



Kauri Ora: Hygiene Principles

Key hygiene principles
for preventing the
spread of the PA
pathogen, which causes
kauri dieback disease



This guide was updated in 2024 by Tiakina Kauri with the help and advice of:

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The 2024 guide was endorsed by the Tiakina Kauri Operational Advisory Group.

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- Kauri Dieback National Programme
- Auckland Council
- Waikato Regional Council
- Northland Regional Council
- Bay of Plenty Regional Council
- Department of Conservation



About this guide

This guide outlines six principles for protecting Kauri from the pathogen *Phytophthora agathidicida* (PA), which causes the fatal condition known as kauri dieback disease. These principles should be followed by anyone moving or working off-track in a Kauri forest area.

For more information about protecting Kauri and the PA pathogen, visit www.kauriprotection.co.nz

The National Pest Management Plan for Kauri

In August 2022 a National Pest Management Plan was launched to help protect Kauri from the PA pathogen. The National Plan includes 10 rules that apply to anyone who grows Kauri, goes into Kauri forests, or lives or works around Kauri.

The principles in this guide support the National Plan and its rules.

How do the rules of the National Plan for Kauri work?

The Tiakina Kauri | Kauri Protection programme helps people understand and comply with the National Plan rules.

In cases of clear and substantial or continued non-compliance with the rules, prosecution or infringement fees could be applied.

For more information about the National Plan, visit www.kauriprotection.co.nz/national-plan



Kauri, Puketi Forest

About the PA pathogen

The microscopic soil-borne PA pathogen infects Kauri through their roots and restricts the trees' ability to transport water and nutrients between the roots and the leaves. This causes the fatal condition known as kauri dieback disease, which eventually starves the Kauri.

There is no proven way to cure an infected Kauri, and there are limited treatment options.

To stop the PA pathogen from spreading, you must follow correct hygiene protocols when moving and working around Kauri.

The PA pathogen can be spread by:

- footwear, clothing or equipment that touches the soil
- vehicles and machinery
- animals, including wild pigs and stock, that have walked through infected areas.



PA pathogen infection can cause bleeding gum



People and animals can spread the PA pathogen



View of Kauri canopy with dead branches

Principle 1: Stay out of Kauri forests

The best way to protect Kauri, and avoid introducing or spreading the PA pathogen through the movement of soil or dirt, is to stay out of Kauri forests whenever possible.

When Kauri are at risk, track closures and rāhui (protective restrictions) may be put in place to give Kauri space to grow and/or to allow for tracks to be upgraded to better protect the trees. By respecting track closures and rāhui, you are helping to protect healthy Kauri and avoiding further damage to infected Kauri.



Recognising Kauri

The below image illustrates the different life stages of Kauri.



Ricker



Emergent



Mature

Principle 2: Stay away from Kauri forests when the ground is wet

If you need to go into a forest with Kauri, schedule your activities for when the ground is dry.

The PA pathogen spreads more easily in wet conditions, as dirt turns to mud which sticks to footwear and other items. Therefore, it is important not to move or work around Kauri trees when it is wet or muddy.



Kauri, Northland

Principle 3: Stay away from infected sites

Do not go into an area where infected Kauri are. Always stay away from any area with a rāhui, Controlled Area Notice (CAN) or similar.

If you have to go into a Kauri forest:

- avoid known infected sites at all times
- do not move or work downslope of infected areas, as the pathogen moves downslope from infected sites via water flow and root contact.

If you must move or work within a PA-infected area, seek advice beforehand from the appropriate land management agency or regional council about how to do so safely.

Principle 4: Avoid Kauri Hygiene Zones

If you're in a Kauri forest and are moving or working around Kauri, it is important not to damage or disturb their roots. Kauri roots are shallow and fragile and extend outwards about 3x the radius of the canopy of the tree; this area is called the Kauri Hygiene Zone (see figures 1 and 2).

Following these best practices helps to stop the PA pathogen from spreading and attacking Kauri roots:

- Plan your activities and routes through the forest to avoid Kauri as much as possible (see figure 2).
- Go to low-risk locations first – for example, work on-track before working off-track.
- Stay out of Kauri Hygiene Zones. This includes keeping all vehicles, machinery and equipment that can't be easily cleaned out of Kauri Hygiene Zones.
- Stay downslope of healthy Kauri, and upslope of infected or unhealthy Kauri wherever possible. This reduces the chance of the PA pathogen being inadvertently spread to healthy Kauri.

Figure 1: Kauri Hygiene Zone – single Kauri

The below illustration shows the Kauri Hygiene Zone for a single Kauri.

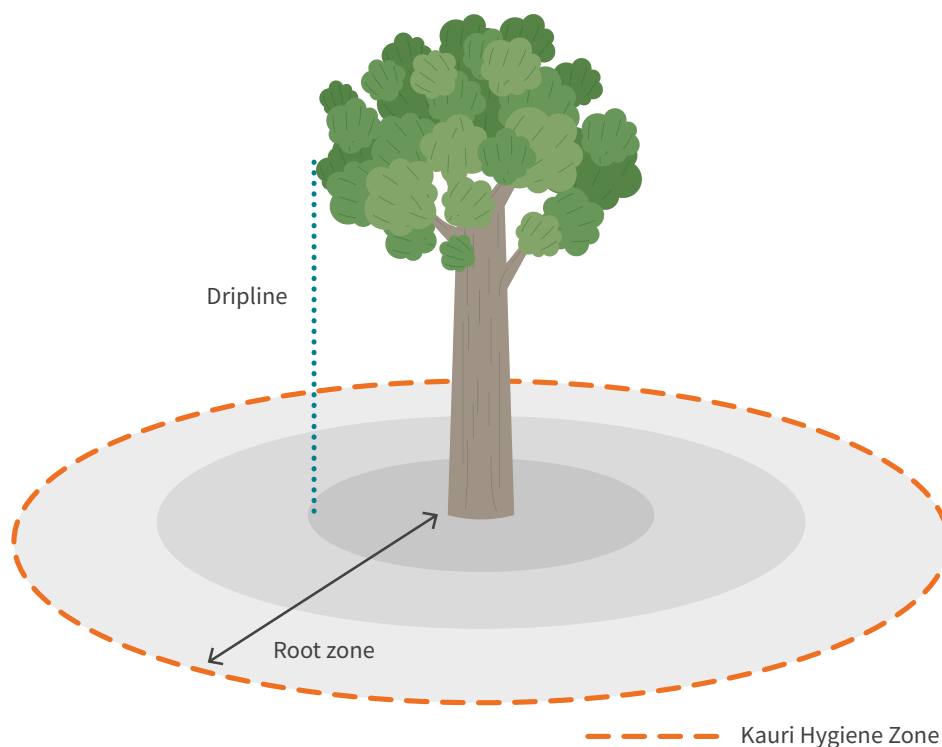
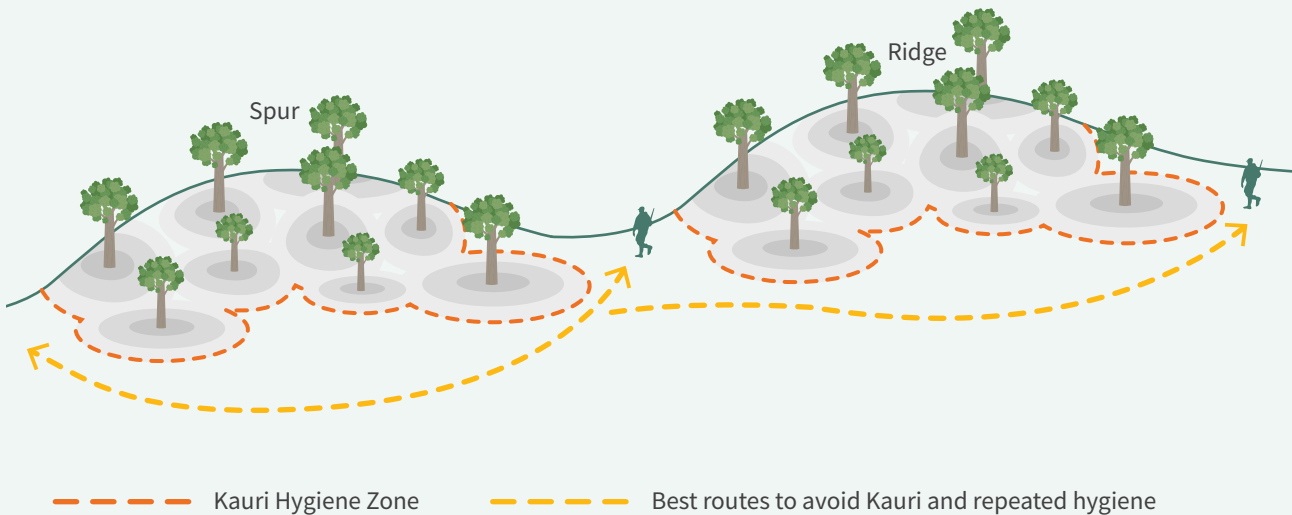


Figure 2: Avoiding Kauri Hygiene Zones

Where there are multiple Kauri growing near each other, their individual Kauri Hygiene Zones (and root systems) interconnect, as illustrated below. The dotted yellow lines highlight the best way to move through the forest to completely avoid Kauri Hygiene Zones.



Principle 5: Follow the National Plan rules

Before entering and leaving Kauri forest areas, and when moving between Kauri Hygiene Zones, you must follow the hygiene protocols in principle 6 to ensure that your footwear and anything that may touch the ground is dirt-free.

This includes cleaning tools, machinery, all vehicles, cycles, walking poles, shoes, gloves, dog paws and horses' hooves.

- If you go off-track and don't clean these items, you could receive an infringement notice and fine, or a criminal conviction, according to rule 8 of the National Plan.

You must also use any hygiene stations in place.

- If you don't use hygiene stations, you could receive an infringement notice and fine, or a criminal conviction, according to rule 9 of the National Plan.

Always arrive clean to Kauri sites and do not rely on finding a hygiene station at each track entrance.

When you're off-track, you must also carry your own hygiene kit to ensure you can keep your gear dirt-free. See page 10 for a list of items you'll need in your hygiene kit.

Principle 6: Follow hygiene protocols

You must follow the below hygiene protocols for all items that could touch the ground (as per principle 5).



Scrub

Remove all dirt from any items that will touch the ground, including footwear, tools and equipment, vehicles, machinery etc. Physically removing dirt is vital.



Check

Check to make sure all items are dirt-free. If they are still dirty, keep cleaning.



Spray

Once all your items are dirt-free, spray them with disinfectant. Note: do not spray disinfectant on animals.

Suitable disinfectants are:

- SteriGENE® – 2% solution with water
- methylated spirits – 70% concentration rate (check the 'denatured alcohol content' as some meths are already diluted to 70%).

For more information about disinfectants and hygiene protocols, see the Best Practice Guide for off-track activities in Kauri forests on www.kauriprotection.co.nz

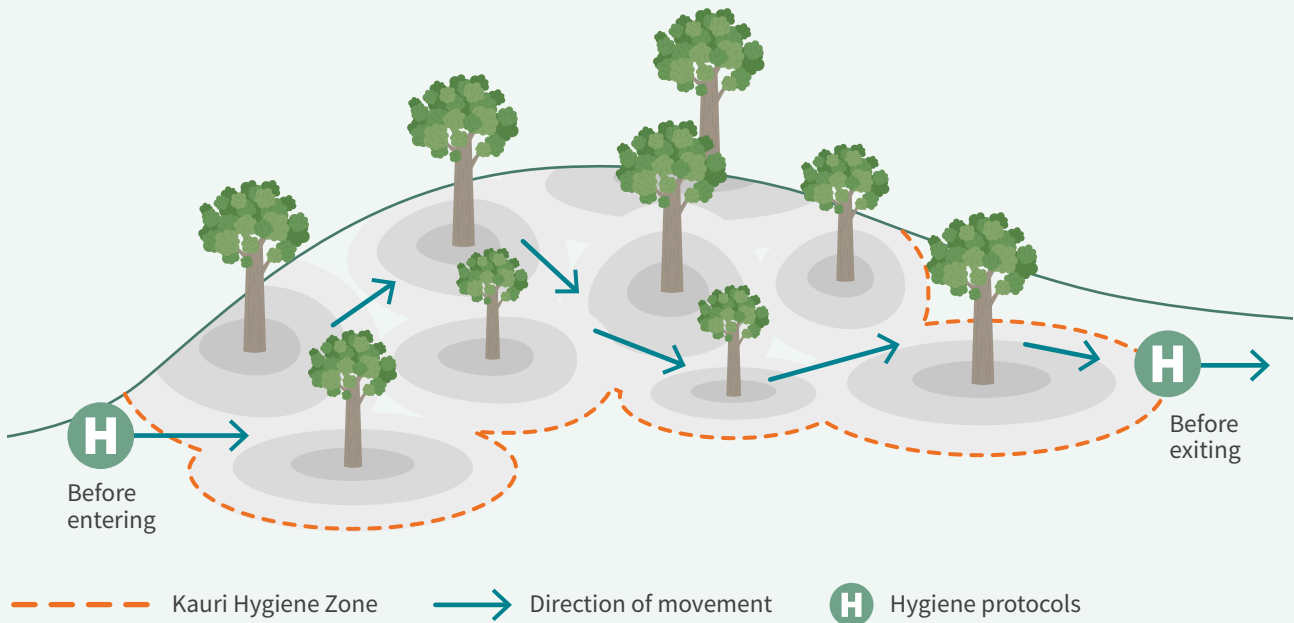


Spray your footwear with disinfectant once it is dirt-free

Figure 3: When to carry out hygiene protocols

You must arrive clean, keep clean, and leave clean when visiting Kauri forests.

If you are going into a Kauri Hygiene Zone – whether it's a singular or interconnected Kauri Hygiene Zone – you should complete the hygiene protocols before entering and before leaving the Kauri Hygiene Zone.



Off-track hygiene kit

When going off-track in a Kauri forest, you should always carry a hygiene kit. The kit should include:

- a hard brush to remove all dirt from footwear and gear (essential)
- a spray bottle containing disinfectant (essential)
- a supply of extra disinfectant for the time you are away from your vehicle (essential)
- overshoe booties and/or disposable gloves if you are working within Kauri Hygiene Zones
- a disposable sealable bag to store dirty items.

You will also need to ensure you can store dirty items and clean items separately. For example, create separate areas in your backpack for clean and dirty items/equipment.



Overshoe bootie

Hygiene tips

- Always check the tread of your footwear thoroughly. It's easy to miss dirt stuck in small spaces. Consider wearing boots with open tread, which are easier to clean.
- In some instances, scrubbing using a solution wash in a container may be necessary to remove dirt. Make sure you discard dirty water away from the forest.
- Disposable overshoe booties are an effective way to stop footwear from spreading dirt. Do not reuse overshoe booties or gloves unless they can be heat-treated at a minimum temperature of 50 degrees Celsius for 24 hours.
- Carry a spare pair of shoes for driving, as driving with dirty boots may leave dirt in the vehicle's footwell which can be easily picked up and moved to another Kauri site.
- Carry a container in your vehicle for securing dirty gear that can't be cleaned on site before leaving.
- Heat treatment is acceptable for items such as footwear and tools. More information is available at www.kauriprotection.co.nz/resources

Never clean your footwear or gear in forest streams.

Use boardwalks or gravel tracks, or gravel roads, whenever possible when moving through a Kauri forest.

Avoid putting your items directly on the forest floor. Anything that touches the ground must be scrubbed and sprayed.

Conducting earthworks around Kauri

If you want to conduct any earthworks within a Kauri Hygiene Zone, you must have an earthworks risk management plan, according to Rule 5 of the National Plan. A 'how to' guide and a template for creating this plan are available at www.kauriprotection.co.nz/resources



Conducting earthworks within Kauri Hygiene Zones requires an earthworks risk management plan

KA RAUHĪ TE TUPU O TE KAURI

GIVE KAURI SPACE TO GROW



Tiakina Kauri is an agency based within Biosecurity New Zealand that provides national direction for the achievement of the objectives of the National Plan for Kauri, through active partnership with mana whenua and collaboration with regional councils and the Department of Conservation.

For more information about protecting Kauri, visit www.kauriprotection.co.nz