

4 Landcare Opportunities.

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.
2. **Managing waterways.**
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.
9. **Managing invasive plants.**
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:

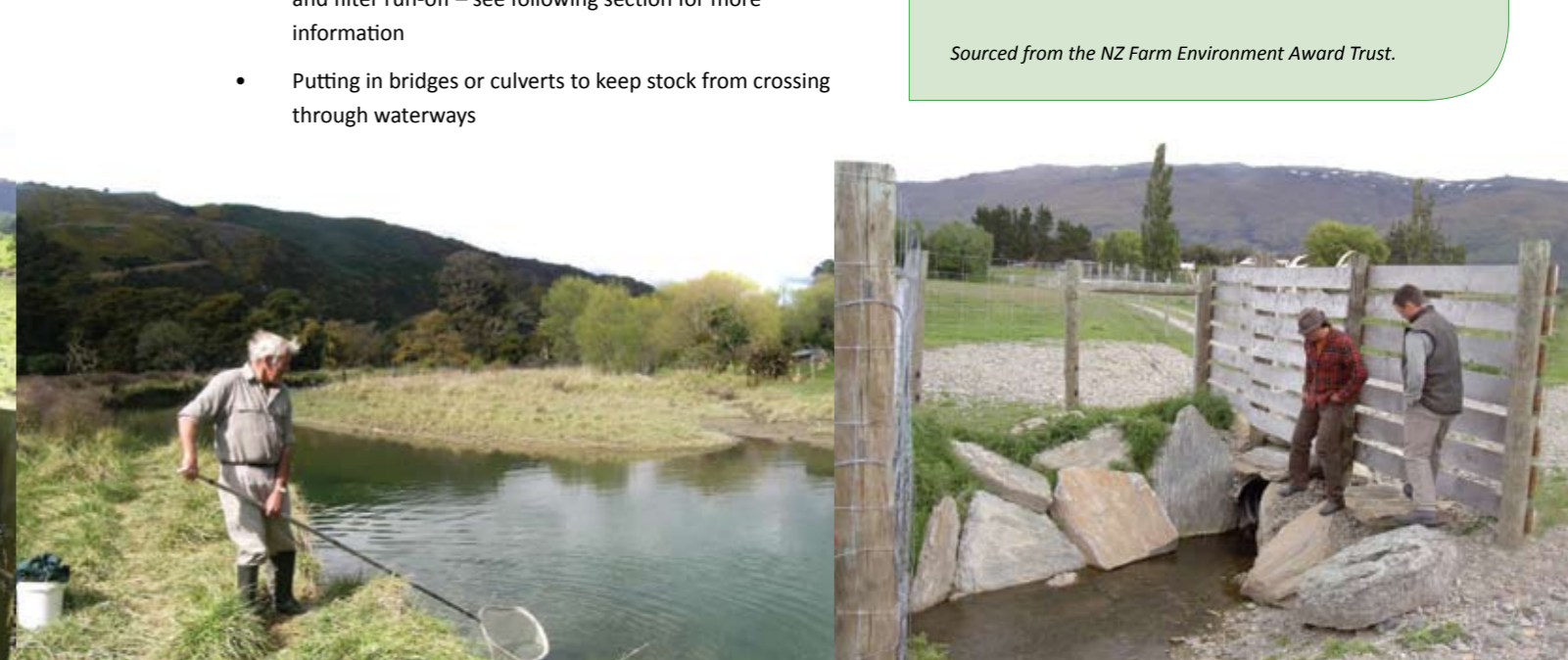
- Let vegetation grow in drains where possible to help strip nutrients from the water
- Avoid cultivating close to waterways – leave a buffer of rough grass to slow and filter runoff
- Use settling ponds, sediment traps or ungrazed swampy areas to filter run-off before it reaches streams
- Graze carefully 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.

