

# Kauri Hygiene Standard Operating Procedures

VERSION 3.0

March 2021





**THESE STANDARD OPERATING PROCEDURES WILL BE UPDATED WHEN NEW INFORMATION BECOMES AVAILABLE.**

We welcome your feedback to help us improve this document. Please email us at [kauri@aucklandcouncil.govt.nz](mailto:kauri@aucklandcouncil.govt.nz)

Subject Header:

**Kauri Hygiene Standard Operating Procedures - Version 3.0**



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## PURPOSE OF THIS DOCUMENT

This document sets out hygiene requirements for **anyone** undertaking activities in **areas owned or managed by Auckland Council or its CCOs** (Council-Controlled Organisations) **where kauri are present**, to reduce the risk of spreading kauri dieback disease.

Contractors and staff working for/on behalf of Auckland Council on land owned by others are also required to comply with these Standard Operating Procedures.

These Standard Operating Procedures have been developed for Auckland Council Family (Council and its CCOs) staff, contractors and volunteer groups. However, **Auckland Council encourages others to implement these procedures** to prevent the spread of kauri dieback disease.

## KEY POINTS

1. These Standard Operating Procedures (SOPs) apply to activities undertaken on land owned or managed by Auckland Council and Council-Controlled Organisations where kauri are present.
2. The Procedures are based on key principles for the protection of kauri from kauri dieback disease and describe a set of actions that should be taken to achieve this. Guidance has been provided in the appendices to help with implementing the procedures. If additional information is needed, the [Auckland Council Kauri Dieback Team](#) should be contacted for assistance.
3. This SOP is a living document and will be updated when new information becomes available to improve the protective actions set out in this document, or knowledge about the distribution of kauri dieback disease is updated.



## 1 Introduction

Kauri dieback disease is a serious threat to New Zealand's kauri and kauri ecosystems. It is caused by a microscopic soil-borne organism called *Phytophthora agathidicida* (PA), which is spread through soil and water. The disease eventually kills the kauri it infects, and there is no known cure at present.

*Phytophthora agathidicida* can survive in the soil, away from kauri, for many years and may spread in tiny amounts of soil and water. A long lag time between infection and visible symptoms on the infected kauri makes it difficult to confirm that an area is free of the disease. A precautionary approach to hygiene involving the thorough cleaning and disinfection of footwear, vehicles, tools, equipment and machinery when moving around and working in areas where kauri are present is therefore essential to reduce the spread of kauri dieback disease and preserve kauri for future generations.

Kauri dieback disease is widespread within the Auckland region, including Great Barrier Island, as well as in other areas of the upper North Island where kauri occur. However, there are still some areas, primarily the Hunua Ranges and Waiheke Island as well as localised sites throughout the Auckland region, where the disease has not been detected. The hygiene procedures set out in this document are designed to prevent the further spread of kauri dieback disease in the Auckland region and are aligned with national guidelines.

## 2 Applicability

The Standard Operating Procedures (SOPs) set out in this document apply to anyone who enters, moves around or undertakes activities on land owned or managed by Auckland Council or its CCOs that contains kauri, including but not limited to:

- Auckland Council and [Council-Controlled Organisation](#) (CCO) staff.
- Principals, staff and agents of all Auckland Council and CCO contractors. Compliance with the provisions of this SOP should be a standard requirement of contract.
- Auckland Council and CCO permit holders and concessionaires, and volunteers.

Contractors and staff working for/on behalf of Auckland Council on privately owned land are also required to comply with this SOP. Adoption of this SOP when working in areas where kauri are present, regardless of land ownership, is strongly encouraged.

The SOP was developed in conjunction with Auckland Council's Environmental Services, regional and local parks staff as well as Auckland Council contractors who regularly work in areas with kauri. The SOP will be reviewed on a regular basis.

### 3 Training

Auckland Council's [Kauri Dieback Team](#) provides **mandatory** training on how to implement this SOP for staff, contractors and volunteers who operate on land owned and managed by Auckland Council and its CCOs where kauri are present.

Any person (meaning all persons in a given organisation rather than a single representative of the organisation, including any new staff or volunteers) wishing to carry out activities on Auckland Council land that contains kauri must attend the Kauri Hygiene SOP training. The trainees' understanding of kauri dieback disease and the hygiene behaviours required when working in areas where kauri are present is assessed by the trainer at the end of the course. Auckland Council maintains a register of persons who have completed the training.

Volunteer groups that wish to undertake activities on Auckland Council or CCO land that is closed to public access for reasons of kauri dieback management will need to prepare a Kauri Dieback Management Plan, which must be approved by Auckland Council's [Kauri Dieback Team](#).

Contractors who have completed Auckland Council's Kauri Hygiene SOP training are subject to auditing as part of the contract management procedures. Any observed non-compliance will require the stopping of work and activities, and re-training will be required.

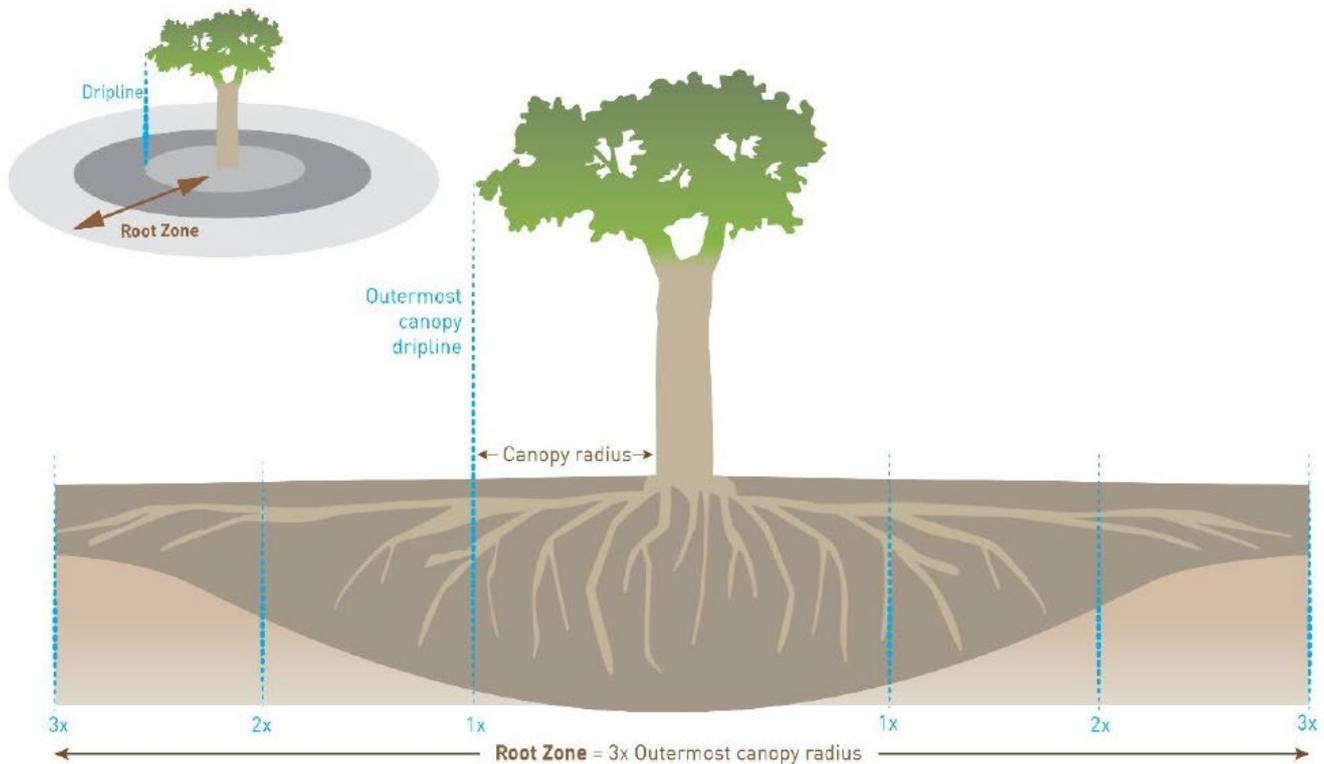
Please contact the Auckland Council Kauri Dieback Team ([kauri@aucklandcouncil.govt.nz](mailto:kauri@aucklandcouncil.govt.nz)) to book a training session.

### 4 Key principles for undertaking activities in areas where kauri are present

Because kauri can be infected with kauri dieback years before any symptoms are beginning to show, all kauri should be considered as being at risk (of infection) or being a risk (of spreading infection). The kauri hygiene procedures set out in [Section 6](#) are based on four underlying principles

1. Working in [Kauri Hygiene Areas](#) (KHAs) (Figure 1) should be avoided.
2. Working in wet conditions should be avoided where practicable. All activities should be carried out in dry soil conditions if possible.
3. The 'Scrub, Spray, Stay' principle should be followed, where all footwear and equipment is **scrubbed** every time an area with kauri is entered or left to remove soil, followed by **disinfecting**. **Staying** on the track (and off kauri roots) should be practised whenever possible.

- Any person working or undertaking activities on land where kauri are present should have two clearly marked sets of footwear – one to be used in [Contaminated Areas](#) only, and one for all other areas.



**Figure 1: Extent of Kauri Hygiene Area**

## 5 Kauri management areas

Auckland Council has identified two types of Kauri Management Areas based on kauri health data, where hygiene measures **over and above** the General Minimum Requirements ([Section 6.1](#)) apply:

- [Contaminated Areas](#)
- [Protection Areas](#).

Auckland Council has an ongoing kauri surveillance and monitoring programme, and the number and extent of these areas is likely to change whenever new information becomes available.

The location of [Contaminated Areas](#) and [Protection Areas](#), and the distribution and health status of kauri in the Auckland region can be found on the conservation map hosted on the [Tiaki Tāmaki Makaurau – Conservation Auckland](#) website.

It is recommended that Auckland Council's [Kauri Dieback Team](#) is consulted if there is any uncertainty as to the current status of any given area.

## 5.1 Contaminated areas

[Contaminated Areas](#) are those where kauri dieback disease has been confirmed, either through soil sampling or assessing symptomology. These include:

- Large areas in the Waitākere Ranges
- Parts of Aotea/Great Barrier Island
- Parts of Awhitu Peninsula
- Some areas in Rodney, including Pakiri, Puhoi and Mahurangi.

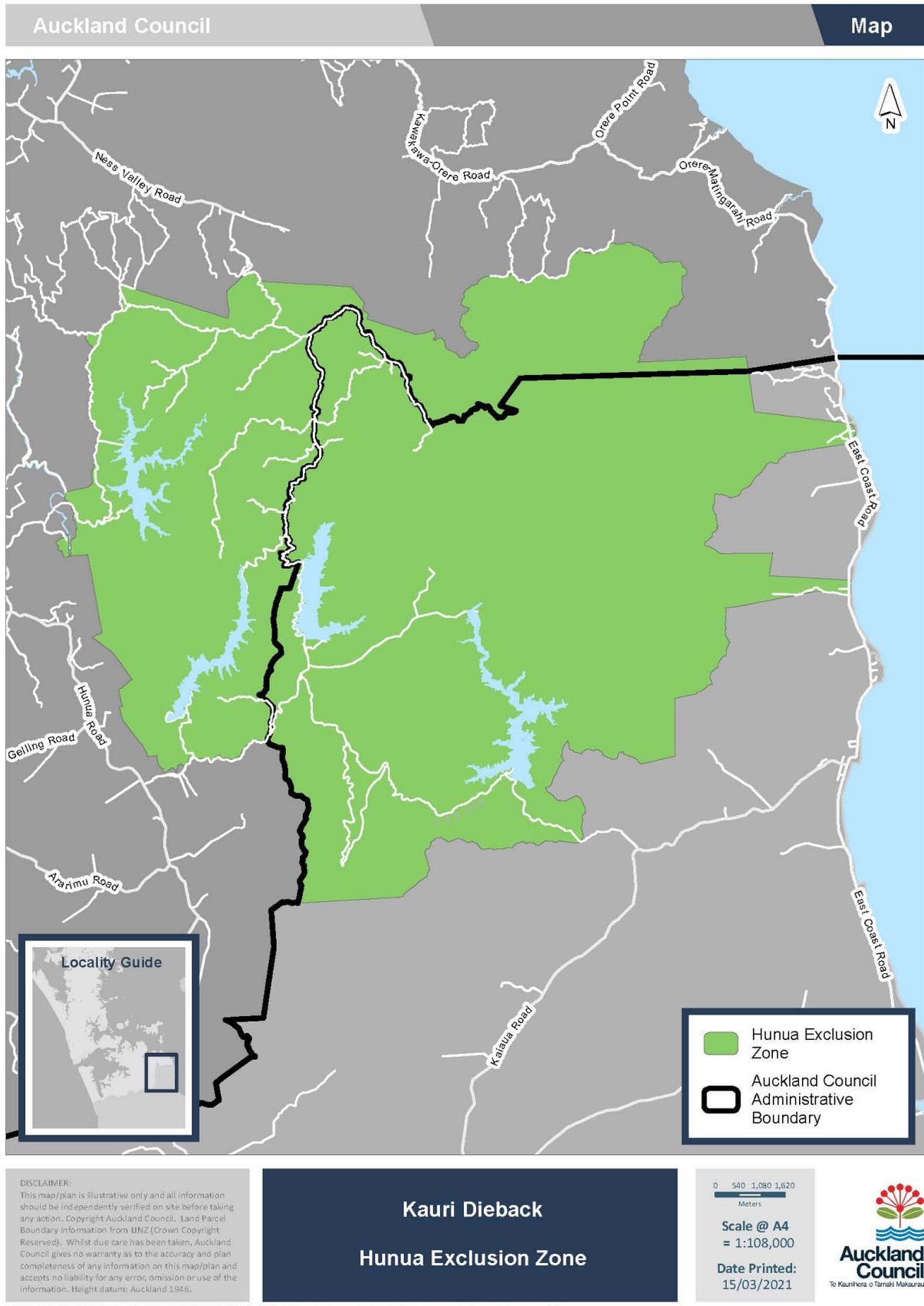
[Contaminated Areas](#) are based on catchments, as the kauri dieback pathogen can be transmitted through soil and water. It is strongly recommended that the status of an area is checked regularly to ensure that it has not been designated as a [Contaminated Area](#) following surveillance updates and new monitoring data.

## 5.2 Protection areas

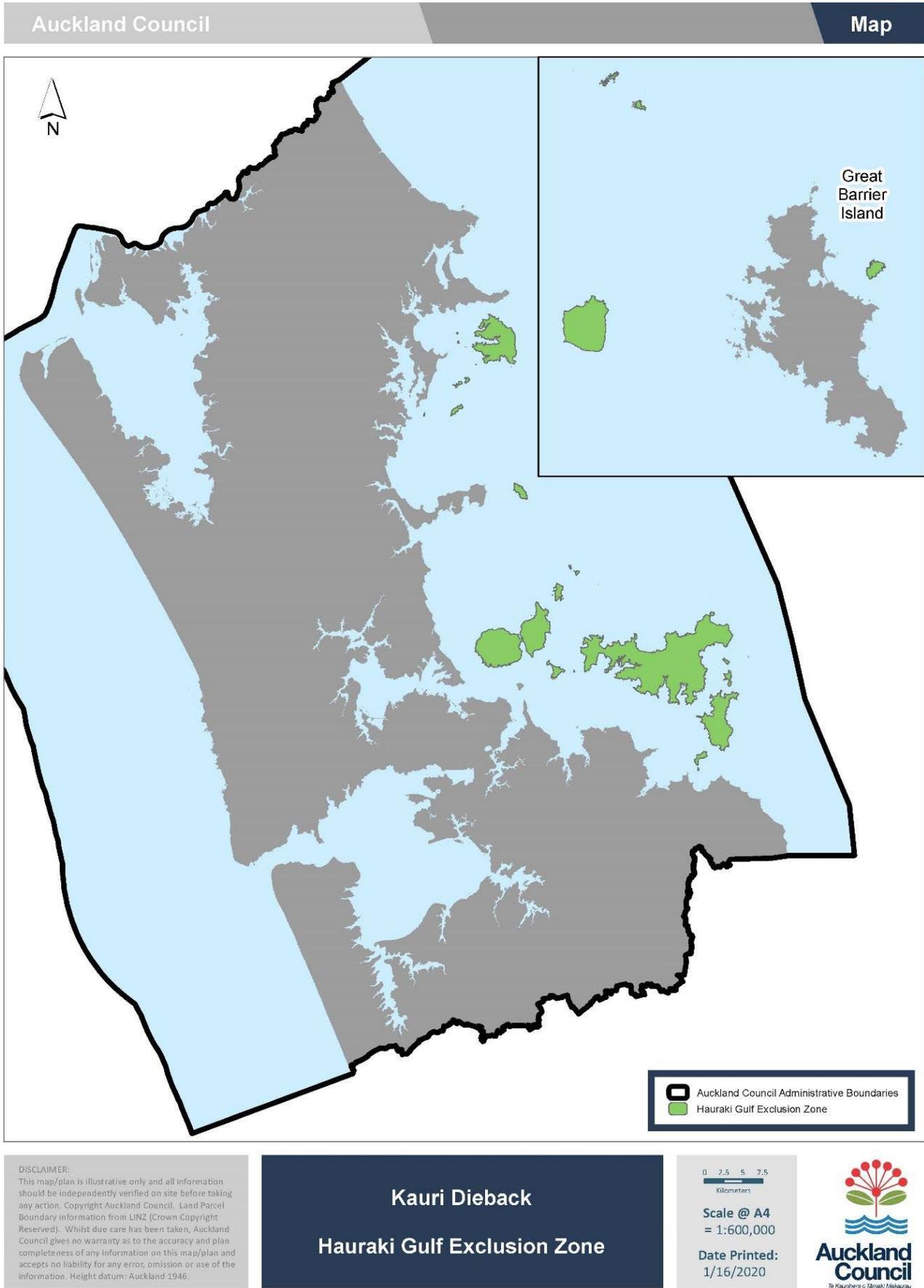
[Protection Areas](#) are actively managed to protect [non-symptomatic kauri](#) and prevent the spread of kauri dieback disease. Specific requirements apply with respect to soil and livestock movements. The following areas are [Protection Areas](#):

- The Hunua Ranges Kauri Dieback Exclusion Zone established by the Auckland Regional Pest Management Plan 2020 – 2030 (Figure 2).
- The Hauraki Gulf Kauri Dieback Exclusion Zone established by the Auckland Regional Pest Management Plan 2020 – 2030, which includes Waiheke Island (Figure 3).

Auckland Council is working to identify further [Protection Areas](#) as more and improved information becomes available. Additional information about kauri dieback exclusion zones established by the Auckland Regional Pest Management Plan 2020 – 2030 is provided in [Appendix 1](#).



**Figure 2: Kohukohunui / Hunua Ranges Regional Park Kauri Dieback Exclusion Zone**



**Figure 3: Hauraki Gulf Islands Kauri Dieback Exclusion Zone**

## 6 Standard operating procedures

### 6.1 General minimum requirements

The Kauri Hygiene Standard Operating Procedures listed below are the minimum requirements that apply when undertaking activities or work in or near any land owned or managed by Auckland Council or its CCOs where kauri are present.

It should be noted that kauri hygiene is also required as a General Standard in [Section E11.6.2 \(6\)<sup>1</sup> of the Auckland Unitary Plan Operative in part.](#)

1. Avoid work in wet conditions and areas containing kauri that are prone to flooding or ponding.
2. Clean and disinfect footwear ([Appendix 3](#) and Figure 4) before entering and after leaving areas containing kauri. Use every cleaning (hygiene) station encountered during the course of your work.
3. Stay on formed tracks if possible.
4. Stay outside of [Kauri Hygiene Areas](#) if possible.
5. When leaving a formed track, inspect footwear immediately before leaving the track, and use the portable (personal) phytosanitary kit ([Appendix 2](#)) to clean and disinfect before re-entering the track network. Formed tracks are 'safe zones' that need to be kept free of potentially contaminated soil.
6. All tools, machinery and other equipment must be clean and soil free on arrival, and when leaving a site. Tools, machinery and other equipment previously used in a [Contaminated Area](#) must not be used in any other area unless they have been steam-cleaned and subsequently sterilised first.
7. Wheeled or tracked machinery must be soil-free when entering areas where kauri are present, and must remain on site for the duration of the works.
8. If moving between different areas and/or catchments, work in low-risk areas (for example, areas where kauri dieback has not been detected) first, and high-risk areas last.
9. When pruning, felling or removing kauri, the procedures set out in the *Best Practice Guideline for Tree Removal and Pruning of Kauri* ([Appendix 4](#)) must be followed.
10. All material (such as weeds, vegetation, roots, trunk, bark and by-products produced during pruning or removal, for example sawdust) from within the [Kauri Hygiene Area](#)

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<sup>1</sup> (6) To prevent the spread of contaminated soil and organic material with kauri dieback disease, vehicle and equipment hygiene procedures must be adopted when working within 3 times the radius of the canopy drip line of a New Zealand kauri tree. Soil and organic material from land disturbance within 3 times the radius of the canopy drip line must not be transported beyond that area unless being transported to landfill for disposal.

must be left on site. If removal is necessary, transport off-site must be in secure containment (to prevent loss during transport) and disposal must be to an approved landfill ([Appendix 5](#)).

11. Any soil excavated within a [Kauri Hygiene Area](#) must be left on site. If removal is necessary, transport off-site must be in secure containment (to prevent loss during transport) and disposal must be to an approved landfill ([Appendix 5](#)).
12. No soil, vegetation or fill<sup>2</sup> materials may be brought onto any Auckland Council land where kauri are present, including local and regional parks, without prior approval from the Auckland Council [Kauri Dieback Team](#). All landscaping and vegetation supplies must be obtained from a source known to be free of kauri dieback disease.



**Figure 4: Example of dirty footwear (left) and clean footwear (right)**

[SOURCE: Northland Regional Council]

## 6.2 Additional requirements for Contaminated Areas

13. A clearly marked set of footwear dedicated to [Contaminated Area](#) work must be worn when undertaking activities in [Contaminated Areas](#). This requirement should be included in all relevant Auckland Council contracts.
14. Activities in [Contaminated Areas](#) must be scheduled to occur after activities in [Protection Areas](#) and other areas where kauri are present.

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<sup>2</sup> Best Practice Guideline for quarry hygiene: aggregate handling, transportation & storage ([Appendix 7](#)).

15. If removing equipment from [Contaminated Areas](#), it must be dry-brushed and contained for transport. Any soil removed from the equipment must be left on site.
16. Equipment, including pest control equipment, used in [Contaminated Areas](#) must not be re-used in any other areas where kauri are present unless it has first been steam-cleaned and subsequently sterilised.
17. Once installed in a [Contaminated Area](#), pest control equipment such as traps, bait stations and monitoring equipment must be serviced on-site and not be moved within the site ([Appendix 6](#)).

### 6.3 Additional requirements for Protection Areas

18. No planting is to be undertaken in a [Protection Area](#) unless the plants are eco-sourced and grown in the Area, or sourced from an Auckland Council approved supplier<sup>3</sup>.

### 6.4 Additional requirements for areas subject to a Controlled Area Notice

A [Controlled Area Notice](#) (CAN) is issued under Section 131 of the Biosecurity Act 1993 to control the movement of materials that may cause a biosecurity risk. In the Auckland region, there are three areas that are subject to CANs issued in 2018:

- Certain open tracks on the Waitākere Ranges.
- Parts of the Hunua Ranges
- Department of Conservation's Goldie Bush Scenic Reserve (northern Waitākere Ranges).

In these areas, it is prohibited to take goods (such as footwear, equipment or other items) with visible soil into or out of the walking tracks. This includes soil on companion animals. Cleaning (hygiene) stations must be used whenever they are encountered. No soil or plant material may be brought into, or removed from, these areas.

Video surveillance is in place, and non-compliance with the CAN may result in prosecution. Further information on CAN restrictions and requirements is available on the Ministry for Primary Industries (MPI) website:

<https://www.biosecurity.govt.nz/protection-and-response/long-term-pest-management/kauri-dieback/kauri-dieback-controlled-areas/>

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<sup>3</sup> An approved supplier is any supplier certified under the New Zealand Plant Producers Incorporated (NZPPI) Biosecurity Scheme core standard and kauri dieback schedule <https://nzppi.co.nz/BIOSECURITY-SCHEME/19750/>

## 7 Movement of livestock

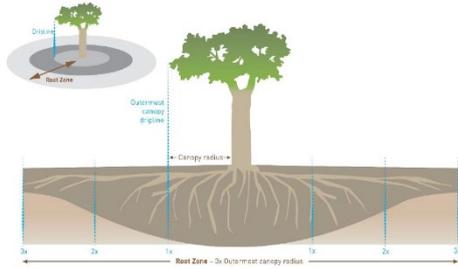
In addition to the Standard Operating Procedures set out in [Section 6](#) above, the following requirements apply to the movement of livestock in and out of areas where kauri are present.

- Livestock from a [Contaminated Area](#) must not be moved into any other areas where kauri are present. The only destination for livestock from a [Contaminated Area](#) should be a processing plant<sup>4</sup>.
- When livestock is removed from a [Contaminated Area](#) to a processing plant:
  - The driver is to be advised that kauri dieback is present, and the risk that the livestock to be transported may be carriers of kauri dieback disease.
  - The pick-up should be the last scheduled pick-up on the day so that the truck can be cleaned afterwards.
- Stock can only be purchased from outside of the natural range of kauri.
- Existing stock may be moved within or between [Protection Areas](#), and within or between other areas where kauri are present. This includes commercial movement to regional park land and movements between regional parks, but excludes sales from regional parks to commercial farms and auction yards as this could result in loss of oversight of stock movement. At present, the following regional parks are in [Protection Areas](#):
  - Hunua Ranges Regional Park
  - Waharau Regional Park
  - Whakatiwai Regional Park.
- All persons visiting livestock (for example, farming coordinators, veterinarians, stock agents) must leave their vehicles on formed roads or hard surfaces such as concrete pads. Where this is not possible, the vehicle (including tyres – refer [Appendix 3](#)) must be cleaned prior to entering the site.
- Livestock should be moved on clean trucks from a known and preferred supplier.
- Implementation of the above requirements, including how to manage the emergency movements of livestock as a result of flooding, feed shortage and similar events should be addressed in a Kauri Dieback Management Plan that is approved by [Auckland Council's Kauri Dieback Team](#).

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<sup>4</sup> The kauri dieback pathogen *Phytophthora agathidicida* is soil-borne and can persist in the ground for many years. Hence, the pathogen could be introduced to an area containing kauri by stock imported from an area or farm that held livestock from a [Contaminated Area](#) in the past, even if the area or farm itself does not contain kauri.

## DEFINITIONS AND ABBREVIATIONS

Contaminated Area	Kauri dieback disease is present in this area.
Controlled Area Notice (CAN)	As defined by S 131 of the Biosecurity Act 1993. The purpose of this section is to enable, among other things, the limitation of the spread of any pest or unwanted organism; minimisation of damage caused by any pest or unwanted organism; and/or protect an area from the incursion of pests or unwanted organisms.
Council-Controlled Organisation (CCO)	CCOs are organisations for which Auckland Council appoints at least 50% of the board of directors or trustees. Auckland Council has five substantive CCOs: <ul style="list-style-type: none"> <li>• Auckland Tourism, Events and Economic Development (ATEED)</li> <li>• Auckland Transport (AT)</li> <li>• Panuku Development Auckland</li> <li>• Regional Facilities Auckland (RFA)</li> <li>• Watercare</li> </ul>
Dripline (DL)	The outer edge of the outermost kauri branch.
Kauri Hygiene Area (KHA) <sup>5</sup>	An area equal to three times the maximum radius of the canopy dripline of a kauri. 
Kauri with confirmed kauri dieback disease	<i>Phytophthora agathidicida</i> has been identified in soil samples taken near the infected kauri.
Kauri with severe kauri dieback disease symptoms	The kauri exhibits significant kauri dieback disease symptoms such as basal trunk lesions bleeding gum, yellowing leaves, thinning canopy and dead branches.
Mechanical Equipment	All motor-powered equipment such as excavators, power barrows, ATVs (all-terrain vehicles), compactors, motorised augers and any type of vehicle (wheeled and tracked), but excluding hand tools or electrical tools.
Non-symptomatic kauri	Kauri appears health and shows none of the typical kauri dieback disease symptoms.
Protection Area	Kauri dieback disease has not been detected and significant areas of non-symptomatic kauri are present.

<sup>5</sup> National (Kauri dieback) Pest Management Plan proposal. Final (Version 10). Last updated: 22.05.2019

## **APPENDIX 1: RULES FOR KAURI DIEBACK EXCLUSION ZONES UNDER THE AUCKLAND REGIONAL PEST MANAGEMENT PLAN 2020 - 2030**

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As of February 2020, kauri dieback disease has not been detected on the Hauraki Gulf Islands (with the exception of Aotea / Great Barrier Island) and Kohukohunui / Hunua. There is no known cure for kauri dieback disease, and once present in a catchment it is difficult to contain spread of the disease. For these reasons, keeping kauri dieback off Hauraki Gulf Islands and out of the large tract of high value kauri forest in the Hunua Ranges (much of which is Auckland Council parkland) is a top regional priority.

The following Rules apply:

### **Rules 7.1.3.1.1 and 7.5.4.1.1:**

No person shall distribute, move or release kauri dieback disease in the Auckland region.

*The purpose of these rules is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.*

### **Rule 7.1.3.1.2**

No person shall move untreated kauri plant material to or among Hauraki Gulf Controlled Area islands, unless the purpose of the movement is to dispose of the material at an approved Auckland Council containment landfill.

### **Rule 7.1.3.1.3**

All commercial transport operators moving goods or people to or among Te Tīkapa Moana / the Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

*The purpose of rules 7.1.3.1.2 and 7.1.3.1.3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.*

### **Rule 7.1.3.1.4**

All occupiers of a commercial passenger boat or aircraft exit or entry point to the Hauraki Gulf Controlled Area islands must:

(i) provide information, supplied by Auckland Council, to passengers about kauri dieback disease;

(ii) provide space for an Auckland Council-maintained phytosanitary station for passengers to use to prevent the spread of kauri dieback disease.

*The purpose of rule 7.1.3.1.4 is to require the occupier of a place to carry out specified treatments or procedures to assist in preventing the spread of the pest.*

**Rule 7.5.4.1.2**

No person shall move soil, or plants, or animals contaminated with soil, or goods contaminated with soil, into the Hunua kauri dieback exclusion zone unless sourced from an Auckland Council approved supplier.

*The purpose of rule 7.5.4.1.2 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest. Rule 7.5.4.1.2 comes into force on 1 April 2020.*

An approved supplier is any supplier certified under the New Zealand Plant Producers Incorporated (NZPPI) Biosecurity Scheme core standard and kauri dieback schedule <https://nzppi.co.nz/BIOSECURITY-SCHEME/19750/>

**A breach of these rules is an offence under s154N(19) of the Biosecurity Act.**

## **APPENDIX 2: GUIDANCE NOTE - CONTENT OF PHYTOSANITARY KITS**

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### **1 Portable (Personal) Kauri Hygiene (Phytosanitary) Kit**

Any person undertaking activities in areas that are owned or managed by Auckland Council or its CCOs where kauri are present must carry a portable (personal) cleaning kit at all times. As a minimum, this kit should include:

- 1 x 500 ml (or larger) spray bottle containing 2% solution of Sterigene ([Appendix 9](#)).
- 1 x hard brush for removing soil (prior to spraying with Sterigene).

The kit should be contained in a sealable plastic bag.

### **2 Small Equipment Kauri Hygiene (Phytosanitary) Kit**

Any person using small, hand-held equipment such as trowels and/or scientific equipment that penetrates the soil must carry a portable equipment cleaning kit. As a minimum, this kit should include:

- A small squirt bottle containing methylated spirits
- Wet wipes
- A bag for collecting used wet wipes.

The kit should be contained in a sealable plastic container with secure lids.

### **3 Standard Kauri Hygiene (Phytosanitary) Kit for Vehicles**

Vehicles that are routinely used for people and equipment transport to areas where kauri are present should carry a range of cleaning tools and supplies to enable thorough cleaning, especially if any of the visited areas are within a [Contaminated Area](#). As a minimum, the standard phytosanitary vehicle kit should include:

- Sturdy plastic bags or bins for the storage of footwear, to prevent the interior of the vehicle becoming a source of contamination
- A selection of hard brushes for removing soil
- 40 l plastic bin
- 1 x 1 litre Sterigene concentrate
- 2 x 1 litre spray bottles containing 2% Sterigene solution
- 1 x 4 litre jerry can of 2% Sterigene solution
- 1 x 4 litre jerry can of water
- 1 x plastic funnel
- 1 x measuring gauge.

The kit should be contained in a sealable plastic container with secure lids.

## **APPENDIX 3: GUIDANCE NOTE - CLEANING INSTRUCTIONS**

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### **Footwear and Equipment**

#### **1. Off-site Cleaning (at depot or base)**

- Use a dry hard brush to remove all soil, vegetation and debris. Dry material should be collected and disposed of to (an approved) landfill.
- Wet scrub with hot soapy water to remove all remaining material. Small amounts of soil removed while scrubbing under water can be allowed to enter a wastewater drain (not the stormwater drain). Rinse with fresh water.
- After all soil, vegetation and debris is removed, sterilise using an appropriate disinfectant:
  - For footwear only use Sterigene at a 2% solution.
  - For equipment use either Sterigene at a 2% solution, Methylated Spirits 70-100% or household bleach at 25% solution.
- Allow to dry.

#### **2. On-site Cleaning**

When moving from one area or catchment where kauri are present to another without returning to depot or base, and where no grated catch tray hygiene station (Figure A3-1) is available, thorough cleaning should be undertaken using the Vehicle Phytosanitary Kit:

- Use a dry hard brush to remove all soil, vegetation and debris. Dry material should be collected and either be discarded off-track or disposed of to (an approved) landfill later.
- Wet scrub with a 2% solution of Sterigene to remove any remaining material. If the standard phytosanitary vehicle kit is accessible, pour 2% Sterigene solution into the plastic bin for thorough cleaning of footwear and tools/equipment.
- Pour dirty water back into the jerry can using plastic funnel and dispose to the wastewater system upon returning to base.
- After all soil, vegetation and debris is removed, sterilise using an appropriate disinfectant:
  - For footwear, use Sterigene at a 2% solution.
  - For equipment, use either Sterigene at a 2% solution, or Methylated Spirits 70-100%, or household bleach at 25% solution.
- Allow to dry.



Figure A3-1: Grated catch tray hygiene station

## Vehicles and mechanical equipment

### 1. General Requirements

As a general principle, vehicles or [mechanical equipment](#) (heavy machinery) should not enter [Kauri Hygiene Areas](#). If machinery needs to be used within a [Kauri Hygiene Area](#), strict cleaning and disinfection procedures must be followed, as set out below.

All operators are required to:

- Carry out thorough cleaning of their vehicles, equipment and machinery, followed by an inspection. All machinery and vehicles must be free of mud and soil (including on tyres, wheels, wheel arches, mud flaps, body and underbody) when entering an area containing kauri (Figures A3-2 and A3-3).
- Maintain a hygiene diary for each vehicle and item of equipment/machinery, recording the following information:
  - Location of use prior to cleaning
  - Date cleaning took place
  - Name of person/s undertaking cleaning
  - Cleaning method
  - Photos of the vehicle/machinery once cleaned to provide evidence that it is soil-free.

- Auckland Council biosecurity staff may undertake inspections of machinery and vehicles, and audit hygiene diaries. Access to areas where kauri are present, particularly those in [Protection Areas](#), will be refused if vehicles and machinery are not free of soil, vegetation or debris.
- Where possible, machinery/vehicles should remain on-site for the duration of the job or project to minimise the risk of spreading kauri dieback disease.
- When working in areas where kauri are present, heavy machinery that is easy to clean should be given preference, for example machines with rubber tyres and stabilisers rather than tracks.
- The tool kit for cleaning heavy machinery and vehicles should include:
  - A range of scrubbing brushes and brooms to remove caked on/loose soil/plant material from the vehicle's body, mudguards and tyres.
  - Steel rods to dislodge clods of soil.
  - Effective tools and methods for applying disinfectant.



**Figure A3-2: Heavy machinery before and after cleaning**



**Figure A3-3: Tyre and wheel arch before and after cleaning**

## 2. Cleaning Procedure at Depot

- Before leaving the site, remove loose soil, vegetation and debris prior to returning to base/depot to minimise spread of soil along the road.
- Wash-down sites should be positioned on a concrete or gravel pad with good drainage. Vehicle ramps are recommended as they allow better access to the undercarriage. Use the designated washdown area if one is available, for example at regional park depots. Wash-down areas should be cleaned after each use and sprayed with Sterigene solution.
- For some vehicles, the use of a nearby commercial car wash facility with underbody cleaning ([Appendix 8](#)) is sufficient, provided that residual soil and other material is removed prior to travelling to the facility.
- Remove as much soil, vegetation and debris as possible with 'dry' cleaning first, using hard brushes, compressed air, shovels, rods or brooms. Dry material should be collected and disposed of to (an approved) landfill to prevent transfer to another vehicle/heavy machinery.
- Minimise the use of water when wet cleaning. Wash vehicles/heavy machinery using a high-pressure unit on a hard, formed surface such as a bunded concrete pad.
- Ensure that wheels and wheel arches, mud flaps and underbody are thoroughly cleaned.
- Sterilise the vehicle/machinery using a pressurised spray unit (which reduces run-off) using a 2% Sterigene solution. Allow the solution to dry for at least one minute (preferably 10 minutes) before the vehicle or machinery leaves the wash-down area. When sterilising excavator tracks, move the vehicle forward so as to reduce the risk of the tracks coming into contact with potentially contaminated dirty water.
- After use, wash and sterilise the tools used to remove the soil, vegetation and debris from the vehicle/machinery.
- Undertake a visual inspection to confirm that vehicles and machinery are free of soil, slurry (water and soil) and plant material. Take photos to provide evidence and include them in the hygiene diary.

## 3. Cleaning Procedure on Site

Vehicles and/or [mechanical equipment](#) (heavy machinery) must not move between different areas where kauri are present, for example from one regional or local park to another, without prior thorough cleaning at the depot or base. If moving from one [Kauri Hygiene Area](#) to another within the same area cannot be avoided, on-site cleaning must be undertaken:

- Remove as much soil, vegetation and debris as possible with 'dry' cleaning, using hard brushes, compressed air (if available), shovels, rods or brooms. Dry material must be disposed of within the [Kauri Hygiene Area](#) in which the work was undertaken.

## APPENDIX 4: GUIDANCE NOTE - PRUNING AND REMOVAL OF KAURI

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This guidance note is an abbreviated version of the National Kauri Dieback Programme's *Best Practice Guideline for Tree Removal and Pruning of Kauri*, Version 2.2, October 2017.

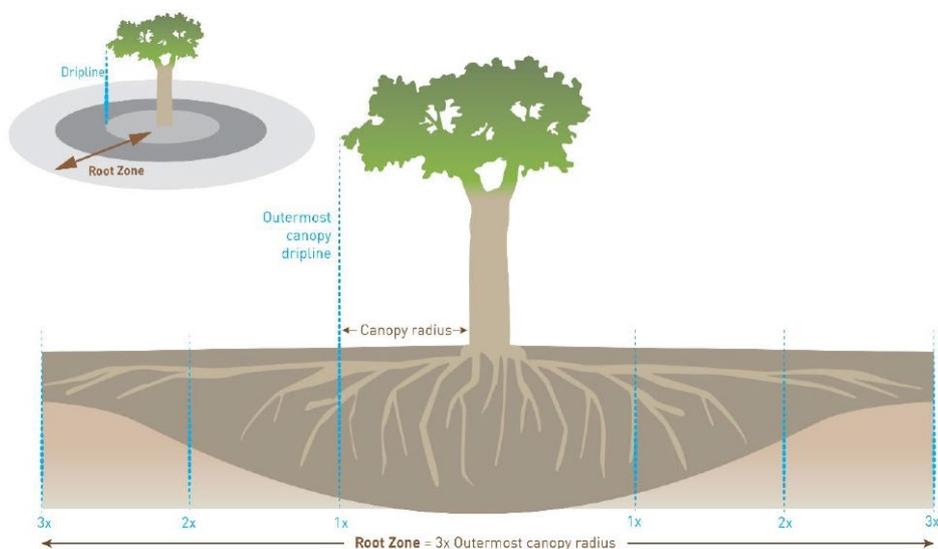
The complete document may be downloaded here:

[https://www.kauridieback.co.nz/media/1860/bpg-tree-removal-and-pruning-of-kauri\\_v22.pdf](https://www.kauridieback.co.nz/media/1860/bpg-tree-removal-and-pruning-of-kauri_v22.pdf)

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### 1 General Considerations

- As a general principle, all kauri should be treated as being infected with kauri dieback disease when pruning or felling. A kauri with a recent infection may not yet display any symptoms, but is already a host for the pathogen.
- Felling and pruning of kauri should occur during dry periods. The only exception should be where trees pose an immediate health and safety hazard.
- As felling and pruning involves working within a [Kauri Hygiene Area](#), all kauri hygiene procedures must be complied with.



- All material deemed contaminated should be left in the ground or within the [Kauri Hygiene Area](#) where the work was undertaken. If this is not possible, the material must be removed to a Kauri Dieback Programme Approved Landfill for deep burial.
- Contaminated kauri material must not be disposed of as green waste, composted or otherwise recycled, for example for firewood, woodwork or building material.
- In the Auckland region, kauri with visible kauri dieback symptoms (lesions) or dead kauri are considered as contaminated.

## 2 Pruning and Felling Instructions for Live Kauri

Live kauri **without** bark lesions should be cut at least 40 cm (or greater) above the highest point of the ground (Figure 1).

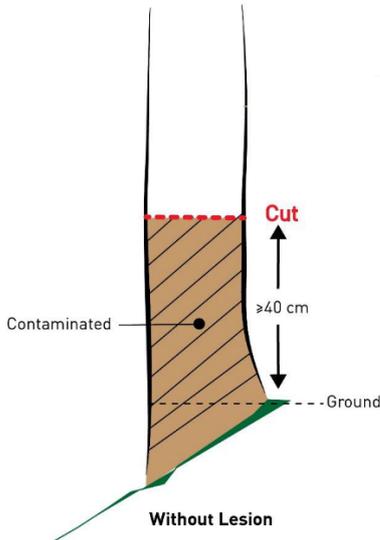


Figure 1

Live kauri **with** bark lesions should be cut at least 40 cm (or greater) above the upper point of the highest lesion on the trunk (Figure 2).

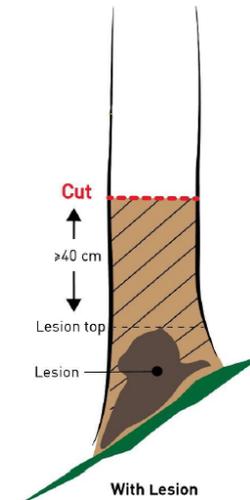


Figure 2

## 3 Pruning and Felling Instructions for Standing Dead Kauri

Standing dead kauri without bark and with a clean rot-free outer trunk from the base of the tree and less than 50 cm at breast height diameter (DBH) must be cut at least 60 cm (or greater) above the highest point from the ground (Figure 3).

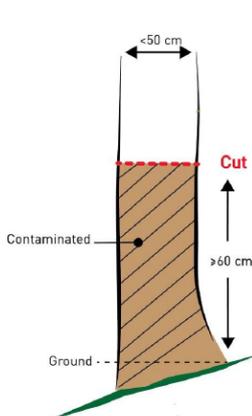


Figure 3

Standing dead kauri without bark and with a clean rot-free outer trunk from the base of the tree and with a girth of more than 50 cm at breast height diameter (DBH) must be cut at least 200 cm (or greater) above the highest point from the ground (Figure 4).

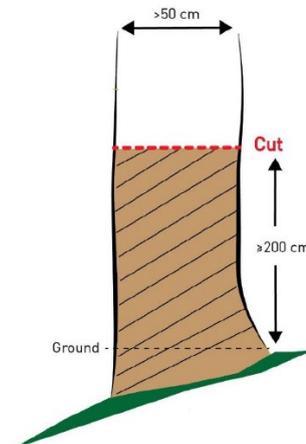


Figure 4

Standing dead kauri with a trunk of less than 50 cm at breast height diameter (DBH) without bark and evidence of wood rot that has extended from the ground up the outer trunk should be cut at least 60 cm (or greater) above the top of the rot-zone (Figure 5).

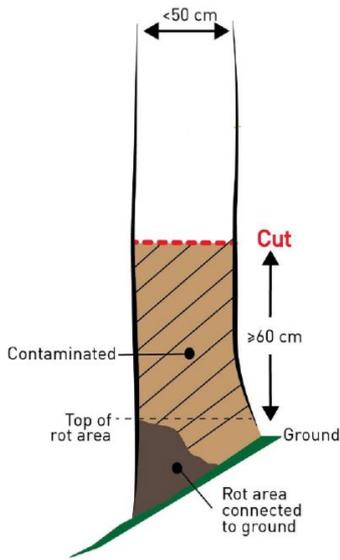


Figure 5

Standing dead kauri with a trunk that is larger than 50 cm at breast height diameter (DBH) without bark and evidence of wood rot that has extended from the ground up the outer trunk should be cut at least 200 cm (or greater) above the top of the rot-zone (Figure 6).

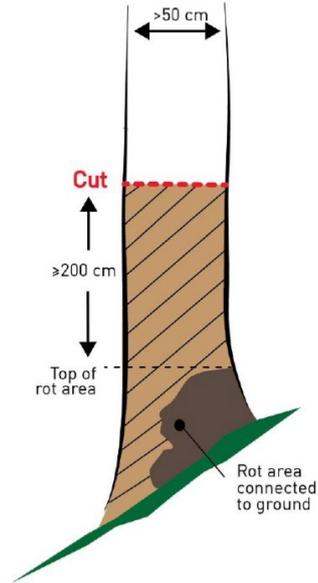


Figure 6

## APPENDIX 5: APPROVED LANDFILLS

There are three approved landfill sites in or near the Auckland region that are authorised to accept material that may be contaminated kauri dieback disease (*Phytophthora agathidicida*).

All require an account to be set up as well as 24 hours' notice prior to load delivery.

Further information is available in the *Best Practice Guideline for Landfill Disposal of Contaminated Material*.

<https://www.kauridieback.co.nz/media/2024/best-practise-guideline-landfill-disposal-of-contaminate-material-031218v3.pdf>

Region	Facility	Address	Operator	Operational information
Auckland	Redvale	Landfill Access Road, Dairy Flat	Waste Management	<ol style="list-style-type: none"> <li>1. Permit enquiries: Siobhan Lloyd <a href="mailto:sloyd@wastemanagement.co.nz">sloyd@wastemanagement.co.nz</a> or ph. 027 404 7430 / 09 427 8607 OR Timothy Brake <a href="mailto:tbrake@wastemanagement.co.nz">tbrake@wastemanagement.co.nz</a> or ph. 09 427 0620</li> <li>2. Wheel wash is available but not full wash down facilities</li> <li>3. Use of a sealable truck liner is advised prior to transportation</li> <li>4. Loads deposited before ca. 1.30pm will be buried 2 metres deep by the end of the day</li> </ol>
Waikato	Ridge Road Quarry Managed Fill	Ridge Road, Bombay (3.5km on left after the Ridge Road off-ramp on the southern motorway)	Ridge Road Quarry	<ol style="list-style-type: none"> <li>1. Permit Enquires: Paul Livesey (Manager) ph. 021 767 950 or Weighbridge ph. 021 434 736.</li> <li>2. No wood, branches, leaves or other organic material is allowed at the landfill. Soil is allowed.</li> <li>3. Contractors will help in washing down the truck/trailer after disposal and before exiting the site.</li> <li>4. Upon exiting the site, the contractor will drive the truck/trailer unit through the wheel wash prior to leaving the premise.</li> </ol>
Waikato	North Waikato Regional Landfill	136 Hampton Downs Road, Te Kauwhata	Envirowaste Services	<ol style="list-style-type: none"> <li>1. Permit Enquires: Wendy Hodge (Special Waste/Soils Manager- Envirowaste) ph. 021 308 874; 09 622 8829. If Wendy is unavailable, Steven Ridgway (Landfill Engineer - Envirowaste) ph. 029 493 9531; 07 826 0076.</li> <li>2. All contractors will give 24-hour notice upon arrival at the site. Please contact Tony or Steven.</li> <li>3. Contractors will wash down the truck/trailer unit using the wash down facilities after material has been disposed of.</li> <li>4. Upon exiting the site, the contractor will drive the truck/trailer unit through the wheel wash prior to leaving the premise.</li> </ol>

## APPENDIX 6: GUIDANCE NOTE - PEST CONTROL ACTIVITIES

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All pest control activities (pest plant and pest animal management) in areas where kauri are present must be undertaken in accordance with the Standard Operating Procedures set out in [Section 6](#).

If pest control is undertaken in areas that encompass more than one catchment where kauri are present, and working in or moving through several [Kauri Hygiene Areas](#) is required, a Kauri Dieback Management Plan should be prepared. A Kauri Dieback Management Plan template and assistance is available from the Auckland Council [Kauri Dieback Team](#).

Kauri protection measures specific to pest plant and pest animal management are set out below.

### 1. General Requirements

- Moving through, working in and locating traps and/or bait stations and or monitoring stations in any [Kauri Hygiene Area](#) should be avoided, **especially** if kauri dieback disease has been confirmed or the kauri have kauri dieback symptoms.
- Some sites may include stands with known infected kauri and stands with non-symptomatic kauri. Where this is the case:
  - Separate 'entrances'/access routes to areas of infected kauri and areas non-symptomatic kauri need to be established.
  - Distinct areas of infected kauri in an otherwise non-symptomatic location should always be entered last, and only if they cannot be avoided completely.
  - Kauri dieback disease is also transmitted through water, hence the direction of the overland flow path is important. Movement/work around known infected kauri should occur uphill of the infected trees, and movement/work around non-symptomatic kauri should occur downhill of the trees.
- When moving between catchments, footwear should be cleaned (using the [portable hygiene kit](#)) before entering and when leaving a [Kauri Hygiene Area](#).
- No equipment and/or other articles should touch the ground, to prevent them coming into contact with soil. This could be achieved by hanging articles from a tree branch rather than placing them on the ground.
- Traps, bait stations and monitoring stations in areas where kauri are present should be serviced and maintained on site wherever possible.
- Traps, bait stations and tracking tunnels must not be moved between parks and/or between distinct stands of kauri without effective cleaning to remove all soil and debris (for example steam-cleaning) and subsequent Sterigene treatment.

- Trap lines should be positioned so that they are on dry or free draining surfaces.
- Bait stations and/or traps must not be placed on any kauri.
- No bait stations and/or traps may be placed on sites where muddy areas are being created within 3 x the diameter of kauri, or where those mud areas could be used as wallows or rooting areas by feral animals.
- Dead animals should be removed from [Kauri Hygiene Areas](#) as soon as possible so that those animals do not attract scavenging pigs.
- When servicing or replacing traps contained within a wooden structure, the trap mechanism should be removed from its wooden housing and the wooden housing be left *in situ*, as the wood could be a source of contamination. The wooden trap housing should not be re-used.

## 2. Working in Contaminated Areas

- A clearly marked separate set of footwear should be used when working at locations in [Contaminated Areas](#). For any contractors working on the mainland **as well as** on Waiheke Island and other islands in the Hauraki Gulf Islands Kauri Dieback Exclusion Zone, a further set of footwear that is only used on the islands is recommended.
- Any traps installed in a [Contaminated Area](#) must not be moved within the site.
- Traps used in a [Contaminated Area](#) may not be re-used in any other area where kauri are present unless they have been steam-cleaned and subsequently sterilised first.

## 3. Working in Protection Areas

- Any traps installed in a [Protection Area](#) must be new.

## 4. Large Animal Control

- Control sectors should be established on the basis of catchments, to reduce the risk of spreading kauri dieback disease between catchments.
- Hunting activities in sectors with non-symptomatic kauri first should be scheduled first, and in sectors with infected kauri or in Contaminated Areas last.

## **APPENDIX 7: GUIDANCE NOTE - QUARRY HYGIENE: AGGREGATE HANDLING, TRANSPORTATION & STORAGE**

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This guidance note is an abbreviated version of the National Kauri Dieback Programme's *Best Practice Guideline for Quarry Hygiene: Aggregate Handling, Transportation & Storage*, Version 1.4, July 2019.

The complete document may be downloaded here:

[https://www.kauridieback.co.nz/media/2018/bpg-quarry-hygiene\\_v14\\_final-signed2.pdf](https://www.kauridieback.co.nz/media/2018/bpg-quarry-hygiene_v14_final-signed2.pdf)

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### **1 General Considerations**

- Aggregate is an important resource for track construction (for example, in forestry operations and on farms) and road maintenance in New Zealand.
- Many of the quarries that are used in the northern part of New Zealand are on hill sides with native forest cover that will/has been cleared of this cover and/or overburden to access the quarry aggregate underneath. As kauri dieback disease has been recorded in areas near quarries, quarry operations could pose a risk in spreading kauri dieback.
- To manage the possible spread pathways of the kauri dieback pathogen *Phytophthora agathidicida* (PA) during aggregate handling, transportation and storage, a risk assessment should be undertaken for each quarry and associated equipment that supplies aggregate to areas where kauri are present.

### **2 Risk Assessment Approach**

- The soil in the overburden may be contaminated with the kauri dieback pathogen *Phytophthora agathidicida* if kauri is present or may have historically been present. As a result, equipment, machinery and vehicles used to remove and transport the overburden and extract the aggregate material could be contaminated with the pathogen, as it remains in the soil for many years. This situation has occurred in the past on at least one site. In addition, trucks may become contaminated when delivering aggregate to muddy sites that contain the pathogen, and transport it back to the quarry.
- Quarry operations use significant quantities of water in the process of aggregate extraction, so the surrounding soil is likely to be wet and muddy. This exacerbates the potential for spreading kauri dieback because:
  - Wet soil will adhere more readily and persistently to vehicles and equipment than dry soil.

- The pathogen is waterborne and can move easily through wet soil.
- The pathogen may be present in surface water runoff.
- There is potential for contaminated water to be re-circulated.
- The risk assessment should be carried out with a person who is familiar with the quarry, its operational procedures and who can give assurance that the aggregate can be provided with minimal risk of spreading the kauri dieback pathogen.
- Guidance for undertaking the risk assessment and developing appropriate risk reduction measures is provided below.

Vector	Questions	Risk Assessment	Management
Overburden and Aggregate	<p>Are kauri present or have they historically been present:</p> <ul style="list-style-type: none"> <li>● Above faces in areas where aggregate is being quarried now?</li> <li>● Where soil or runoff could contaminate aggregate during production and storage?</li> <li>● In the surrounding catchment?</li> </ul> <p>If no kauri are/were present, what is the likelihood that other vectors may have spread PA (such as vehicles, equipment or pigs) to the quarry?</p>	<p>If kauri are or were present the risk of the pathogen being contained in the overburden is higher compared to kauri being absent.</p> <p>If there is information to suggest that vectoring has taken place from a contaminated area to where the quarry is located, then there is an increased risk that the disease may have spread to the quarry or surrounding area.</p> <p>Clean aggregate is not considered to be a vector for kauri dieback disease.</p>	<p>Overburden may be contaminated with PA and may require deep burial in a secure facility on site or at an appropriate landfill if the material has to be removed from the quarry.</p> <p>Refer to:  <a href="https://www.kauriprotection.co.nz/media/2024/best-practise-guideline-landfill-disposal-of-contaminate-material-031218v3.pdf">https://www.kauriprotection.co.nz/media/2024/best-practise-guideline-landfill-disposal-of-contaminate-material-031218v3.pdf</a>.</p> <p>If the overburden is to be used on site for rehabilitation and landfill, it should be stored separately and away from clean aggregate. The storage area should be located where vehicles, equipment and personnel are not exposed to possible overburden contamination and run-off does not occur towards areas where clean aggregate is stored. During rehabilitation operations, vehicles and equipment should be cleaned prior to exiting the quarry.</p> <p>Clean aggregate is to be stockpiled in an area away from any potential source of contamination.</p>

Vector	Questions	Risk Assessment	Management
Vehicles, machinery, and equipment	What is the likelihood that these vectors could spread PA to and from the quarry?	<p>If there is information to suggest that vectoring has taken place or is likely to take place from a PA-contaminated area to where the quarry is located, then there is an increased risk that the disease may have spread to the quarry or surrounding area.</p> <p>If the overburden or soil substrates at the quarry are near kauri (as above) then there is an increased risk that the pathogen may spread from the quarry to areas containing kauri.</p>	<p>Vehicles and equipment originating from an area where PA could occur should be clean of soil prior to leaving that site. If this has not happened or cleaning was inadequate, then the vehicles and equipment should be washed down before entering the quarry.</p> <p>Vehicles and equipment exiting the quarry must be washed down so that they are not transporting soil from the quarry.</p> <p>Refer to: <a href="https://www.kauriprotection.co.nz/media/1464/best-practice-guidelines-vehicles-and-heavy-machinery-hygiene.pdf">https://www.kauriprotection.co.nz/media/1464/best-practice-guidelines-vehicles-and-heavy-machinery-hygiene.pdf</a></p> <p>Footwear should be cleaned of soil and then sprayed using Sterigene.</p>
Water	Is the water used in the quarry process sourced from streams or surface water in catchments with kauri?	<p>If water is sourced within catchments containing kauri then there is an increased likelihood that the water may contain the pathogen.</p> <p>Water sourced from non-surface flow such as bores and rainwater carries a lower risk of spreading PA.</p>	<p>The water used to wash gravel should not be recirculated from any system used to wash vehicles entering and exiting the quarry.</p> <p>The gravel must be washed in clean water until the water exiting the washing is clear.</p> <p>The water from washing should not be disposed of into areas or waterways where kauri are present at or below the outfall.</p> <p>Water drainage should direct any surface flow away from aggregate storage areas and away from areas or waterways where kauri are present.</p>

Vector	Questions	Risk Assessment	Management
Pigs and other feral animals	What is the likelihood that these vectors have or are likely to spread PA to the quarry?	If there is information to suggest that vectoring has taken place or is likely to take place from a PA contaminated area to where the quarry is located, then there is an increased risk that the disease may have spread to the quarry or surrounding area.	Fencing off the quarry to prevent movement of pigs and other feral animals onto the quarry site.  Pest Control.

## APPENDIX 8: WASHDOWN SITES

### Commercial Carwash Facilities

[STATUS: February 2020]

Relevant Location	Facility and Address
Hunua Ranges Clevedon Scenic Reserve	BP Ormiston, 255 Ormiston Road, Flat Bush
Kauri Glen Reserve Eskdale Reserve	BP Coventry, 127 Wairau Road, Takapuna
Botanic Gardens Totara Park	BP Weymouth, 199 Weymouth Road, Manurewa
Kauri Park, Kauri Point Domain, Chatsworth Reserve and others	BP Birkenhead, 172-178 Mokoia Road, Birkenhead
Shakespear Regional Park Stillwater	BP Whangaparaoa, 701 Whangaparaoa Road, Whangaparaoa
Douglas Scenic Reserve, Bendall Creek, Waitakere	BP Glendene, Cnr Norcross & Te Atatu Rd, Glendene
McElroy Scenic and Kowhai Park Scenic Reserves	BP Warkworth, 67 Auckland Road (SH1), Warkworth
Wenderholm Regional Park, Mahurangi Regional Park	Caltex Orewa, 70 Grand Drive, Orewa
Gills Road, Three Streams and Albany Heights West Reserve and Coatesville Scenic Reserves	Caltex Albany, Mercari Way, Albany Z Albany, 287 Oteha Valley Road, Albany BP Rosedale, Cnr Rosedale & Apollo Drives, Albany Oteha Valley Caltex, 256 Oteha Valley Road, Albany
All Waitakere reserves	Caltex West Coast Road, West Coast Road, Glen Eden
Awhitu Reserves	Z Waiuku, 16 Kitchener Road, Waiuku
Rahui Kahika Reserve, Waitakere Ranges	Z Green Bay, 82 Godley Road, Green Bay

## APPENDIX 9: DISINFECTANT INFORMATION

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The recommended disinfectant for kauri hygiene purposes is Sterigene, also known as Trigene.

Sterigene is a broad-spectrum disinfectant proven to be effective against *Phytophthora agathidicida* spores. It is non-toxic, non-corrosive, biodegradable and environmentally friendly. Phytosanitary kits containing Sterigene disinfectant are used by all agencies managing kauri dieback disease. Sterigene can be sprayed onto clean or lightly soiled surfaces, which should then be allowed to dry. However, Sterigene will not kill spores that are embedded in soil.

Spores of kauri dieback disease can be removed from footwear and equipment by scrubbing with warm water to thoroughly remove all soil, then allowing them to dry. The use of Sterigene increases the effectiveness of hygiene measures, provided that all dirt is removed first.

Concentrated Sterigene solution has a shelf life of two (2) years. Diluted 2% Sterigene solution (i.e. already mixed with water) remains effective for approximately 6 months.

Disposal of water, soil/slurry and Sterigene from cleaning footwear and equipment must be disposed of to a wastewater system (sewer system) connected to a wastewater treatment plant. Liquid waste containing Sterigene cannot go into septic tanks, or into the stormwater system. Safety data information for [Sterigene](#) can be accessed on the National Kauri Dieback Programme website.

If necessary, expired Sterigene may be discarded on a lawn or gravel pad.

Sterigene can be ordered from Chubb, either as a concentrate or ready-mix:

<https://store.chubb.co.nz/11-48/product/first-aid-kits-and-disinfectant>

It is available in 20 litre containers of concentrate and needs to be diluted as follows to achieve the recommended 2% dilution:

- 10 ml of Sterigene in 0.5 l of water (standard spray bottle)
- 200 ml of Sterigene in 10 l of water
- 2 l of Sterigene in 100 l of water
- 20 l of Sterigene in 1,000 l of water

## APPENDIX 10: LIST OF BEST PRACTICE GUIDELINES

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### [STATUS: February 2020]

The (national) Kauri Dieback Programme is a partnership between central government, local government and tangata whenua. The partners are Biosecurity New Zealand (part of the Ministry of Primary Industries), the Department of Conservation, Auckland Council, Waikato Regional Council, Northland Regional Council, Bay of Plenty Regional Council, Te Roroa – tangata whenua for Waipoua Forest, and Tangata Whenua Roopu – the representative body for iwi and hapū with an interest in kauri lands. The Best Practice Guidelines listed below are available on the Kauri Dieback programme website: <https://www.kauridieback.co.nz/how-to-guides/>

- How to help save kauri when walking your dog
- How to help save kauri when horseriding
- How to help save kauri when mountainbiking
- How to help save kauri when walking or running
- How to help save kauri when hunting
- How to help save kauri when trapping
- How to help save kauri when visiting the Upper North Island
- How to help save kauri by looking after the ones you've got
- How to help save kauri by following hygiene guidelines
- How to help save kauri when disposing of material contaminated with the disease
- How to help save kauri when working around kauri
- How to help save kauri when operating vehicles and heavy machinery near kauri
- How to help save kauri when pruning or removing kauri
- How to help save kauri during propagation and planting of kauri
- How to help save kauri during quarry operations

