- By mid April around 700 insurance claims had been lodged and 20 households were still displaced
- Costs to the rural sector were estimated at $2.5M

The 10 hour deluge that struck the region in March was reportedly a 1 in 150 year event. Then, four months later, it happened all over again.

The deluge was a 1 in 150 year event – four months later it happened again.

Prepare for the worst and hope for the best.

The year 2007 brought a chaotic mix of weather events – floods in Northland, droughts in the eastern North Island, tornadoes in Taranaki and windstorms in the ‘City of Gales’.

No matter what your opinions are on climate change, heartbreaking images of drowned stock and destroyed pasture sharpen the resolve to prepare for more extreme events to come.

The Government’s 2007 Sustainable Land Management and Climate Change Plan of Action warned us to expect more intensive, frequent and damaging rainfall events. 2009/10 has shown that Northland is also not immune to the crippling effects of drought. In any event ‘business as usual’ won’t cut the mustard in the face of more frequent wild weather.

All New Zealand farmers will have to adapt their farming practices and business structures to minimise disruption and manage risk. As Northland is particularly susceptible to tropical cyclones and high intensity rain events, it’s a sensible place to start in the quest for solutions.
Search for solutions.

After the devastating 2007 floods, MAF appointed NZLT Regional Coordinator Helen Moodie as Northland’s Rural Recovery Facilitator. Helen built a database of farmers who were adversely affected by the climate events and arranged on-farm assistance from Enhanced Task Force Green crews to 217 farmers. She noticed a range of responses from landowners to the floods, and spotted an opportunity to share knowledge for the benefit of all farmers.

Helen secured a Sustainable Farming Fund (SFF) grant to talk with Northland farmers about ways to adapt their farming systems to the changes.

NZ Landcare Trust wanted to:

- Find out what decisions farmers are making around risk perception and management, and understand why they react as they do
- Build rural capacity to adapt to climate change by identifying ways to build greater resilience into farming systems
- Identify barriers to uptake of techniques identified
- Provide leadership from within the region to aid the development of more resilient rural businesses and communities

Are we ready?

The SFF grant allowed the Trust to contract AgResearch to survey a range of Northland land owners affected by the 2007 floods, and gather their ideas on ways to storm-proof their production systems.

With expert assistance from AgResearch social scientists, the Project:

- Reviewed research on landowner’s responses to adverse events
- Ran three focus group meetings in Whangarei during November 08 with dairy farmers, sheep/beef farmers and horticulturists
- Held follow up interviews with another 30 farmers/growers in February 09
- Analysed farm systems – including economic and environmental costs and benefits of adaptive land management practices
- Shared the information through field days, factsheets, workshops, website
Straight from the farmer’s mouth.

While the research is still underway, early results are promising, with lots of sensible tips from Northland farmers.

The importance of a strong community in building resilient farmers can not be underestimated. Where new farmers are able to learn from their more experienced neighbours they are better prepared to survive the effects of storm, flood and drought.

Other tips include:

- Use one or two wire fences and flexible poles near waterways
- Have enough supplementary feed on hand to see the animals through
- Remove potentially dangerous trees near buildings
- Buy a generator to run the cowshed in the event of a powercut
- Keep crops off flood-prone flats
- Store feed on higher ground
- Check culverts are large enough and clear
- Fence and plant erosion-prone slopes and stream margins
- Look at a battery option or generator for the water pump
- Get to know your neighbour, you might need to use their milking shed, or offer use of yours
- Accept help when you need it, for the family and the farm
- Act in response to adverse weather reports

Working through measures to keep the family safe and happy was equally important.

Further work is now underway to identify on-farm management practices that farmers can consider to reduce the risk to their system from storms.

Top tip
Plan the farm finances to see you through the tough times.
Help in tough times.

More lessons are being learned as the research proceeds. The next steps will see landowner groups identifying scenarios that pose a risk to their livelihoods and families, and assess a range of social, economic, farm systems and physical farm dynamics that could contribute to resilience building.

Helen believes the information gathered through her farm resilience research will help Rural Support Trusts all over New Zealand.

Rural Support Trusts are designed to help ensure rural communities can overcome extreme weather events. Their role includes:

- Develop response and recovery plans with the rural sector
- Coordinate initial response activities to an event with Civil Defence
- Provide stress management services, or referrals
- Provide mentors or colleagues from rural backgrounds to talk to
- Arrange assistance from Work and Income programmes (like Task Force Green) to help rebuild damaged properties after significant storms

Preparation and planning have become key components, ensuring rural communities can minimise damage and make a rapid recovery.

Adapting to the impacts of climate change is a global challenge, and the national networks of NZ Landcare Trust and Rural Support Trust will ensure that the outcomes of this Project spread well beyond Northland.

The issues of climate change and adverse weather events have prompted a broader national debate about the future of farm planning and the importance of sustainable land management – and the NZ Landcare Trust is right in the thick of it!

Find out more about this Project see: www.landcare.org.nz/regional-focus/upper-north-island/rural-support-trust/

Helen Moodie,
NZLT Regional Coordinator
A climate for change.

Changing attitudes and practice for farming dryland Marlborough.

**PROJECT PROFILE:**

**Name:**
Starborough Flaxbourne Soil Conservation Project

**Location:**
Starborough Flaxbourne District, Marlborough

**Main objectives/issues:**
Seeking economically, socially and environmentally sustainable solutions to farming in the face of climate change in dryland Marlborough

**Investment:**
Sustainable Management Fund grant

**NZLT role/involvement:**
Project coordination, funding, advice, facilitation

**NZLT Regional Coordinator:**
Barbara Stuart, barbara.stuart@landcare.org.nz

**PROJECT BENEFITS:**

**Farm benefits:**
- Reduced soil erosion
- Increased biodiversity
- Diversification to maintain income in bad years

**Environmental benefits:**
- Reduced soil erosion
- Healthier stock
- Better lamb finishing weights

**Social benefits:**
- More sustainable community
- More attractive landscape to live and work in
- Increased tourism and associated businesses
Droughts and doubts.

There’s no doubting it when your farm is affected by floods and no denying it by support agencies or insurance assessors either.

Droughts, on the other hand, are a different kettle of fish. They sneak up on you, slowly wreaking their havoc, so subtly at first it can be hard to know when you are actually in one.

When Marlborough farmers talk about ‘dry’ they’re not referring to a nice drop of local Sauvignon Blanc. These farmers know they are in a drought when they have to sell stock before they fatten, when they have to sell capital stock, or when their summer crops fail. These telltale signs may arrive long before the classic ‘dust-bowl’ images of parched hills, listless stock, and bare, eroding soil are played on the 6 o’clock news.

Coping with this insidious threat is something farmers here have done all their lives, but some are wondering if the droughts are becoming more frequent, starting earlier, lasting longer. The patterns they know seem to be changing.

“My neighbour has been farming here for 75 years. He was born on his farm. He has dates, and you do things by this date. All the dates that he used to work from are no longer there.”

“I don’t know what normal is any more. I think a lot of us, we don’t know what normal is any more. And I did used to think we knew.”

Farm profits dry up.

South Marlborough is one of the driest parts of the country. This area of extensive pastoral farming, and an expanding wine industry on the Awatere river terraces, has received 30% less rainfall since 1997. Coupled with strong norwesters, the drought has caused extensive soil erosion – literally ‘blowing away’ agriculture’s natural capital.

Farmers have so far coped through practices like de-stocking, but the impacts of year-upon-year of drought is causing financial hardship, forcing farming families to start looking for innovative ways to stay on the land amid an increasingly fragile landscape.

NZ Landcare Trust wants to help the farmers build resilience into their landscape, to avoid or quickly recover from the effects of drought. They hosted a workshop in Seddon, attended by more than 60 people, to explore options to keep their farms and their land working.

From this meeting, the Starborough-Flaxbourne Soil Conservation Group was formed and a $220,000 Sustainable Farming Fund grant secured with help from NZLT provided a real chance to trial the ideas discussed at the workshop. The community offered cash and labour worth over $60,000 a year, while NZ Landcare Trust, Marlborough Research Council and the Marlborough District Council also chipped in.
Getting the dirt on Marlborough soils.

With this strong support, a three-year soil conservation research project was established in 2005. Community-driven, it links science providers, farmers and agencies to find sustainable farm systems for drought-prone areas. Involving farmers from the outset ensured the ideas were practical and likely to be adopted.

Ultimately, everyone knew there was a need to change attitudes and land management practices for farming dry land – if they kept using traditional methods the farms wouldn’t survive. The key question, then, was:

“What viable options are there to arrest this erosion and restore these areas to sustainable production systems or alternative land uses?”

So, the Project team set out to learn more about soils in the Starborough-Flaxbourne district and develop methods to minimise erosion. Working with a team of specialist researchers, they examined the problem at the whole-farm scale, investigating six key areas to find strengths that could be adapted or enhanced to increase farm resilience:

1. Business modelling
2. Dryland plants
3. Soil science
4. Climate change
5. Landscape
6. Social issues

The Avery family offered Bonaveree Farm to trial a range of experiments with different crops and farm systems, while community workshops were held to ensure the sustainability not only of farms, but of whole catchments.

Top tip.
Look at a range of income streams and diversify the farm, to increase resilience in drought years.

“farming through a dry period is now business as usual”
Working a thirsty land.

The group found the South Marlborough soils are reasonably robust if ground vegetation is maintained, but the combination of overgrazing, long-term drought, and localised soil salinity have depleted plant cover and caused erosion, particularly on sunny north-facing slopes.

On Bonaveree farm, lucerne was found to be a survivor, with remarkable tap roots reaching down more than 20 metres for ground water, and able to recover rapidly after dry periods. Lamb growth rates achieved on lucerne were high and with rapid fattening they can be off the property before high summer to let the pasture recover. Over the course of the trial, farm profitability improved by more than 50%, despite continued below-average rainfall on their property.

The lucerne and other trials at Bonaveree showed that with innovation and new knowledge, is it possible to farm profitably and sustainably, even in the face of significant climate challenges.

The Project developed a range of best management practices for dryland farming.

1. **Match crops and feed to climate and soils, and stock production to feed availability** – grow drought-tolerant plants like rotation ryegrasses, cereal greenfeeds, lucerne or sub clover, match stock numbers to the increased feed available, reduce stock numbers over summer and allow pasture to recover.

2. **Focus on the flats** – plant high quality stock feed to take pressure off dry north facing slopes.

3. **Reduce stock pressure and plant fodder shrubs** – fence eroding hill slopes to reduce stock pressure and encourage grasses and legumes, or plant stock forage species like saltbush and tagasaste.

4. **Plant shelterbelts, shade trees and woodlots** – shelter and shade will reduce lambing losses, enhance pasture and crop production, and reduce soil loss from wind erosion.

5. **Retain native scrub and tussock** – especially on steeper south-facing slopes for shelter and shade and slope stability, if you need to clear areas be selective, use sprays or root-raking, not fire.

6. **Diversify** – develop farm tourism, renewable energy (wind), and woodlots of drought-tolerant stringybarks, ironbarks and box eucalypts.
‘Beyond Reasonable Drought’.
The Starborough Flaxbourne Project wound up in 2008, with a field day cleverly called ‘Beyond Reasonable Drought’ that attracted 420 people. The innovative work carried out clearly demonstrated to the local farming community that it is economically viable to farm sustainably in the area. But more than that, they have been proactive in finding solutions that are transferable to other areas facing similar climate pressures.

With NIWA predictions of increasingly drier weather in the eastern parts of New Zealand, the lessons learned in South Marlborough will help prepare the nation for a sustainable future in the face of climate change.

Getting gold at the greens.
In 2009, the Starborough Flaxbourne Soil Conservation Group was the national winner of the Green Ribbon Award’s ‘Sustainable Land Use’ category for their outstanding efforts to sustainably manage land use.

“with innovation and new knowledge, is it possible to farm profitably and sustainably”

For more information on this Project see:
Burgeoning birdlife at Whangarei Heads.

The Taurikura Ridge Landcare Group is targeting a range of pests to protect native biodiversity at Whangarei Heads.

**PROJECT PROFILE:**

- **Name:** Taurikura Ridge Landcare Group
- **Location:** Whangarei Heads, Northland
- **Property Size:** Over 1400 ha under sustained pest control
- **Main objectives/issues:** Integrated pest control to protect biodiversity
- **Investment:** DOC Biodiversity Funds

**NZLT role/involvement:** Project coordination, facilitation

**NZLT Regional Coordinator:** Helen Moodie, helen.moodie@landcare.org.nz

**PROJECT BENEFITS:**

- **Landowner benefits:**
  - Less erosion and flooding from rain interception by healthy bush canopy
  - More attractive farm and pleasant environment to live in
  - Eco-tourism opportunities (guided walks, freedom walks, farmstays) to supplement farm income

- **Environmental benefits:**
  - Healthy bush
  - Threatened species saved
  - More native birds

- **Social benefits:**
  - Closer community networks
  - Local employment (e.g. trapping)
  - Increased tourism
Multitude of pests.
The old woman who swallowed a fly learnt a pretty harsh lesson in integrated pest management!

The folk in Taurikura Ridge Landcare Group at Whangarei Heads have also found that removing one pest can sometimes cause problems with another. In their case it wasn’t flies and spiders, but a discovery that if you only deal to the possums, the rats go wild, putting native birds and plants at risk.

With fewer possums there’s more food for rats and stoats. So now, having got possum numbers under control, they’re turning their attention to the rest of the pests.

From a pohutukawa to a whole peninsula.
The skeletal form of a browsed pohutukawa was the trigger for the Taurikura Project founders Martin and Heather Hunt, and Daniel MacDonald, to tackle the pesky possums responsible for their tree’s sorry state.

Back in 2002 they started controlling possums on a couple of properties covering around 120 ha of land at Whangarei Heads. Being a peninsula, the Heads were an ideal place to start on pest control, with the sea preventing possum re-invasion on three sides.

The area is a biodiversity treasure trove, a patchwork of coastal forest, shrubland, dunes, estuary and freshwater wetlands among the farmland and pine blocks providing habitat for threatened and unique species including kaka, kiwi, and the local hebe.

With the help of Helen Moodie and NZ Landcare Trust, Martin and Daniel talked with a number of other landowners before forming the Taurikura Ridge Landcare Group, one of 7 active landcare groups that comprise the Whangarei Heads Landcare Forum.

The Group now controls possums over 1400 ha and has expanded its targets to include rats, mustelids (stoats, weasels, ferrets) and feral cats. They aim to keep these feral fiends at low levels to improve and maintain native flora and fauna.
Sharing the passion.
The group aims to:

- Increase numbers of kukupa (wood pigeon) kiwi, tomtits, and bellbirds, and wetland birds like spotless crakes, fernbirds, and bittern
- Re-introduce locally extinct species like robins and whiteheads
- Encourage kaka and kakariki from the nearby Hen and Chicken Islands to breed on the mainland
- Increase germination and survival of native plants
- Protect rare and threatened plants, like carmine rata and the local hebe shrub and ground daisy
- Protect land snails, weta, lizards and bats

Importantly, their Project is also a demonstration to others of what can be achieved at the grass roots.

By talking with and including the wider community and neighbouring landowners, and sharing their learnings, they hope to achieve positive and sustainable outcomes for the environment.

Listen and learn.
The Landcare Group makes good use of local knowledge, scientific expertise, and a solid dose of kiwi ingenuity.

Advice was widely sought from DOC, Northland Regional Council, and the Puketi Forest Trust which is successfully trapping rats over a large area.

Poisons are another key tool, but ensuring they don’t harm the natives was important. The new toxin, Rat-Abate along with Feratox, ensure maximum effectiveness with minimum effect on non-target species.

Martin and Daniel also designed a cheap and effective rat bait tunnel using diagonally cut PVC pipes firmly anchored to the ground with wire hoops. The pipe keeps the bait out of the weather and out of the reach of native birds like the curious kaka.

Rat-Abate and Feratox ensure maximum effectiveness with minimum effect on non-target species.
Watching brief.

Keeping track of their achievements is critical for the group, not only to ensure they’re not wasting time on the wrong approach, but also to let them know if their efforts have paid off. Proof of that is also very handy when applying for funding.

The FORMAK (Forest Monitoring and Assessment Kit) provided the basis for monitoring:

- Tracking tunnels with ink pads to record footprints, betraying the presence of any remaining pests
- Recording the numbers of pests caught in traps
- Annual kiwi call listening
- Regular 5-minute bird counts
- Photo point monitoring of key specimen trees to detect change in foliage health
- Sightings of key species such as bittern, kaka and kukupa

To share their results, they record them on the FORMAK website and regularly report them to the group members and supporters.

Making tracks.

Since about 2007, the group has ‘knocked off’ more than 3000 possums. After an initial Feratox blitz and weekly trap lines checks, the traps are now restocked fortnightly to keep possum numbers low.

Tackling the rats requires more traps and bait stations, as their smaller home range means spacing traps 100 metres apart, with bait stations every 50 metres.

Their efforts have greatly improved flowering and fruiting of trees. Kiwi calls are heard more often, and kaka coming from the Hen and Chicken Island are regularly seen above the ridge.

Top tip.

Put as much effort into monitoring as you do on pest control. Not only will it let you know if you are on the right track and if your efforts are paying off, it is also a powerful way to secure ongoing support for your project.

Tracking tunnel prints showing ship rat. Solid blocks of colour are the ink pads. Image: Corinne Watts, Landcare Research
Under the strong leadership and initiative of Martin Hunt, the Taurikura Landcare Group has shown that sustained integrated pest control can be successfully carried out by a community driven initiative, as long as financial support and other resources can be secured.

Ecological restoration can be infectious. The project has supported and inspired other projects in the region – just as it received support and inspiration from Puketi Forest Trust. The group has a lot of work ahead but Martin says their enthusiasm is spurred on each time they enter the bush.

For more information about this Project see:

**In for the long haul.**

Like housework, pest control is an ongoing job. So, while the group aims to sustain biodiversity, it’s also important to sustain themselves. All landowners in the area are supportive and involved, but keeping them keen over the long-term is vital.

To keep up momentum, Martin ensures the landowners feel involved and engaged through:

- Regular email updates
- Bush walks
- Lots of chats over a cuppa!

Nature itself gives the landowners plenty of reasons to carry on, with more birds and flourishing bush providing enormous satisfaction from a job well done.

Being part of a bigger picture (the Whangarei Heads Landcare Forum) and having the support of NZ Landcare Trust is important in maintaining the group’s work. Ongoing funding also helps, so a three year funding grant from the Biodiversity Condition Fund in 2009 was a real boost.
Leaving the land in a better state.

A mosaic of native bush and productive paddocks creates a park-like feel on the Dodd’s farm at Te Waewae Bay.

Riparian plantings and shelter belts provide stock with protection from all prevailing wind directions.

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<thead>
<tr>
<th>PROJECT PROFILE:</th>
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<tbody>
<tr>
<td>Name: Dodd Family sheep, beef and dairy grazing farm</td>
</tr>
<tr>
<td>Location: Near Waiau River mouth, Tuatapere, Southland</td>
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<tr>
<td>Property Size: 240 ha: 30 ha in covenants, riparian, wetland</td>
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<td>Main objectives/issues: Protection of natural features (bush, wetland, streams, wildlife) while running economic unit</td>
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<td>Investment: DOC Biodiversity Funds</td>
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<td>NZLT role/involvement: Funding assistance, advice</td>
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<tr>
<td>NZLT Regional Coordinator: Janet Gregory, <a href="mailto:janet.gregory@landcare.org.nz">janet.gregory@landcare.org.nz</a></td>
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<thead>
<tr>
<th>PROJECT BENEFITS:</th>
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<tr>
<td>Farm benefits:</td>
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<tr>
<td>✔ Easier mustering</td>
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<td>✔ Better weight gain</td>
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<tr>
<td>✔ Fewer lamb losses from exposure</td>
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<tr>
<td>Environmental benefits:</td>
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<tr>
<td>✔ More native birds</td>
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<tr>
<td>✔ Healthy native bush</td>
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<tr>
<td>✔ Cleaner streams</td>
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<td>✔ Better fish spawning</td>
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<tr>
<td>Social benefits:</td>
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<tr>
<td>✔ Better fishing</td>
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<tr>
<td>✔ Enjoyable environment to work and live in</td>
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Buying a piece of paradise.

When Dorothy and Graeme Dodd purchased their Waiau Valley property nine years ago, they were determined to combine environmental management with improvements in productivity and profitability. Dorothy echoes the views of many kiwi farmers when she says, “You should leave the land better than you found it”.

The Dodd’s new farm already had a history of environmentally sympathetic management boasting many natural features including rare lowland alluvial forest and tidal creeks important for the local fishery.

The couple’s vision was to find ways to improve the farm, whilst protecting these natural areas and reducing business costs.

Getting down to business.

Fencing off the bush and stream margins was a first priority, to:

- Improve mustering
- Reduce lamb loss from wind exposure
- Reduce stock loss in waterways
- Improve stock weight gain by keeping animals grazing pasture, instead of wandering the bush

Control of rats and mustelids soon followed. The added bonus was healthier native bush and streams, and more native birds, further motivating the Dodd family.

Fencing and planting started in their first season on the farm, with five bush areas put into QEII National Trust covenants in 2005 to ensure that “…something positive will remain into the future for all the hard work put in,” says Graeme.

“I get so much enjoyment from working in a place with character”, says Graeme Dodd.

Top tip.

Hold field days on your property to share experiences and information with the neighbours and inspire them to sustainably manage their land.

Graeme Dodd, landowner
Pitching in.
Most of the capital costs of their environmental initiatives have been covered by grants and donations, enabling much faster progress to be made than would have otherwise been possible.

While the Dodd’s have contributed their own labour and money to reticulate stock water supplies, they have accepted help and funds from:

- The Waiau Habitat and Enhancement Trust to help install generous riparian buffer strips either side of all streams
- The Biodiversity Condition Fund, secured by NZLT, to plant extensive riparian zones, buy predator traps and poison, and pay professionals to control the shade-tolerant Darwin’s barberry that persisted in the bush
- Environment Southland who donated traps to control mustelids and rats in the covenant areas

Excluding stock from streams has brought with it a raft of benefits including:

- Water quality improvements
- A reduction in stream maintenance costs as the riparian vegetation shades out aquatic weeds and stabilises banks
- Healthier stock due to clean drinking water
- Neighbours inspired to fence off their own creeks after a field day on the Dodd’s farm

Rewards and awards.
Widespread recognition of the Dodd’s efforts came in 2006, when they won the Southland Supreme Winners of the Ballance Farm Environment Awards. Meeting other like-minded farmers from around the country at the national showcase was particularly valuable to Graeme and Dorothy, confirming they had done the right thing by their land.

The labour of love the Dodd family have put in to protect the biodiversity values on their farm has made it feel like home. Their initial plans were to use the property as a stepping stone, but now they have no wish to move on anywhere else; so much so that they continue to put precious time and resources into enhancing biodiversity.

Recently, with connectivity in mind, they have created a one hectare wetland that links existing bush with the estuary and provides fish habitat. Soon, the only unprotected patch of podocarp forest on the farm will be fenced at the Dodd’s expense. And all this, while continuing to improve pasture health and aiming to develop residual rough ground, makes for a bright future.

For more information on this Project see:
www.landcare.org.nz/regional-focus/lower-south-island/biodiversity-southland/

Janet Gregory,
NZLT Regional Coordinator
So you would like to get involved but are not sure where to start...
10 key areas for consideration.

When dozens of urgent jobs are all demanding attention, farmers and landowners can understandably feel reluctant to spend time looking for more work. Surely shifting to sustainable farming is going to take a huge additional effort? Not necessarily. There are a number of effective steps that farmers can take to make a real difference to the long-term sustainability of their farm, improving both productivity and the farm’s natural resources at the same time – a win-win situation.

1. Matching land type to stock class.
   Understanding the limitations of your land and its soil, and what uses it is capable of supporting.

   There are a range of waterway management options that provide real benefits to your farm.

3. Riparian planting.
   Planting waterway margins increases bank stability and provides a better environment for native plants and animals.

4. Pasture and soil health.
   Good management of pasture and soils is critical for optimum productivity.

5. Nutrient management.
   Managing nutrients carefully can save you money and improve farm decision-making.

6. Effluent management.
   Effluent is a valuable resource and if managed well can increase pasture production and reduce fertiliser costs.

7. Encouraging native biodiversity.
   Protecting natural features on your farm can be an important way to encourage native biodiversity.

8. Pest management.
   Animal pests can significantly damage native vegetation, prevent regeneration and affect bird life.

   Early and regular control of weeds is an important part of protecting natural areas and pasture.

10. Improving energy efficiency.
    Using energy efficiently provides both financial and environmental benefits.
Matching land type to stock class.

It’s important to know the limitations of your land and its soil, and what uses it is capable of supporting. That way you can focus your effort on the most productive land and in doing so, increase returns.

Start by considering whether the different land types on your property (e.g. steep and erodable, flat and fertile, wet) are subdivided as far as practicable and matched to the appropriate stock, crops or protection uses. Land use capability classes are one way of assessing the limitations of your land. Land is assessed according to its:

- Tendency to erode – for example, flat land versus steep hill country
- Type of soil
- Wetness – for example, too much or too little drainage
- Climate – including hours of sunshine, rain levels, wind, maximum and minimum temperatures

Developing a farm plan is one approach to help match land use to its best capability. A plan can highlight the suitability of various areas for particular land uses based on factors such as soil type and slope. A plan can also identify “hot spots”, such as waterways, wetlands, seeps and steep sidings, where environmental protection efforts are best spent, as well as identifying those areas best suited to further development, e.g. further subdivision, drainage etc.

Benefits include:

- Increased returns from better land use
- Fewer stock losses from removing steep or wet areas from grazing
- Reduced erosion
- Effective long term planning due to use of farm plans
- Better internal farm subdivision
Managing waterways.

Managing waterways on farms can often conjure up images of daunting costs with little benefit to farmers. The good news is there are alternatives that don’t involve putting up expensive post and batten fences along lengthy waterways. There are a range of management options to consider, all of which are accompanied by real benefits to your farm business.

Keeping stock out of waterways should be a number one priority – stock will stay safe, stream banks will be more stable and your water quality will certainly improve. However, there are a range of ways you could achieve this, depending on your budget, goals, the type of waterways on your farm and what suits your farming operation. These include:

- Temporary electric fencing around waterways or wet areas in the winter and/or when stock are grazing affected paddocks
- Reticulating water supply so stock no longer access waterways to drink
- Providing shade and shelter for stock away from waterways
- Permanently fencing part or all of any drains, streams, gullies, wetlands, lakes and estuaries – this can also be used to help improve paddock subdivision and grazing management
- Using riparian planting to help stabilise streams bank and filter run-off – see following section for more information
- Putting in bridges or culverts to keep stock from crossing through waterways

Other management approaches to help protect waterways include:

- Let vegetation grow in drains where possible to help strip nutrients from the water
- Avoid cultivating close to waterways – leave a buffer of rough grass to slow and filter runoff
- Use settling ponds, sediment traps or ungrazed swampy areas to filter run-off before it reaches streams
- Graze carefully in winter to avoid pugging, soil damage and soil loss to waterways
- Leave an ungrazed grass strip beside waterways to act as a filter for runoff

Taking action to manage waterways can be a step-wise process. Do a bit each year as you have the time and money. Small changes over time can add up to big improvements in both your farming operation and the health of your local waterways. And don’t forget that this is an area where funding is often available – talk to your local council to see what financial assistance and advice might be open to you.

Benefits include:

- Reduced stock losses and easier mustering
- Reduced erosion, conserving valuable soil
- Improved stock health and weight gains from reticulated water
- Transforming rough areas into attractive features.

Sourced from the NZ Farm Environment Award Trust.
Riparian planting.

One option for waterway management is to establish grasses, shrubs and trees in a fenced strip along the waterway margin or in wetland areas. Planted waterway margins provide both shade and food for freshwater life, as well as habitat for native plants and animals on the banks.

Farm benefits include shade and shelter for stock on the paddock side of the fence, as well as the establishment of an attractive farm feature which can enhance duck-shooting and fishing opportunities.

The main challenges with riparian planting are getting the right combination of plants to achieve your goals and factoring in the time and resources needed for ongoing management of the area. For example, if you have issues with stream bank erosion, it will be important to maintain a good cover of native grasses and sedges on the bank. It’s best to avoid planting too many native shrubs and trees that will shade out these grasses, which do the most to hold your banks in place. Alternatively, you might want to consider using willows or poplars to help stabilise banks, although in the long term these may take more maintenance.

If you have a large area that you’d like to plant up over time, it’s a good idea to develop a planting plan. Think about how wide an area you can afford to remove from grazing and where you might need access gates. You’ll also need to consider how much you can afford to plant in any one year and the time and resources needed to keep the area free from pests and weeds. Maintenance is especially important in the first three years as your planting gets established.

Together with fencing, planting is also an area where funding can be available to help cover your costs, so make sure you talk to your regional council when you’re at the planning stage. They, along with DOC, will be able to provide advice about what plants are suitable for your local area, where and how to plant, and ongoing maintenance for pests and weeds.

Key benefits:
- Protecting freshwater life
- Improving local biodiversity
- Filters run-off before it reaches the waterway
- Improves bank stability
Pasture and soil health.

Good management of pasture and soils is critical for optimum productivity. Productive soils and healthy pasture will together result in a better bottom line for your farm business, as well as positive benefits for soil and waterways on your property.

Better soil health will improve soil texture by reducing surface runoff, improving infiltration and moisture retention and improving the rooting environment. Good organic matter content will help retain nutrients in the root zone and help break up limiting horizons, e.g. clay pans. Improving forage quality and nutrient balance in pasture will improve stock performance, decrease losses to the environment and save you money.

Successful pasture and soil management is largely a result of good decision-making, based on planning and careful observation. Taking the time to monitor how different parts of the farm respond to different stock and weather conditions will enable you to adjust your management approach and stocking policies for optimum pasture growth and soil health.

The following principles can help ensure healthy pastures and good soil health:

- **Keep a healthy residual pasture cover after grazing to prevent pasture opening up.** This helps prevent soil loss and maintain soil moisture, as well as maximise pasture regrowth and suppress weeds.
- **Take stock off vulnerable soils and slopes during wet periods to reduce pugging damage.** This helps protect soil, increase pasture yield and clover content, and suppress weeds.
- **Manage your pastures to promote clover growth.** Clover is a free source of N and is critical to animal health and performance. Use grazing to prevent clover shading during high pasture growth periods but avoid overgrazing in low growth periods or extreme dry.
- **Minimise pasture cultivation to protect your soil structure and reduce your energy use and costs.**
- **Consider adjusting your stocking policy or grazing management to better match feed supply and demand, to improve control of spring growth and maintain feed quality, to reduce pugging during winter, or to allow greater flexibility to cope with unseasonable weather.**

Sourced from the NZ Farm Environment Award Trust.
Nutrient management.

Managing nutrients carefully can save you money and improve farm decision-making. Together with soil test results, you can use a nutrient budget to assess farm fertiliser requirements, targeting nutrients where you most need them. Better nutrient management will also reduce fertiliser losses to waterways, which is literally money down the drain, not to mention its effects on freshwater life!

The Farm Environment Award Trust offers a simple nutrient budgeting worksheet to help get you started or you can contact the Ministry of Agriculture and Forestry (MAF) Policy, Hamilton office, for a free copy of the OVERSEER® nutrient budgeting computer programme. You can also download it from the AgResearch website. In addition, Dairy NZ has produced a simple guide for dairy farmers on how to work towards a nutrient management plan.

The key practices:

- Avoid wasteful fertiliser use. Apply only the fertiliser that is needed, where and when it is needed. Use soil monitoring, nutrient budgets and professional advice to help achieve this.
- Manage nutrients and soil pH to meet the needs of healthy plants and animals.
- Recycle nutrients within the farm from effluent ponds and stand-off pads as well as from off-farm waste where suitable. Make your waste an asset instead of a problem!
- Minimise nutrient loss to groundwater and waterways by timing fertiliser application carefully to avoid saturated soil and heavy rain. Use wetlands, fenced grass strips beside waterways, and well-managed open drains as nutrient traps to reduce effects on water quality.

Sourced from the NZ Farm Environment Award Trust.
Effluent management.

Well-managed farm dairy shed effluent can be a valuable resource to increase pasture production and reduce fertiliser costs. However, untreated effluent entering waterways or ground water can damage both human health and water quality.

Every dairy farm is different and your effluent management system needs to reflect your farm’s unique needs. It’s a good idea to do your own effluent nutrient analysis to be sure of the nutrient content you are actually applying to your pasture. A nutrient budget can help you determine if your effluent application area is big enough, and help you develop a separate nutrient management plan for your effluent blocks.

Some land application systems are used to apply too much effluent for the conditions. Check your current application rates against the information on Dairy NZ’s website for your area, to ensure you are complying with the rules and making the most of the fertiliser value of your effluent.

Top tips for good effluent management:

- Test your effluent for nitrogen, phosphorus, potassium and sulphur.
- Check irrigated performance by measuring the application depth.
- Adjust irrigator speed to ensure good pasture uptake of applied effluent nitrogen.
- Run irrigators as fast as possible so that effluent application is light.
- Soil test the effluent area separately from the rest of the farm.
- Regularly maintain the irrigator, pump and pipes.
- Have holding facilities for effluent so that it can be applied to land at optimal times.
- Divert rainwater from the farm dairy before it reaches the effluent system.
- Reduce effluent volume with efficient wash down practices in the farm dairy.
- Avoid irrigating effluent over subsurface drained land.
- Hump and hollowed paddocks require extra care when irrigating effluent as there is an increased runoff risk.
- If you still need to spread effluent to manage pond levels between contractor visits, consider installing a low rate effluent irrigation system.
- Spread effluent evenly on flatter areas that are less susceptible to runoff.

Sourced from DairyNZ.
Encouraging native biodiversity.

New Zealand’s most threatened natural ecosystems are in lowland areas, often in isolated patches within or on the edge of farm or forestry land (New Zealand Biodiversity Strategy). Protecting natural features on your farm can be an important way to encourage native biodiversity in your local area. It can also have positive effects on your farm business and can enhance the wilder parts of your property. For example, planting or retiring less productive areas of your farm such as steep gullies or bush blocks can help reduce erosion, improve shade and shelter for stock, and make mustering easier.

Bush blocks (both forest and scrub) are valuable as they:

- Act as stepping stones through the landscape for our wildlife, e.g. they allow native birds to move down from the mountains in winter to feed in the lowlands
- Are reservoirs of native plant seeds allowing natural regeneration to occur and supporting local restoration projects
- Are often the last refuges of rare or endangered native plants and animals, providing a base from which to rebuild populations
- Often occur in gullies and steep slopes where they protect our soils and streams
- Contribute to the visual diversity of our landscape.

Fencing and planting are likely to be the biggest cost to enhancing biodiversity on your farm. Fencing costs will depend on your terrain, type of fence and stock.

Remember that this is an area where information, advice and sometimes funding can be available to help. Your local NZ Landcare Trust Regional Coordinator will be able to help advise you.

To find out more about protecting streamside areas and wetlands, contact your regional council or local Fish & Game office. To find out more about protecting and restoring bush, contact your regional or district council, your local Department of Conservation office, QEII National Trust, Native Forests Restoration Trust or New Zealand Ecological Restoration Network.

The following principles can help enhance biodiversity on your farm:

- Start by looking after the features you already have on your farm and extend your efforts around these areas.
- Keep stock out of special natural areas on your farm – the bush and your stock will be safer. You’ll also keep nutrients on your pasture where they’ll grow grass.
- Consider using native species for shelter belts to provide habitat for native birds and insects – ideally use species that grow in your area naturally.
- Find out what is special or rare in your area and protect any examples on your property.
- Plant carefully to reduce weed problems in areas fenced from stock – using the right number of plants will avoid leaving gaps where weeds could grow.
- Connect up areas of natural habitat on your farm where possible. For example, a shelterbelt running between two areas of bush could provide a corridor for wildlife.
- Maximise the farm benefits from any work you do. For example, fence bush areas so that you can run additional subdivision fences off the new fence.
- Where possible, form a Landcare Group and work together with your neighbours to protect natural features in your district – you’ll make more progress and could save money on bulk deals.

Sourced from the NZ Farm Environment Award Trust.
Pest management.

If you have taken the first few steps to protect natural features on your property and enhance biodiversity by fencing out stock, it’s a good idea to consider pest management as well. Animal pests can significantly damage native vegetation, prevent regeneration and affect bird life, undoing your good work.

Pest management costs will vary with pest type, numbers and the way you decide to control them. In most cases, it will be important to coordinate any control efforts with neighbouring landowners to achieve maximum benefits. There are many good examples of Landcare Groups with a focus on pest management.

Key pests to watch out for in natural areas are possums, rats, goats, pigs, deer, rabbits, hares, cats, ferrets and stoats. The main control options include traps, bait stations and shooting. Your local pest contractor, DOC office or local council can provide you with advice about the latest SPCA approved traps, the best bait station designs and appropriate poisons for your situation. It’s important to be aware of the health, safety and environmental impacts that go with different methods of animal pest control.

If you have chosen to protect an area of bush under a QEII Covenant, you may be eligible for assistance with pest control costs. You can also save money by buying pest control products in bulk together with your neighbours or as part of a Landcare Group to get a cheaper deal. Pest control on private land can also be eligible for funding from the Biodiversity Condition Fund.
Managing invasive plants.

Fencing stock out of your bush, wetland or streambank can mean you quickly see lots of new seedlings. However, you can also end up with a weed problem as well. Prompt and regular control of weeds will be an important part of protecting natural areas and neighbouring pasture.

Weeds can be a problem in natural areas for a number of reasons:

- Creepers can smother native trees, stopping them from getting enough light to grow
- Weed trees can overtop native canopy trees, reducing light levels for other plants
- Weeds that form a dense mat on the ground prevent native seeds from germinating, preventing natural regeneration
- Climbers can strangle and constrict the growth of native tree trunks

Weed control can be time-consuming and expensive. It is important to prioritise any weed problems to make sure you focus your efforts on those that are doing the most damage to your valued natural area. Talk to your local plant pest contractor or DOC for information and advice on what weeds you have and which to tackle first.

If there are weeds present in or on the boundaries of your bush remnant, wetland or riparian areas, make sure you:

- Remove all weeds from the site before you fence or plant
- Identify your weeds and get good advice about the best way to control them
- Take care with herbicides around native plants because they are very sensitive
- Use the right chemicals for your target weed and at the recommended rates
- Replant any open areas to avoid new weed infestations and use mulch where you can
- Check on weed growth regularly, especially during spring and summer as controlling weeds at an early stage is much easier
Energy efficiency.

Every New Zealand farm uses electricity and fuel, which have both a monetary and an environmental cost. Using energy more efficiently means using less energy to perform the same task – for example, using energy efficient light bulbs and appliances or regularly servicing and tuning all farm vehicles.

The Ministry for the Environment suggests the following low or no-cost ways of improving energy use on farm:

- Monitor and track irrigation water use with a meter
- Use a soil moisture sensor to schedule your irrigation
- Match your irrigation pump to the system requirements, rather than throttling a system with a gate valve
- Irrigate little and often and not below the active root system
- Turn off lights, appliances and computers when you’re not using them
- Replace the light bulbs in your most frequently used lights with energy-efficient compact fluorescent bulbs
- Make sure you switch off equipment on ‘stand-by’ at the wall
- Insulate your hot water cylinder with a wrap and insulate pipes near the cylinder
- Use ‘Energy Star’ computers and equipment with shut-down timers and sleep modes
- Track water use with a meter - many pumping hours can be wasted through undetected leaks
- When replacing a motor, choose the most energy efficient model, not the cheapest. Annual running costs can be 10 times the capital cost.
- Monitor and track energy use – you cannot manage what you do not monitor
- Regularly service and tune all farm vehicles and machinery
- Correctly ballast the tractor to optimise wheel slip.
- Radial ply tyres properly inflated to low pressure values can achieve better fuel efficiency
- Use minimum tillage techniques

In 2007, Landcorp conducted a full energy audit across all its dairy farms together with the Energy Efficiency and Conservation Authority (EECA). By adopting energy efficient practices they achieved a 9% savings in energy use across all farms, with an annual saving of around $50,000.
Larger commercial operators require a more formal reporting structure...

Sustainable land management plans are a key tool.
Sustainable land management planning is particularly important for larger commercial farming operations. These larger businesses are distinguishable by their ownership structure; in contrast with an owner operator they feature investors whose core business might not necessarily be farming. Owner operators may function quite well with an informal approach to planning however larger commercial operators require formal planning structures which may involve reporting to a board of directors who monitor progress on behalf of investors. Therefore, sustainable land management plans form a natural part of a large commercial farming operation.

A Sustainable Land Management (SLM) plan starts with an analysis of soil, land and other resources. It provides the basis for broad land management planning, taking into account issues such as return on investment and support for environmental services (biodiversity enhancement and water quality maintenance). It allows land managers to run a profitable business and leave the farm in a more sustainable condition for the future. These structured plans provide evidence of how economic, environmental, social and cultural issues associated with the land are managed, demonstrating to markets and regulators that high quality environmental management is in place.

Formal techniques such as land use capability mapping and biodiversity assessment are used in an SLM. They provide a consistent and transparent approach which suits larger commercial operations which may operate multiple properties across a region. The techniques often rely on digital mapping and provide data that can be continually re-used in management of the property (e.g. planning and operational control of fertiliser application). The mapping approach also provides visual information that is easily understood by shareholders and the wider community.

Key Concepts:

- Matching land use to underlying land capability
- Understanding the whole range of resources that make up the property
- Identifying integrated approach to property management that sustains both economic returns and environmental services – ‘win-win approach’
Why is sustainable land management planning important?

Protecting the long term health of fundamental farm resources. Soil can be regarded as the biggest capital investment in farming. It is a key and limited resource and SLM planning helps us to look after it. A basic premise is that farming activities are dictated by the limits of each unit of land. Soil is a key limiting factor and good farm managers recognise this and work to protect and enhance it. An SLM plan will provide a detailed breakdown of the soil types on a farm and offer an excellent platform on which to base initial management decisions.

A way to integrate management of economic and environmental requirements. Farm managers deal with complex natural systems such as pasture growth and stock production. They also face increasing requirements to demonstrate performance in managing a range of factors that impact on the environment; effluent management, nutrient runoff and biodiversity enhancement.

Economic factors are integrated within the plan and link directly with long term productivity and the provision of environmental services. Therefore SLM plans allow an integrated look at overall property objectives and the relationship between economic, environmental, social and cultural resources.
Benefits of a sustainable land management plan:

- Ability for the owner to match land management for forestry, agriculture and other land uses to the capability of different parts of the property – ensuring sustainability and maximum long term returns
- Providing a clear basis for any future investment – so money is put into appropriate investments on the right parts of the property
- Planning of planting, e.g. forestry, soil conservation works, stream works, riparian plantings, restoration, shelter etc.
- Property value increases and landscape enhancement
- Optimal use of fertiliser and other inputs – through development of a nutrient management plan which includes application based on soil fertility, land use and soil type
The following describes the process for the development of a comprehensive sustainable land management plan. Less detailed plans are unlikely to involve as many steps.

**Understanding property management objectives and constraints.**
Firstly it is essential to define the property management objectives and any associated constraints. A discussion needs to be held between landowners, land managers and other interested parties to confirm these points. Property information such as stock numbers and fertiliser use can be gathered at this stage. Constraints such as existing management agreements and easements need to be confirmed.

**Existing property information and resource maps.**
Existing property maps or aerial photographs showing key features are obtained. An electronic GIS map is created and overlayed with property resource information such as Land Use Capability (LUC), fence lines, buildings etc.

**Property survey and map generation.**
A land resource survey of the property is undertaken to gather additional information. This will generally include but is not limited to:

- Land use capability (LUC)
- Biodiversity and vegetation cover
- Recreational or tourism use
- Carbon farming potential
- Visual landscape zones
- Production forest
- Waterways

Mapped information is transferred to electronic GIS maps to allow different ‘layers’ of information to be compared. Examples of some of the resources that are generally mapped are provided in the following examples.
Land Use Capability mapping.
A key component of good SLM planning is Land Use Capability (LUC) mapping. This widely used system has been developed and refined in NZ since the 1970’s. Land Use Capability (LUC) classification is an assessment of the land’s capacity for sustained productive use. It identifies the class of land from 1 (the most versatile and productive class) to 8 (the class with most limitations to use). The dominant limitation on productive use is identified as one of four types of limitation – erodibility, climate, wetness, or soil within the rooting zone. A particular land management unit has particular management and soil conservation requirements.

Biodiversity.
A survey of vegetation cover and biodiversity values is important to allow areas with significant biodiversity value to be incorporated into the plan. Indigenous vegetation values, rare species etc. are taken into account.

Carbon farming potential.
The potential carbon credits for a farm can be quantified once forest areas are fully identified (species and age). A value can be assessed in relation to future farm emissions liabilities, harvest liabilities and forest management plan.

The Emissions Trading Scheme states that Pre-Kyoto Exotic forest is eligible for a one-off allocation of credits while Kyoto Exotic is eligible for annual credits. Pre-Kyoto native is not eligible for credits but Kyoto Native is eligible for annual credits.
Management zones and management directions.
Once the resources of the property are mapped and understood the relationships between the various aspects can be examined. Management zones can be identified, where a similar broad management approach can be used. There might be zones such as high production pasture management, integrated farming and forest woodlots, biodiversity enhancement etc. A discussion of the resource information with the management team is useful to identify possible management zones and broad management directions.

Draft plan.
Based on management team discussions, a draft property plan and associated maps are produced identifying developments such as:

- New landuse options
- Agricultural productivity improvements
- Soil conservation plantings
- Biodiversity management and restoration options
- Waterway management approaches
- Alternative effluent management approaches
- Provision of carbon credits

Sustainable land management plan and implementation.
A practical work programme is set out to implement the SLM plan. It is developed in conjunction with the landowners and their management team.

For guidance on creating a sustainable land management plan simply contact your local NZ Landcare Trust Regional Coordinator or local council.

This chapter is based on information provided by P. A. Handford & Associates Ltd.
Example: Kakaho wetland, SLM planning in action.

Wetland areas on a farm create potential problems for stock management. They contribute minimal pasture production and can form an ongoing stock hazard, particularly if stock attempt to enter the areas in search of feed in dry periods. On the other hand, wetlands can provide significant environmental benefits. Wetland systems are increasingly rare and can contain threatened native wetland plant communities which in turn provide important lowland habitat for native birds and fish. Wetlands are often described as ‘natures kidneys’, as they have a fantastic ability to filter out sediment and nutrients from water moving through the wetland system.

Fencing and restoring wetland areas on a property can provide significant benefits, such as improved farm productivity through avoiding stock losses and time lost rescuing stock. It can provide increased biodiversity and water protection performance for the property. The enhanced landscape can improve the look and real estate value of a property.

SLM planning allows wetland areas to be identified within the whole farm property and approaches to fencing and management identified that benefit the overall farm operation.

This wetland area has been fenced and planted following completion of an SLM plan. It removes a problem area for stock management, and provides capture of sediment and nutrients to protect downstream waterways and the Pauatahanui inlet. It is providing important habitat for native waterfowl and will provide increasing habitat for other native birds as restoration plantings develop.
6 How to set up a Landcare Group.

There are no set rules about what a landcare group should look like.
Five good reasons to set up a Landcare Group.

1. Land management issues don’t respect property boundaries.
   Caring for the land and our natural resources often requires community participation. If you have a problem, it’s highly likely your neighbours will share a similar problem. Weed seeds blow across property boundaries, erosion prone gullies cut through boundary fences and streams flow across multiple properties in a catchment. Landcare Groups encourage neighbours to work together to overcome common problems.

2. Landcare Groups come in all shapes and sizes.
   There are no set rules about what a Landcare group should look like. Each Group decides on its own focus and activities, and can be as big or small as it needs to be.

3. Landcare Groups are a proven successful approach to local land management issues.
   Experience has shown that the group approach achieves better results than individuals working alone. Sharing information leads to an improved understanding of both problems and solutions. Groups often have access to a wider range of advice and financial support making them more effective than the individual working in isolation.

4. Landcare Groups involve local people dealing with local issues.
   Setting up a Landcare Group is not just about trying to solve complex, large-scale environmental issues. Many Groups find sharing knowledge and resources, learning new things and social aspects of Landcare are important for the community and a good reason to be involved.

5. Landcare Groups develop practical solutions that make a difference – ‘action on the ground.’
   Real solutions to land and water degradation problems need to be both profitable and sustainable. Landowners working together to address local problems will ensure that management solutions are practical and fit together with production objectives whenever possible. Adopting a proactive approach ensures landowners and local communities maintain control of what happens in their own ‘back yard,’ with expert advice called upon when needed.
Getting started.

If you’re thinking about starting a Landcare Group in your area, there are a few key steps you might like to follow to help get things off the ground. The steps below are a guide only, as all groups and communities are different.

Identify the issue.

Start by getting clear in your own head what the issue or problem is. From there, it’s important to get a feel for what others in the community think. Talk to a range of local people to see if they share your view and are interested in taking action – for example, landowners, farm discussion groups, local businesses, schools, your regional council, your district council, Federated Farmers, DOC, forest managers, local hapu. Think about who’s likely to have an interest in the issue, who might be affected by any actions and what agencies might have a legal responsibility or interest in the issue. This will also help you check that there aren’t any other groups in the area already looking at the matter.

Get together.

Once you feel there is enough interest in the idea, hold a ‘get together’ to discuss everyone’s ideas. This could be as informal as a gathering of neighbours around your kitchen table or could involve a formal public meeting in the local hall chaired by a council or Landcare Trust staff member.

The main purpose of a first meeting should be to:

- Bring together people who are interested in the issue or problem
- Allow for discussion about the issue or problem
- Confirm whether the project is a ‘goer’ for a community effort
- Identify the next steps, which may include getting commitment to form a Group (from DOC 2003)

It will be important to write down the ideas discussed and to agree on the next steps by the end of the meeting. This might be as simple as agreeing that you want to form a group or could go as far as setting some goals for action on agreed key issues. Don’t forget to pass round paper for people to add their name and contact details to help you organise the next meeting.
Clarify the issue

Do you feel strongly enough to do something

Get together and discuss ideas with others

Other people share your views

Form a landcare group

**Top tip.**
It can be helpful to have someone from an existing Landcare Group come along to share their experience.

**Top tip.**
Get actively involved ‘on the ground’ at an early stage. This helps build on the initial enthusiasm and encourages people to stick with the project.
Working out your Group structure.

There are no hard and fast rules about how a successful Group should be structured. The approach your Group chooses may depend on:

- The level of commitment available to run a formal group
- Whether you need to formalise project detail in a constitution or similar
- The amount of funding needed for your planned action and possible sources for that funding – many funding organisations require groups to be a legal entity to show financial accountability

Groups can be informal, with members sharing the coordination role and teams established for discrete tasks. Alternatively Groups can choose to be formal, with assigned roles, such as treasurer, secretary, chairperson and a committee.

Top tip.

Both formal and informal structures can work successfully, although a more formal approach can improve your eligibility to access funds and grants.
Formal Groups.
Roles in a more formal Group structure will generally include:

- Chairperson – represents the group (spokesperson), chairs meetings and ensures everyone has their say
- Secretary – takes minutes, deals with all correspondence and may circulate minutes or send out an agenda before the meeting
- Treasurer – handles the financial side of the group’s operation

Other members may be given designated roles, for example, publicity officer, fundraising coordinator, volunteer coordinator.

If your Group is taking on a large-scale project and needs to be established as a legal entity, you will need to form either an incorporated society or a charitable trust. Both structures can obtain charitable status with the IRD for tax purposes and both are able to employ people, receive grants and enter into contracts.

An incorporated society requires a minimum of 15 members and key decisions are made by members at general meetings and in committee. There is a fee of $100 to establish an incorporated society, which can be either charitable or work for profit. You must be registered with the Companies Office, who will require annual financial accounts.

A charitable trust requires a board of trustees of at least two people, which makes the key decisions. Trustees are appointed or elected for a fixed term. There is no establishment fee and annual accounts are not required by the Companies Office. However, you must satisfy the Charities Commission that the main purpose of the trust is charitable.

While becoming a legal entity means more administration work and incurs a cost to audit accounts, it means group members are not personally liable if the group gets into financial difficulty. It also enables a group to hold assets and enter into contracts if need be.

Informal Groups.
For some groups, a formal structure at the outset isn’t appropriate because projects are small scale, administrative resources are limited or members simply aren’t ready to go down that path. There will still be some funding and support available to groups without legal status. An alternative option to help access more significant funding is to negotiate with an existing legal group or agency to handle the funding aspects.

For more information about the common structures available to community groups and for help with deciding what will best suit your group, check out the links on our website at www.landcare.org.nz/landcareguide/.

Other administrative areas that your group may need to consider include the need for membership fees, any OSH implications of particular projects, and what kind of processes you’d like to use to run your meetings.
Hatching a plan.

Good planning from the start will mean that your Group’s activities have a much greater chance of being effective. It also helps everyone to be clear on what’s happening and why. Preparing a plan of action is an excellent place to start and it doesn’t need to be a lengthy document.

A good action plan should include:

- The results you want (your vision, goals, objectives)
- Actions that will be taken and what needs to be done first (priorities)
- What resources are required and how resources will be provided
- Who will take which roles and responsibilities
- How coordination, communication and decision-making will take place
- Time lines
- How progress will be monitored
Steps involved in planning include the following:

- Assess the current situation
- Establish vision, goals, objectives
- Identify actions and priorities
- Identify how to monitor progress and evaluate
- Confirm your plan
- Communicate your plan
- Implement your plan
- Monitor and evaluate
- Revise your plan
Maintaining momentum.

Take some concrete action. Once your Group has decided on a structure, has agreed some goals and established a plan, it’s time to put things into action. Having a clearly defined task to work on at the outset will help the Group come together and will keep everyone’s interest high. Start with something simple that is easily achievable to build the Group’s confidence – there is nothing like a sense of shared achievement to motivate people.

Top tip. Include a social component like a shared lunch or a BBQ to help celebrate what you achieve.
Keep up motivation and enthusiasm.
The success of your Group will come down to how well you work together. Consider the following ideas to help ensure your Group maintains enthusiasm and continues to enjoy the work:

- Make sure your group maintains regular communication – agree as a group how you will communicate, e.g. telephone tree, reports at regular meetings with clear records of who’s doing what and by when, circulating minutes to all members, newsletters etc.

- Make sure everyone in the Group is involved in planning and decision-making to maintain a sense of ownership and purpose.

- Share the workload amongst as many people as possible to avoid a few people doing all the work and burning out. Find out about the different skills and interests of Group members and encourage people to use these to support the Group. Try to keep all tasks manageable and realistic and don’t forget to build in rewards, which can be as simple as a cake for morning tea.

- Fieldays and workshops provide an excellent opportunity to share information. Why not invite experts such as scientists to come along and answer questions?

- Deal with any conflict as it arises – this is an inevitable part of working together but can be managed constructively by acknowledging all points of view and looking for win-win solutions.

- Celebrate achievements – everyone likes to know they are appreciated and to celebrate the results of hard work. Individual acknowledgements are important, as are social events and positive publicity.

- Reflect on how your Group is doing and take time to learn from your experiences. This doesn’t have to be an arduous process and can involve the Group discussing simple questions such as “what’s working well?” “what isn’t working so well?” and “what could we be doing differently?”
Running events and workshops.
At some point your Group might decide to run an event. Events come in all shapes and sizes and can include farm walks, field days, a working bee, a public meeting or a fundraising activity. You might like to consider running an event together with one or more partner groups or agencies if there is a common interest or you need help with resources.

It’s helpful to consider the following points when planning an event:

- Be very clear within your Group what the purpose of the event is and who your audience is – these will be the key influences in how you design and run the event
- Check if you need permission to hold the event.
- Make sure you have a venue or environment suitable to the event
- Ensure conditions are safe and comfortable
- Make sure you have suitable funding and resources for what you want to achieve
- Consider the need for publicity and reporting
- Make sure you have enough people power to plan the event well and to manage it on the day

It’s a good idea to assign one person within your team to be the event coordinator – someone who keeps track of the big picture and makes sure all the aspects of the event come together on the day. Develop a task list and timeline together as a group and make sure tasks are allocated to a number of people. One person can’t do it all! The event coordinator can then keep track of how each task is progressing.

If there are costs associated with your event, it will be important to set a clear budget that everyone in the Group is aware of. Make sure you check actual costs against your budget as you go, so you don’t overspend.

A key part of running an event is letting your audience know it’s on. Before you set a date, check for any clashes with other local events that might involve your audience. Once you have a date, you might choose to develop a specific invite list and contact key people individually. Alongside this, wider promotion using local media is a good idea, as well as putting posters and flyers targeted to your audience in local shop windows, halls and on notice boards. For more information about working with the media, see the following section.

It is also prudent to think about risk management for your event. Consider what could go wrong, what you could do to minimise this risk and what you will do if something does happen. It’s always better to be prepared for unplanned situations when the safety of others is involved.

At the end of the day, don’t forget to acknowledge the effort people have put in to an event. It can also be useful to reflect on how the day went. This can include checking in with participants to get their feedback on positives, negatives and what could be done differently next time.
 Keeping others informed and dealing with the media.

Once your Group is up and running, make sure you inform the local NZ Landcare Trust Regional Coordinator (for contact details check out www.landcare.org.nz/contact-us/), local councils and any other agencies that might have an interest in what you are doing. This will help you keep informed about what’s happening in your area, including any training, events, support or grant opportunities.

Don’t be afraid to involve the local radio station and newspapers in the promotion and reporting of your group activities. The media love feel-good stories involving local people and are often happy to help publicise Landcare Groups. Effective media liaison will help you gain support from funding bodies, corporate partners and volunteers.

It’s a good idea to choose one person from your Group to be your media spokesperson. Ideally this will be someone who speaks well in public, can respond quickly and succinctly to questions and has good knowledge about what your Group is doing. Your spokesperson can then introduce themselves to the editor, environmental or rural journalist at your local newspaper and/or radio station and let them know about your Group and any plans and projects. Over time, your spokesperson can feed these media contacts information and photos about progress with projects and invite them to any events the Group might run.

Posters and displays in local public places are also a good way to encourage new members and promote what you are doing in your community.
Examples of how Landcare Groups form.

Landcare Groups can be any size, from two or three individuals upwards. The scale and structure of a group is determined by the issues being addressed, the geographical coverage and the number of people willing to get involved. The follow examples help explain how this works in practice.

Formation of small Landcare Group.

Smaller Groups can sometimes be made up of only 2 or 3 people but it is more usual to have somewhere in the region of 10 active members. They might simply be neighbours who have a shared interest in an area of bush located on private land. In many such cases the focal point will be the protection of native flora and fauna or a desire to clean up a creek. This in turn drives them to find out more. Where should they start? Is funding available? Who can help? The more support a group can get the more likely it is to succeed. NZ Landcare Trust can answer these questions and help identify other key agencies who can be of further assistance.

The Tuamarina-Blind Creek Landcare Group in Marlborough formed when a group of neighbours got together to re-plant the margins of the stream near their homes. The idea was to improve the habitat and establish an ecological corridor for tui and other birdlife. A three stage plan over 6-9 years was identified. The small group of 3-5 neighbours holds regular weeding days and calls on Outward Bound for support with these events.

The formation of a small Landcare Group is often a good way to give structure to the project and help its continued development and success. Smaller Landcare Groups sometimes require lots of help during the first year. With growing experience comes greater independence and the involvement of NZ Landcare Trust reduces.
Formation of a medium Landcare Group.

Some smaller landcare groups find that they have a complementary interest in a given land area and on that basis they get together and form a larger entity. This was the case with the Whangarei Heads Landcare Forum.

Whangarei Heads has high biodiversity values including a rare coastal forest, a population of Northland Brown Kiwi and other threatened species. However this was under threat from invasive weeds and animal pests. A mosaic of habitats within the 6000 ha of the Heads reflects a varied land use with large scale sheep/beef farms, dairy farms, lifestyle blocks and coastal settlements. All are complemented with a community that is passionate about caring for what is in its backyard.

Small informal Groups ‘sprang up’ with the assistance of NZ Landcare Trust. They started looking at the active management required, such as possum control, establishing community nurseries, rat trap lines, fencing and revegetation projects. Although separated in some cases by only a few kilometres each project was essentially stand-alone. Helen Moodie, NZ Landcare Trust Regional Coordinator began to organise opportunities for the various Groups to come together and share ideas. It didn’t take long before these ‘forums’ forged a strong link between the separate Groups.

One of the Landcare Groups found the absence of a legal status limited its opportunities to gain funding, so Papakarahi Landcare Group Incorporated Society was born. With this formation of a legal entity came the compliance costs of auditing, minute taking and establishment of a bank account. As other Groups started considering taking similar steps the potential for needless duplication became obvious. Following the needs of the constitution and requirements of the Companies Office, the Papakarahi Landcare Group (Inc) underwent a review of its constitution and a name change to become the Whangarei Heads Landcare Forum (inc).

Formation of a large Landcare Group.

Large formal Groups are usually the product of geographically large or complex issues. The Upper Taieri Project provides a good example of how such a Group forms.

The Upper Taieri catchment in Central Otago receives between 350 and 450mm of rainfall a year. This rainfall feeds the Taieri River which services around 150 irrigators. The river is also a highly valued trout fishery, home to several rare native fish and adjoins the popular tourist destination, the Central Otago Rail Trail. Water allocation is managed through a diverse mix of scheme shares, individual RMA consents and a historical system of ‘Mining Rights’.

Historically there had been a lot of friction around competition for water. More recently mining right holders became aware of the need to re-apportion water amongst themselves in the modern day policy setting. However, they were not sure how to go about unifying the community in discussing this once taboo subject. A setting of fear of the unknown and awareness of a need for a community voice sparked the formation of the multi-stakeholder Upper Taieri Group.

In 2006 Chairman of the Maniototo Irrigation Company Geoff Crutchley sparked community discussion around the advantages of wide community involvement in determining a fair water allocation model. Local authority support for the idea was followed by a series of stakeholder meetings facilitated by NZ Landcare Trust Project Coordinator Gretchen Robertson. The Trust’s involvement continued with a successful grant application to the Sustainable Farming Fund.

A public meeting was held to nominate representatives for the Upper Taieri Water Resource Management Group. At least one representative from each of the 5 Upper Taieri irrigation sub-catchments was nominated along with representatives from Fish & Game, Department of Conservation, Otago Regional Council and Central Otago District Council. Attendees developed an innovative vision for a community self management model and also supported an open door policy to attendance at the Group’s future meetings.
7 Further Information.

Digging deeper...
Useful contacts.

NZ Landcare Trust
www.landcare.org.nz

NZ Landcare Trust Regional Offices and contact details
www.landcare.org.nz/contact-us/

NZ Landcare Trust, Trustee Organisations:
• Federated Farmers of New Zealand
  www.fedfarm.org.nz
• Fish & Game New Zealand
  www.fishandgame.org.nz
• Royal Forest & Bird Protection Society of NZ
  www.foresandbird.org.nz
• Federation of Maori Authorities
  www.foma.co.nz
• Ecologic Foundation
  www.ecologic.org.nz
• Rural Women New Zealand
  www.ruralwomen.org
• Federated Mountain Clubs of New Zealand
  www.fmc.org.nz

Crown Research Institutes (CRIs): Science New Zealand represents the 8 CRIs including AgResearch, Landcare Research and Scion
www.sciencenewzealand.org

Regional Councils: Local Government NZ
www.lgnz.co.nz/lg-sector/maps/

Ministry of Agriculture and Forestry
www.maf.govt.nz

Department of Conservation (DOC)
www.doc.govt.nz

DOC List of Regional offices

NZ Farm Environment Award Trust
www.nzfeatrust.org.nz

QEII National Trust
www.qe2.org.nz

New Zealand Native Forest Restoration Trust
www.nznftrt.org.nz

New Zealand Ecological Restoration Network
www.bush.org.nz

National Wetland Trust
www.wetlandtrust.org.nz

Tane’s Tree Trust
www.tanestrees.org.nz

DairyNZ
www.dairynz.co.nz

Useful documents and publications.

NZLT. Restoring the Balance, Northland Biodiversity
Self-Help Kit

NZLT. Turning the Tide, An Estuaries Toolkit for New Zealand Communities

NZLT. Beyond Reasonable Drought – Adapting Dryland farming to Climate Change

NZLT. Guidelines for LandownersPEAT Lake Catchments

NZLT. Pest Control Guidelines


DairyNZ. Clean Streams Booklets
http://www.dairynz.co.nz/page/pageid/2145836756/Sustainable%20Dairying#WaterwayManagement

DOC. From Seed to Success: Guidelines for Community Conservation Partnerships
www.doc.govt.nz/publications/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/guidelines-for-community-conservation-partnerships/

NZFEA Trust. Learning from Leaders Project
http://nzfeatrust.org.nz/content/213/default.aspx

Landcare Australia. New Group Starter Kit
http://svc018.wic008tv.server-web.com/news_details.asp?sType=news&news_id=245

For further information and resources supporting ‘Landcare: A Practical Guide’ visit our website:
www.landcare.org.nz/landcareguide/