



# Bush Restoration

## Community Guide

This guide has been created to assist a thoughtful stepwise approach towards bush restoration projects.

### Indigenous Forest in the Horizons Region

80% of Aotearoa forest plants naturally exist nowhere else in the world. Before the arrival of humans, 78% of Aotearoa was covered by forest, today, it's about 20%. Large areas of land have been deforested to allow for production.

There are over 30 different forest ecosystem types in the Manawatū Whanganui region. These differ in soil, climatic, and vegetation characteristics. Conversion of lowland forests to pasture and urban areas has disproportionately reduced these forest areas, with some that now have as little as 2% of the original area remaining.

Restoration of forest remnants provides opportunities such as creating habitat for a wide range of birds, insects and reptiles, linking the past and future with ancient trees, providing education and study resources of unique ecology, creating corridors that link different ecosystems, respecting and contributing to Māori values for food, medicine, spirituality, and protecting local genetic material. Loss of an ecotype can lead to significant lost opportunities.

### Your Indigenous Forest

This guide contains six exploration steps to help you understand your site, and seven action steps to prepare and implement any changes needed to restore your forest.

## Exploration Step 1: Choose a goal

There are many goals you could work towards for your forest restoration project. A goal helps you to make decisions along the way like, what should I measure to make sure positive gains are made.



Here are a few themes to think about:

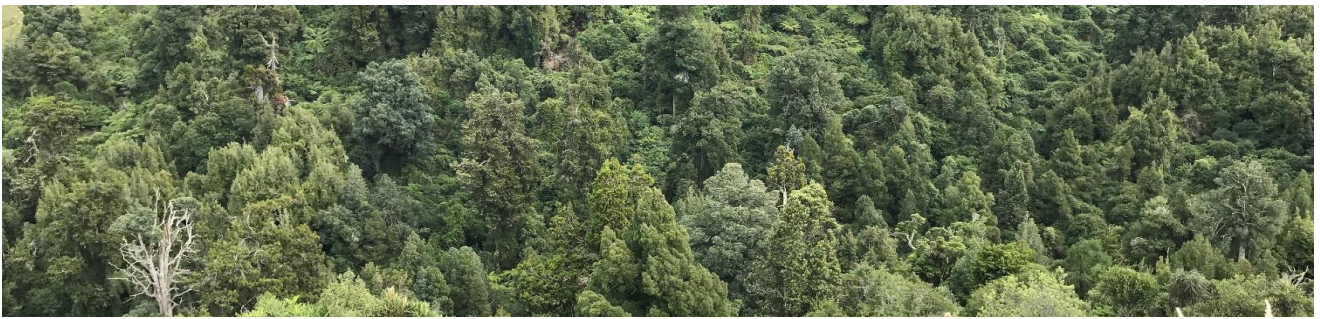
- Restoring forest ecosystem to be self-sustaining with natural and historical values.
- Increase biodiversity, birds, insects, frogs, lizards & native plants.
- Rongoā supplies.
- Improve water quality & reduce flood risk.
- Protect low producing land.
- Mitigate erosion.
- Reintroduce threatened or locally extinct species.
- Create an education facility.
- Preserve historical references.
- Create a visitor attraction.

## Exploration Step 2: Choose a restoration site

You may already have a project site in mind, but if not, choose the easiest site first where the goals are achievable.

You may have:

- Old trees that need protecting.
- An area of native vegetation being overwhelmed by pest plants and/or pest animals.
- Signs of taonga species i.e. kiwi, bats, skinks.
- Poor production land best suited for retirement.



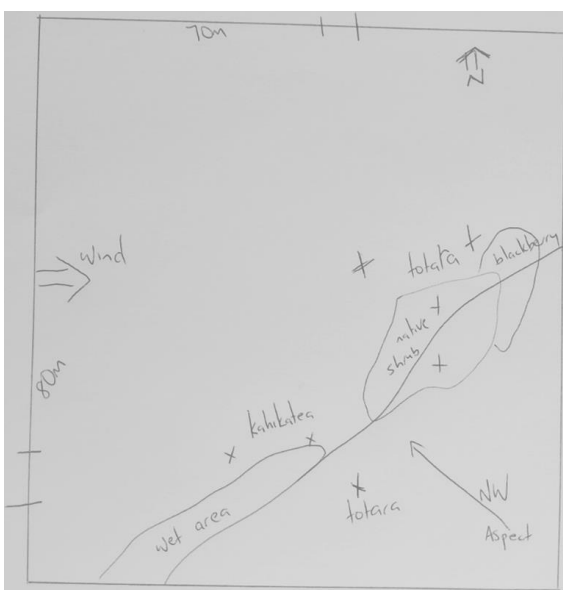
### Exploration Step 3: Prepare a site plan

A site plan allows you to gather lots of information before you start so that good decisions can be made.

Identify the main limiting factors i.e. wind, weeds, pests, and erosion as these will be critical to address early on in your project.

Draw the area you have in mind, include areas in square meters (m<sup>2</sup>) so you can calculate resources required and look to include:

- Existing vegetation (both native and exotic).
- Native plants (identify what and where they are).
- Weeds (identify what species as this will determine methods of control).
- Identify different moisture conditions and dominant wind directions.
- Identify significant slope variations, erosion or potential erosion risks.
- Structures, buildings, dams, culverts, fences, silt traps.
- See if you can find any historic pictures, cultural use of the area, and any information that could show what the area used be like.



Example Site Plan

### Exploration Step 4: Check the rules

There are national and regional regulations that aim for similar outcomes that your project may have including improved water quality and increased biodiversity.

Regulations may apply to stock exclusion, vegetation clearance, any built structure, earthworks, coastal forest and general indigenous forests.

For more information on these regulations please check out the **One Plan** which is our 'one stop shop' document for resource management planning. Chapters 13 and 18 are likely to be relevant to bush restoration projects. You also may need to refer to the Freshwater Intensive Winter Grazing factsheet. These documents can all be found on the Horizons Regional Council website – [www.horizons.govt.nz](http://www.horizons.govt.nz)

You can also check in with the Horizons Consents Planning team before you begin to make sure you know if any rules apply. We encourage you to get in touch because every site is different and we can provide better guidance with the rules when we know your site specific conditions. Contact the Duty Planner on free phone 0508 800 800.

### Exploration Step 5: Seek out support

Financial and practical support is available for a variety of sources.

You may want to look into these further:

- Community Grants offered by Horizons Regional Council.
- General search for funding for environmental projects in your area online.
- Volunteers from your community, environmental groups, or local school.
- Expertise from Horizons, or other local people who are already working with a protected remnant, or environmental groups, such as Forest & Bird, Fish & Game.





## Exploration Step 6: Make a plan and a budget

From your exploration so far several actions may need to be prioritised. This could include solving a problem first, such as erosion, before native plants are put in. Your plan should order each action and estimate when the next step can be undertaken both practically and affordably. Small achievable targets each year are better in the long run by comparison to trying to do too much and finding the maintenance is too difficult to keep up with.

For example; a schedule of smaller steps could be:

- Year 1: Fence and weed control.
- Year 2 to 5: Plant shelter and weed control.
- Year 6 to 10: plant small areas of natives, maintain or add increase plants each year.

Check through each of the seven action steps and prepare your plan with all the potential costs required.

For each action:

- Select most appropriate measures for your site
- Measure the project area or the fence length required
- Calculate quantities needed
- Find the cost of each item (this may require contacting suppliers or contractors)
- You may choose to divide your site into zones to reduce initial work load and costs and trial methods. Once you achieve results in one zone you can continue onto others



Here are some approximate costs (as of Jan 2024) and items to account for to help plan what can be afforded. Accurate costing is still needed.

Item	Unit cost	Quantity	Total cost
Fencing			
2 wire electric	\$7/m		
3 wire electric	\$8/m		
5 wire 2 electric	\$16/m		
8-9 wire	\$24/m		
Deer	\$30/m		
Weed control	\$80/hr		
Plants	\$4 ea.		
Spot sprays	\$0.50 ea.		
Plant guards	\$3 each		
Pest repellent	\$85/500 plants		
Plant release spray	\$0.60 ea.		

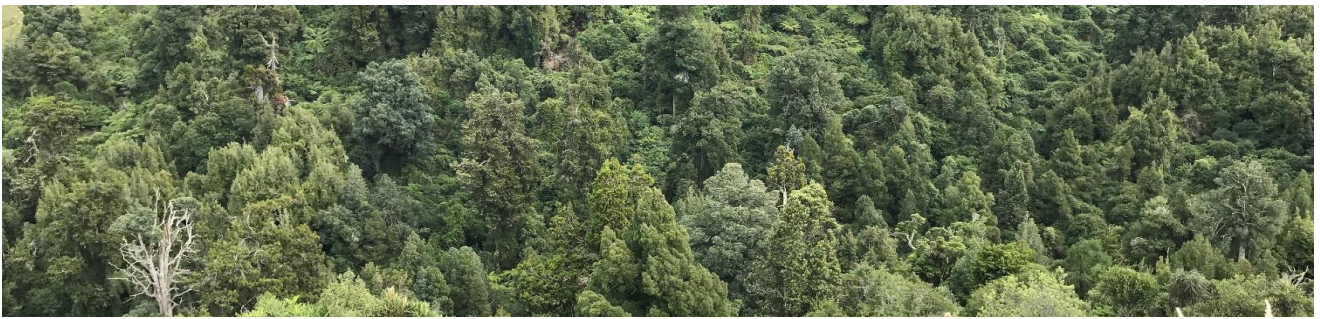
## Actions

Actions are best prioritised according to your specific site, if you have erosion or weed problems it will be best to deal with these first. If you have stock, deer or goats fencing should be your first priority and for exposed sites fencing and shelter belts are a good first step.

## Action 1: Fencing

If you have decided to protect an area, it's much easier to remove stock to avoid any potential damage to your plants, this is especially important once new species are planted for the forest restoration or shelter belt.

Get advice from contractors to choose the most cost effective option for your project and consider alternative options depending on what you're trying to achieve.



## Action 2: Shelter

High wind prone sites will struggle to establish a native forest without shelter. Aside from the artificial shelter option, fencing will be needed first. You can find our "Trees for Our Region" factsheet on the Horizons Regional Council website, it has some handy information about planting a shelter belt. Here are some options:

- Artificial - This is costly post and shelter cloth (however the benefit is you can plant native trees immediately).
- Exotic trees and/or other native trees - some species are hardy, fast-growing, and resilient enough to grow in harsh conditions.

## Action 3: Weed removal

Pest plants are a big part of this challenge. You need to make sure they are removed completely, and the site is kept weed-free to protect your plantings. To be successful make sure you know the following before you proceed with pest plant control:

- Correctly identify your weeds.
- Research the most effective control method for your location / weed – [www.weedbusters.org.nz](http://www.weedbusters.org.nz) is a great resource.
- Herbicide use, make sure you know the correct application method to minimise the quantity of chemical used and ensure the results are successful.
- Best time and conditions to apply herbicide.
- If you are still in doubt - get advice.

## Action 4: Erosion Control

Erosion prone land is an ongoing risk to any project. Our "Trees for Our Region" factsheet on the Horizons Regional Council website has methods to help stabilise land. Exotic trees such as poplar and

willow poles are often chosen to assist soil stabilisation before native plants are established.

## Action 5: Plant Selection

The Forest Restoration Plant Selection table below is not comprehensive but aims for hardy plants that are likely to be available from nurseries. These plant types are considered pioneers – they will grow quickly, protect the area, assist weed suppression, and provide sheltered, shaded areas.

Once plants are established on the site, either natural seeding (of native plants from nearby native remnants) will enhance the planting, or you can improve the site by planting canopy and emergent tree types such as tōtara, beech, rimu, and rata.

More difficult to grow and rare plant types can be introduced when the ecosystem is well established to support these more vulnerable species.







### Table: Forest Restoration Plant Selection

For a more comprehensive plant list for your area, visit the freshwater page on the Horizons website to find region specific riparian planting guides that will also be relevant for forest blocks.

Botanical Name	Common Name	Tolerates
<i>Coprosma robusta</i>	Karamu	Clay, salt wind, damp, dry
<i>Cordyline australis</i>	Ti kouka, cabbage tree	Clay, salt wind, damp, dry
<i>Hoheria sexstylosa</i>	Lacebark	Clay, wind, dry
<i>Kunzea robusta</i>	Kānuka	Clay, wind, dry
<i>Pittosporum eugenioides</i>	Tarata, lemonwood	Clay, wind, dry
<i>Leptospermum scoparium</i>	Mānuka	Clay, wind, damp, dry
<i>Melicytus ramiflorus</i>	Māhoe	Clay, wind, damp, dry
<i>Pittosporum tenuifolium</i>	Kōhūhū	Clay, wind, damp, dry

#### Eco-sourcing

Eco-sourcing means collecting seed or plant material from a similar ecosystem close to your location. This plant material collected for propagation provides greater potential for success because these plants have been adapting to the local conditions for a very long time. Sometimes this is difficult due to very few remaining remnants. It is best to contact your local nursery who will be familiar with this practice

#### Growing & Buying Plants

It takes time. Most shrubs and trees need two to three years to get to the size which is ready for planting. A nursery needs this time too so it is best to enquire and order eight to twelve months ahead of planting time, or two to three years if your order is large.

Smaller plants are generally better than larger plants, as those grown in nurseries can struggle to adapt to their new location.

Consider the following when buying plants:

- They should be about 30cm tall.
- Roots should be filling the container but not root bound where roots are tight and the tops are starting to loose vigour.
- They should be vigorous.
- Avoid those which are spindly, poor colour and show signs of disease or pest damage.

It is recommended to start with a small number of plants to see how they go. You may find that one species does better than another in which case you may need to reconsider your plant selection.

### Action 6: Planting

#### How many plants?

Planting at 1m x 1m spacing: this will have your plants covering the ground quickly and hopefully less maintenance. The plants will compete with each other and the most vigorous will survive and take over.

Planting at 2m x 2m or more: this means you will cover a much greater area for less cost but you will be controlling weed growth around the plants for longer, approx. four to five years (compared to two to three years at 1m x 1m spacing).

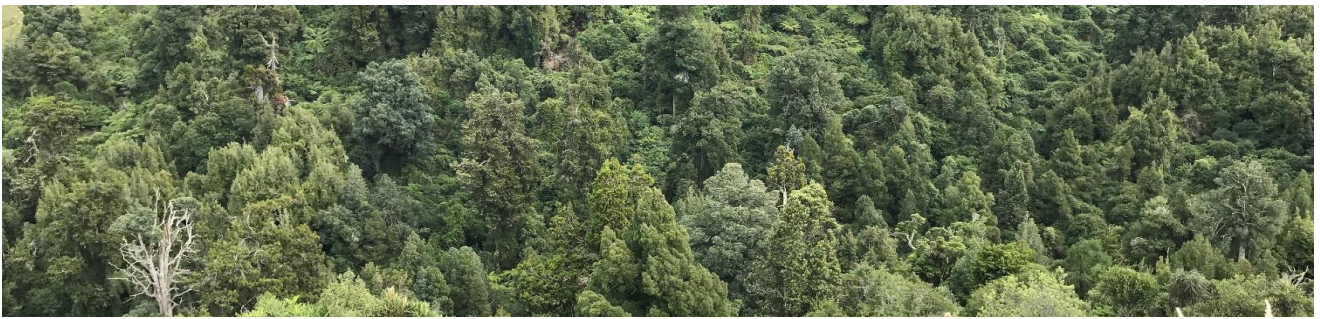
#### When to plant; May to August

You want the plants to get established before the hot dry summer months.

- May June for sandy silty soils.
- July August for clay soils.
- Anytime of the year for wet soils.

#### Planting

- Spray glyphosate (or equivalent) 60 to 70cm wide spots before planting to make planting easier, and to suppress weeds/grass for a few months after planting.



- Wait for the withholding period of your spot spray chemical – check chemical instructions for this information.
- Plant roots below the ground, and the stem and leaves above the ground. Firm the soil around the roots so they are not easily pulled out.
- Pest protection by using plant guards, or by spraying a repellent e.g. Plant Skydd.

### **Volunteers to help plant**

People take a bit of planning to make sure they turn up with the right gear and know what to do. Talk to people who have had some experience with this or call Horizons for advice.

## **Action 7: Post planting**

It's important to look after your investment so you will want to pay attention to:

### **Weeds**

Young plants need air and light around them, we recommend you clear weeds and grass approx. every six months, you can reduce this as they establish. This can be done by careful spraying or hand weeding.

### **Pest Control**

Plants will grow above the pest control guards and can be at risk of been eaten. Pest repellent spray can be applied and lasts about three months so we recommend you reapply often as new growth can be quickly eaten.

As your forest develops, keep an eye out for other unwelcome guests such as possums, mustelids, and rats. Respond to these pests quickly as they predate on birds, lizards, and invertebrates. Possums are also highly destructive browsers. Get good advice for the best approach. Trapping and baiting needs to be planned to make sure the pests doing the damage are being caught. They are very good at avoiding traps if it's not done right. Take a look here: <https://predatorfreenz.org/toolkits/> or contact Horizons for advice.

### **Monitoring**

We want your project to keep tracking forward, with the ecosystem evolving to become self-sustaining. Visit the site often, at least every month or two to make sure plants are thriving. Jump in early for weed or pest control rather than when it becomes much harder to tackle.

Makes sure to take photos – they are a great way to track progress and change over time. Choose a spot or several spots and take a photo each year. Think about your location:

- Make it the same day every year.
- Make it the same time of day.
- Remember the direction the photo is taken.
- Avoid trees that will grow up and block your image.
- See as much of the site as possible (a high point if possible).
- Include a water site that will show the effects of rising and falling water.
- Include a site close by that is not in the programme to show how much has changed in your own site.
- If you can put a post in the ground for your monitoring photo site, it is handy place to sit the camera.
- Take last year's photo with you to get a good comparative photo.





## Contacts

Contact Horizons for advice regarding planning your forest restoration, our consents planning team can answer questions regarding potential resource consent requirements, getting advice before you begin often can be a big time saver.

- For general enquiries email [help@horizons.govt.nz](mailto:help@horizons.govt.nz)
- For consent and regulation questions email [Enquiries@horizons.govt.nz](mailto:Enquiries@horizons.govt.nz)
- Or free phone on 0508 800 800

## References

Here are some good guides to check out to help with your project:

- *Native Forest Restoration - A practical guide for landowner.* By Tim Porteous
- *Bush Vitality a visual assessment kit managing the seasons for the years* by Helmut Janssen
- Department of Conservation website ([www.doc.govt.nz](http://www.doc.govt.nz))
- *Community Guide to Stream Restoration* – Horizons Regional Council website ([www.horizons.govt.nz](http://www.horizons.govt.nz))

