

Te whakarite i te wāhi whakatō tipu

Site preparation

Site preparation is crucial to success and helps with the ongoing maintenance of native plants, weeds and animal pests.

“Everybody loves planting, and lots of people think that’s what looking after these sites is all about - but planting is only 5% of the job, the other 95% is good site preparation and good maintenance.”

Peter, Trelissick Park Group



Ngā tarutaru Weeds

For restoration planting, weeds are unwanted plants that compete with your planted or regenerating seedlings by smothering, blocking light or using water and nutrients.

Weeds need to be controlled before and after your seedlings go in the ground to ensure their survival.

The type of weeds at your site will determine the lead-in time before planting. Some problem weeds, such as blackberry, Japanese honeysuckle or climbing asparagus need to be treated repeatedly to get them under control. If you plant too soon and weeds regrow, it will be more difficult to control them without damaging your seedlings.

Some typical weed situations in Wellington are outlined here. For more advice on the best approach, check out the Weedbusters website or contact Wellington City Council (04 499 4444) and ask for a Biosecurity Technical Advisor.

Using herbicides

As a general principle, herbicide use should be minimised to reduce the risks of spray drift and residue build-up in the soil. However for aggressive weeds, herbicide can be more effective than hand or machine pulling and is much less labour-intensive. The choice will depend on your own preference, land ownership, the type of weeds, and your resources.

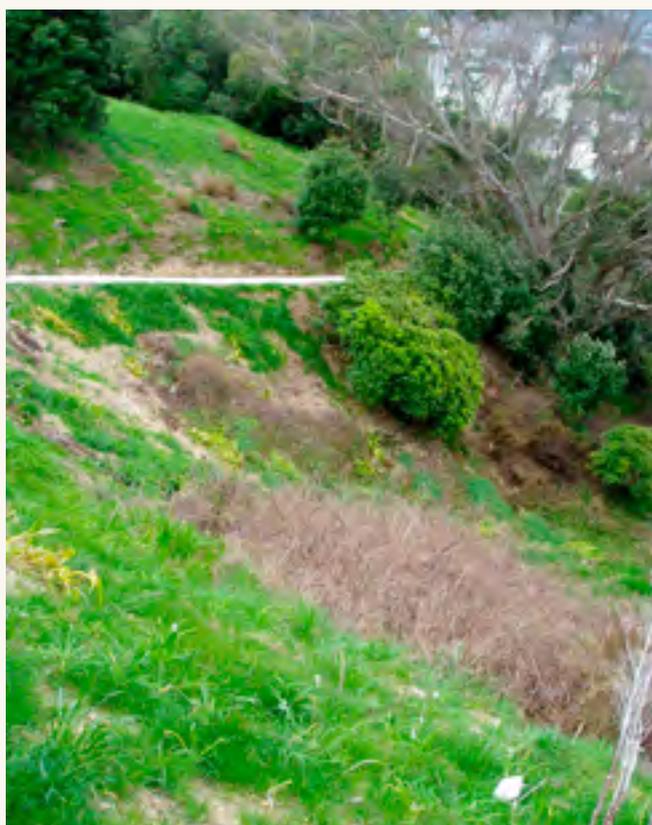
- Anyone using herbicides on Council land must have a permit and be qualified. This includes paste-on herbicides like 'Vigilant' (useful for treating regrowth of problem woody weeds). Contact Council to get advice on approved contractors or get a permit.
- If you are spraying on your own land, consider doing a Growsafe training course. This covers the safe and effective use of herbicides.

Easy-to-control weeds

Grass and annual weeds typically only take one season to control. Hand clearing is an option but be aware that seeds love to germinate on disturbed ground. If you are hand pulling these types of weeds, plant sooner rather than later to fill in the bare ground. Laying grass and annual weeds back around the base of the plant on bare ground can help retain moisture in the ground and stop weeds growing back.

Spraying with non-residual herbicide, like glyphosate, in the preceding growing season can give new plants a head start against future weed growth. Try to minimise the amount of spraying:

- Treat only as much of the site as you intend to plant the following winter.
- Rather than doing 'scorched earth' blanket spraying, spot spray circles on the ground to clear a place for each new plant.



Spot-sprayed site with difficult-to-control blackberry and *Elaeagnus x reflexus*. Now the site has been treated, the next stage is to cut down the dead growth in preparation for planting.

Good site preparation is key to the success of planting sites. Leave piles of dead material to naturally break down and compost.

Aggressive and difficult to control weeds

Some weed species are highly invasive and difficult to eradicate from a site due to their persistent root systems, seeds or ability to sprout from fragments. They usually require effort over several seasons to remove. You can apply for an environmental grant to cover costs of contracting a qualified spray contractor.

If you have enough volunteers, or can contract labour, then either digging out by hand or machine can be the best option, followed by ‘mop-up’ spraying of any regrowth.

Usually it takes two growing seasons to remove aggressive weeds:

- Year 1 - spray the infestations, leave to die off, cut and clear, leave over the winter and the following spring to allow regrowth to appear;
- Year 2 - spray any regrowth. In some instances, a further year could be required.

Herbicides required to kill aggressive weeds can leave residues in the soil that can damage young seedlings. Consider delaying planting in such areas for a year.

Aggressive weeds most often encountered in Wellington

• Gorse and broom

The seed remains viable in the ground for up to 40 years. Pulling plants out and exposing bare ground can create a flush of dense new growth which is more problematic than older growth.

Single bushes can be cut and the stump treated to stop regrowth. Where gorse and broom are growing thickly over an area, complete removal may not be your best option unless you have the time and ability to remove all the new growth.

Instead, you can use these weeds as shelter for young seedlings.

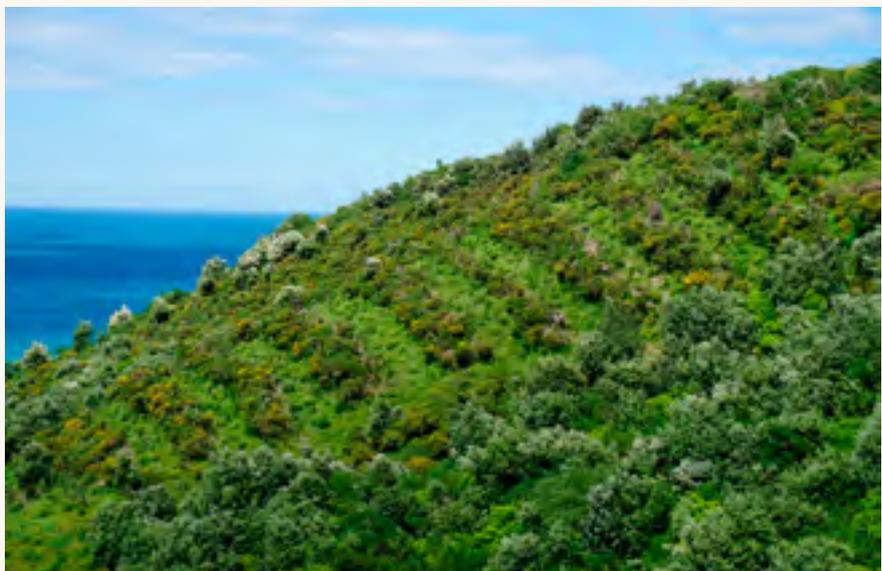
Cut strips or small clearings within the gorse and broom and plant seedlings into them. Areas where gorse and broom are tall, straggly and starting to open out are great for planting into, especially on very exposed sites.

Your plants will eventually shade out gorse. Broom can persist for longer so additional cutting, treating and inter-planting may be required.



(Top) Planted site with a large pile of gorse, left to break down on site. If the gorse doesn't present a fire hazard this is an ideal way to compost your weed pests.

(Below) Strips within the gorse were cleared for planting at Oku Street Reserve. The remaining gorse is providing shelter on the exposed site and will, eventually, be overshadowed by the planting.



- **Blackberry and fennel**

Blackberry patches are often best sprayed in two stages. The first spray will usually kill most of the plants then a re-spray will kill off the rest. Once fully dead, cut the plants down leaving the slash in piles on the ground to rot. Allow one to two years for effective control and for any spray residue to break down. Any stumps that show regrowth after that can easily be removed using a grubber or treated with paste-on herbicide.

- **Wandering willie**

(*Tradescantia fluminensis*)

This is a difficult weed to control as any small stem sections left behind will regrow. Rake or hand-pull small areas during dry conditions and either bury the weeds beneath at least 300mm of soil in a hole, cover with black plastic to block light and allow to rot down, or place the weeds in bags and remove from the site. Rolling this weed into mats can be a useful technique where it covers the ground thickly.

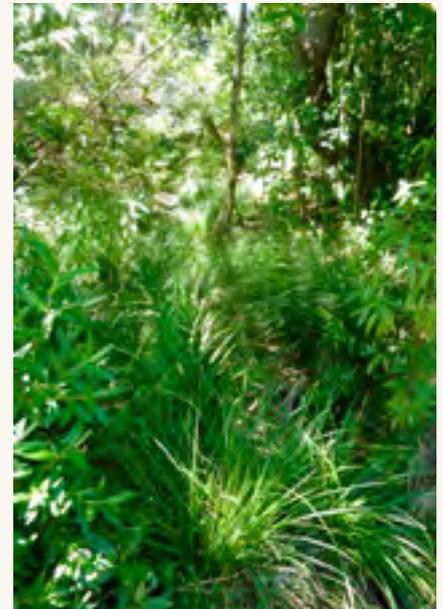
The spray used to kill this weed can have an adverse effect on some mature trees as well as many other native plants. As a result it can only be applied by a qualified contractor. Wandering Willie grows rapidly, so ongoing weeding to remove any regrowth before it spreads again is vital. Wellington City Council is trialling biocontrol with the release of beetles that attack this weed but it could be years before the results are known.

Example of Wandering willie management



(Above) Extensive infestation of Wandering Willie in the upper reach of a stream.

(Left) Manchester St, small forest stream, cleared of Wandering Willie.



(Right) Restored stream after extensive clearance of Wandering Willie infestation.



Other hard-to-eradicate weeds

Do not plant into sites where the following weeds are present until all sign of them is gone - cape ivy, cathedral bells, climbing asparagus, periwinkle elaeagnus, English ivy, ginger, Japanese honeysuckle, Japanese knotweed, old man's beard, banana passionfruit and pampas.

Sites with these weeds are often best converted to grass for at least a year after the main control work is done. The grass covers the exposed soil while allowing observation for any signs of weed regrowth that can then be treated before planting starts.

If you are removing weeds from a site, contact Wellington City Council to find out whether they can go to green waste or need to be landfilled, or composted on site.

Is pōhuehue a weed?

Pōhuehue (*Muehlenbeckia australis*) is a vigorous scrambling or climbing native plant that grows naturally in places where there is plentiful light, such as cliff faces, scrub, regenerating bush and forest edges - and restoration planting sites!

Some people regard it as a weed because its rampant growth can smother planting. The natural function of pōhuehue is to protect exposed bush edges and disturbed sites, providing cover for native trees to emerge through it. Clear it away from around your young seedlings, but let it grow in the gaps - it will keep weeds down and is an important insect habitat, especially for native moths and butterflies.

(Left) Banana passionfruit and Old man's beard are two climbing weeds that are difficult to eradicate. Trace back to the main growing point, cut and paste the stump. With climbers, ensure all cut foliage and stems have no contact with the ground or they will regrow.

(Right) Pōhuehue climbing over the top of a Koromiko.

Preparing ground for planting after weed control

Weed debris will eventually rot down and contribute to the organic matter in the soil. Moving debris into piles makes it easier to move around a site.

Usually weed clearance is enough ground preparation. Occasionally, if the ground is very compacted, ripping might be required using a digger with ripping blades.

Where large trees, like macrocarpas or pines have been removed, leave the site for several years to allow the debris and pine duff to settle and rot down, especially where the ground under the trees has been compacted and/or dominated by woody tree roots that make planting difficult. Cover these sites with mulch to inhibit weed invasion in the interim.



(Above) After old conifer trees were cleared from this site on Hutchison St, in 2015 the tree debris was removed and the site was partly mulched, making follow-up work safer and easier.

(Below) Hutchison St site four years later.

Ngā kīrehe ka tirotiro haere

Browsing animals

"Our biggest threat to plants is rabbits, not just on exposed sites, but in the bush. Get on top of rabbit control and get help from Council if you need it."

Garth, Highbury, Polhill Reserve planting volunteer

The most common animals in Wellington that might trample or browse newly planted, nutrient-rich seedlings are rabbits, hares, feral goats, possums and, to a lesser extent, pukeko.

Check out Pest Detective to help identify which animal pests are at your site. You may need to control pest animals before planting if numbers are high.

For Council reserves, contact your ranger or the Council Biosecurity Officer - Pest Animals to arrange animal pest control.

In rural areas, fence all stock out of areas to be planted with native plants.

Taupata (left) and pingao (right) can quickly be destroyed by rabbit browse. Photographer: Michael Bergin.



Pest animal deterrents

Use re-useable physical protection such as plant protectors or hare nets for pest animals like rabbits and hares.

Where animal numbers are high and control is difficult or reinvasion likely, plants can be sprayed with an animal deterrent before they leave the nursery which may help them through the first three months of establishment. One product, used to make plants unpalatable to rabbits and hares for up to three months, is Plantskydd. Always wash your hands thoroughly after handling plants with Plantskydd applied to them.

Ongoing monitoring of pest animals will be the key to plant survival. Keep a close watch for signs of damage, especially when the plants are still young and vulnerable.

Take note of which plant species are browsed and what is left alone. You may need to restrict your plant species selection to unpalatable plants.



(Above) Young nikau seedling browsed by rabbits. Rabbits in Wellington feed both in open areas and in bush.

(Right) Tree shelters being used to protect from the wind and rabbit browse, combination of green corflute shelters and composting coconut fibre shelters.

