

# Island biosecurity best practice: Introduction and quarantine

## About this document

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# Contents

1	Purpose and scope	2
2	Terms and definitions	2
3	Island biosecurity	5
3.1	Who does island biosecurity apply to?	5
3.2	Principles	5
3.3	Mandates	6
3.4	Framework	6
4	Management	7
4.1	Preparedness	7
4.1.1	Island biosecurity planning	7
4.1.2	Risk assessment	8
5	Quarantine	16
5.1	Introduction	16
5.1.1	Purpose	16
5.1.2	Principles	16
5.1.3	Quarantine standards	16
5.2	Biosecurity facility management	19
5.2.1	Security and management	19
5.2.2	Signage at biosecurity facilities	21
5.2.3	Management of pests and pathogens	23
5.2.4	Packaging and containers	28
5.2.5	Quarantine flow - dirty to clean practices	31
5.2.6	Monthly checks and annual review	32
5.3	Quarantine procedures	33
5.3.1	Information prior to departure	33
5.3.2	Cleaning and disinfecting gear	35
5.3.3	Inspection of personnel and goods	40
5.3.4	Cleaning, inspection, storage and transport of goods that cannot pass through a Biosecurity facility	43
5.3.5	Transport management	49
5.3.6	Supply chain quarantine	56
5.3.7	Taking domestic stock to islands	58
5.3.8	Translocating native animals to islands	60
5.3.9	Taking plants and seeds to islands	63
5.3.10	Interceptions and reporting of interceptions	66
5.4	On-island quarantine	68
5.4.1	On-island quarantine facilities	68
5.4.2	Arrival procedures on islands	72
5.4.3	Reverse quarantine and inter-island quarantine	74
5.4.4	On-island hygiene	77
6	Document history	79
7	Documents replaced	79

# 1 Purpose and scope

The purpose of this best practice guideline is to support effective planning and implementation of island biosecurity for conservation. Proper planning is vital to achieve the desired conservation outcomes and risk management for islands.

## Scope:

This best practice guideline **applies** to:

- Islands surrounded by a water barrier (whether freshwater or saline)
- Any island to which the Department has a biosecurity obligation
- where the intention is to maintain the island free of invasive species for biodiversity conservation.

This best practice guideline does **not apply** to:

- Mainland biosecurity
- Marine biosecurity
- Mainland islands

# 2 Terms and definitions

List any technical terms or definitions needed to support users' understanding of your document using the format below. The section can be deleted if it's not needed.

Term	Definition
Audit	An independent systematic assessment of compliance with accepted biosecurity standards, with recommendations for improvement.
Biosecurity	The systems and practices applied pre- and post-border to protect islands from invasive pests and pathogens. Quarantine, surveillance and incursion response are the three mandatory workstreams through which pest organisms are intercepted.
Biosecurity facility	The facility provided to meet the biosecurity requirements of goods and personnel going to pest-free islands. It includes a cleaning area, cleaning tools, quarantine rooms, and storage space for equipment and supplies dedicated to pest-free island use.
Biosecurity lead	The ranger, appointed by the Operations Manager, to lead the whole of Island Biosecurity or the relevant Island Biosecurity workstream for their District. The leads for Quarantine, Surveillance, Incursion Readiness and Response, or Advocacy are not necessarily the same ranger.

<b>Term</b>	<b>Definition</b>
Custodian	The ranger appointed by the Operations Manager to look after the Biosecurity Facility and ensure the standards are met.
Eradication	Complete removal of all individuals of the targeted pest organism from the island.  In the case of pest plants with seeds or spores, bring them down to zero density and maintain zero density until the propagule source is exhausted.
Incursion	Where a pest is found in the wild on an island or stepping stone island. Implies: a breach; having got past the only or last barrier.
Incursion response	The process of finding and removing all invading pest individuals or pathogens from an island as soon as possible after detection.
Inspector	Ranger, appointed by the Operations Manager, who is trained in (or has demonstrated experience and competence in) quarantine inspections. Inspectors have a mandate to veto personnel and goods from travelling to pest-free islands if island biosecurity standards are not met.
Interception	Where a pest is detected in a secured area either on the mainland, in transit or in the on-island receiving room, e.g., quarantine store, wharf, helicopter pad, vessel, aircraft, or on the island receiving room while unpacking, etc.
Inter-island quarantine	The measures or procedures taken to ensure that people, animals, equipment, supplies and transport travelling between islands are not carrying pest organisms from one island to another.
Neophobia	Fear of new things; in the biosecurity context, this refers to pest animal suspicions about new baits, bait stations, traps or detection devices within their territory, usually resulting in avoidance.
Pathogen	An often not visible organism (a bacterium, virus, or other microorganism that can cause disease). Generally not wanted on the island or other biologically significant area. Includes Kauri dieback, Myrtle rust and other infectious diseases.
Pathway	A route or means by which pests spread. Not to be confused with vector (see below). Typical pathways are air, shipping or visitor traffic, but swimming or flying across an ocean gap can be a pathway too.

<b>Term</b>	<b>Definition</b>
Pest	An organism which is not wanted on the island or other biologically significant area. Includes animals, plants and pathogens.
Pest-free	Free of one or more specified pests that are not wanted on an island.
Quarantine	The measures or procedures (usually cleaning, inspections and precautionary pest control) applied to ensure that people, animals, equipment, supplies and their means of transport are not carrying pest organisms to an island.
Quarantine room/s	The rooms within a Biosecurity Facility that are defended from pests (and pathogens). Ideally the Quarantine space is divided into 3 rooms with one-way flow between them: these are the Receiving Room to hold goods that have been cleaned but not yet inspected, the Inspection Room for inspecting and repacking goods into sealed containers, the Clean Room for holding inspected goods without risk of recontamination until transport.
Reverse quarantine	The measures or procedures taken to ensure that people, animals, equipment, supplies and means of transport returning from an island are not carrying pest organisms back to the mainland (e.g. highly relevant for the Kermadec Islands). Includes screening for rare species hitchhiking off the island with departing visitors and gear.
Surveillance	The process of systematic checking (of an island) to detect the presence of pests (pests or pathogens) which may have by-passed quarantine measures or arrived by their own means.
Unwanted organism	Any organism formally declared to be unwanted under the Biosecurity Act 1993.
Vector	A vector is anything on which a pest hitchhikes from one place to another. This may be a craft of some kind (vehicle, vessel, aircraft); a structure (hut, water-tank, chainsaw); freight (island supplies, construction materials, roading materials, bulk planting supplies, live plants or animals, food); personal gear (clothing and footwear) or people (island residents, people visiting the islands for work, recreational visitors, transport operators, tourism operators).

## 3 Island biosecurity

New Zealand's pioneering use of islands as pest-free refuges for threatened native biota is well regarded internationally.

We are global trail-blazers in making islands pest-free too. Today we have more than 420 of these island sanctuaries distributed from the sub-tropical Kermadecs to the deep Subantarctic.

Preserving these sanctuaries as biodiversity banks for New Zealand's biological and cultural futures requires us to prevent new or previously eradicated pest organisms from invading them.

The consequences of invasion can be devastating. The financial costs of eliminating invaders are punishing (approximately \$1m annually). The biological costs of invasions are often severe and permanent.

### 3.1 Who does island biosecurity apply to?

Biosecurity applies to **all** classes of visitor, all their gear, all freight, all translocated plants and animals, all vessels and aircraft.

All DOC and DOC-authorized visitors to pest-free islands must comply with DOC's biosecurity rules. We apply the controls strictly because we visit islands more often and have a higher probability of contaminating them.

Where visitors are provided with open access to islands, DOC has fewer controls available to manage island biosecurity risks. The primary tool for these islands is messaging to influence public behaviour. Social research is the key to developing more effective messages.

### 3.2 Principles

Island biosecurity work is governed by these principles:

- Aim to place as many lines of defence as practical:
  - Stop pests infesting gear destined for islands on the mainland through:
    - Good practice and hygiene at source (e.g. home or supplier)
    - Good checking, secure packing and storage at the quarantine rooms
    - Checking on wharf (or other point of departure) before leaving
    - Prevention matters more than detection and response
  - Stop pests reaching islands through:
    - Good practice and hygiene on transport vessels and aircraft
  - Stop pests establishing on islands through:
    - Checking gear on arrival
    - Maintaining surveillance to detect pests
    - Having incursion readiness and capability available
- Biosecurity is about all pests, not just rodents.
- Biosecurity only minimises the risk, it doesn't extinguish it.

### 3.3 Mandates

- Legal status: Of the pest free islands over 5 hectares:
  - 40% are Nature Reserves
  - 13% are National Park
  - 6% are Recreation Reserves
  - 5% are Scenic Reserves
  - 4% are Wildlife Sanctuaries
  - 29% are privately owned and/or iwi traditional title.
- Island biosecurity strategy – capacity and performance improvements [DOC-5495723](#)
- Biodiversity 2018 contingency island biosecurity funds [DOC-5662783](#)
- Island strategy 2010 [DOCDM-668802](#)

### 3.4 Framework

#### *Framework – the 4 workstreams of island biosecurity*

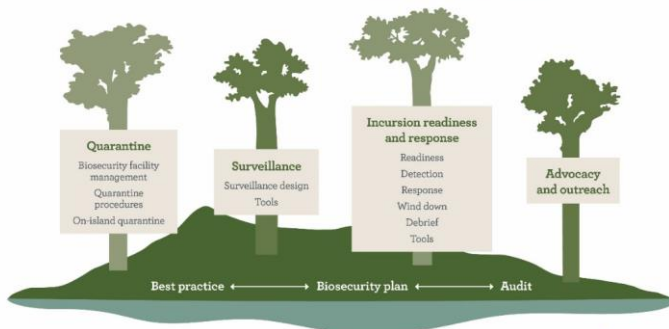
Island biosecurity is the mutually dependent suite of measures we apply to prevent pest invasions. It is biological Health and Safety for our island sanctuaries.

It comprises four protective workstreams, each dealing in its own way with pests capable of reaching islands on their own or as hitchhikers with human visitors.

- **Quarantine:** intercepts unwanted hitchhikers at points of departure to islands, in transit and on first arrival
- **Surveillance:** detects invaders which have reached defended islands independently or by avoiding quarantine inspections
- **Incursion readiness and response:** are the swift measures we take to eliminate or remove invaders before they can breed or propagate on islands
- **Advocacy and outreach:** communications with the public about the actions they can take to keep islands pest-free.

Island biosecurity framework

Tiakina Ngā Moutere | Protect the islands



## 4 Management

### 4.1 Preparedness

#### 4.1.1 Island biosecurity planning

##### *Purpose of an island biosecurity plan*

Biosecurity programmes for pest-free islands are declared and approved through island biosecurity plans. In formalising the work, plans act as operational cornerstones for DOC's four biosecurity workstreams.

The plans take the form of blueprints for all island biosecurity effort at local or regional scales. They translate DOC's island biosecurity best-practice prescriptions into co-ordinated, coherent programmes of work.

Island biosecurity plans guide DOC's biosecurity business-planning and set the standards against which biosecurity performance is audited at 5-yearly intervals.

Every pest-free island or island group will be governed by an up-to-date biosecurity plan.

##### *Purpose of auditing island biosecurity facilities and practices*

Auditing is the most powerful tool for promoting national consistency in biosecurity standards. Audits review infrastructure (especially biosecurity facilities), island biosecurity plans, practices in all four workstreams, readiness, resourcing, attitudes and local leadership.

They are intended to be constructive; their aim is to remedy lapses or risks through formal recommendations for change.

Formal audits are standardised to be sure of reviewing all aspects of biosecurity work appropriately.

Audits are commissioned at different scales and intensity, ranging from opportunistic peer-review (i.e. inviting comment from visiting colleagues) to scheduled monthly reviews by Operations Managers and formal investigations of effort at regional scales at 5-yearly intervals.

For learning purposes, island biosecurity rangers can expect to participate alongside an expert in at least one formal audit every 5 years.



#### 4.1.2 Risk assessment

Commented [KV1]: This section still needs work, I'm waiting on Pete C and I need to catch up with KGB.

Objective:	<ul style="list-style-type: none"><li>Assess relative risk of high consequence pests arriving using knowledge of pathways and vectors. Use this to determine likelihood of arrival. Ensure human-mediated pathways and vectors with significant likelihood are managed.</li></ul>
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Risk, for the purposes of island biosecurity should be considered as the likelihood of a pest arriving (the chance of the pest hitchhiking multiplied by the frequency of available rides) multiplied the consequence of the pest arriving.

For a Hauraki Gulf example, the chance of a plague skink stowing away in someone's bag or personal belongings is very low, but the large number of people travelling by ferry within the Hauraki Gulf makes this a significant possibility, so the **likelihood** of a plague skink arriving is significant. The **consequence** of plague skinks arriving is high because of the potential impacts of plague skinks on native skinks (as has happened in Hawaii) and the lack of effective control tools for plague skinks. Hence, the risk associated with plague skink incursions is very high and something that must be managed.

$Risk = Likelihood \times Consequence$

where  $Likelihood = Chance \times Frequency$

Some risk can be calculated based on what we know of what has occurred in the past. However, for some pests, we have relatively limited information regarding the relative risk. For these species we can only evaluate assumed or inferred chances and known frequencies.

It is important to consider the consequences of a pest arriving on an island, whether there are potential tools to control or eradicate the pest, is there potential for an effective incursion response, and what an eradication may cost. The consequence will also differ depending on the values of the island. The size of the island will influence the values of the island, the ability for control or eradication and the costs of incursion response or eradication.

Likelihood considers the chance of different pathways and vectors being exploited by the different pests, and the frequency of those pathways and vectors. These vary from island to island but for assessing a risk profile might be lumped into categories such as the following:

- Islands with privately owned land and resident communities (people able to freely bring residential stuff) to places such as Rakiura/Stewart, D'Urville/Rangitoto ki te Tonga, Great Barrier/Aotea, Waiheke, Chatham, Pitt.
- Inshore open access islands (public land with open and easy access such as ferry services, movement of residential stuff is controlled by owner e.g. DOC) such as Tiritiri Matangi, Matiu/Somes.
- Limited access islands – (public land with open but not easy physical access, movement of residential stuff is controlled by owner e.g. DOC)
- Restricted access islands with strict controls regarding entry such as Nature Reserves, often remote. (Kermadecs, Sub-Antarctic Islands, Te Hauturu o Toi/Little Barrier, Rangatira and Mangere)

An example of assessing relative risk of a suite of pests reaching inshore open access islands of the Hauraki Gulf based on approximate rankings of likelihood and consequence from history and experience. While the boundaries between highest risk (red) and moderate risk (yellow) are arbitrary, the assessment helps prioritise the pests that need the greatest focus. Note that weeds have been left out of this assessment.

### Likelihood of pests arriving on islands

The table below is an example of assessment of likelihood for pests arriving on islands with resident communities. Add or delete pests to your island and assess the pathways as appropriate.

Pathway											
	People /residents	Ferries	Risk goods	Barge	Private boats	DOC vessels	Aircraft	Swimming	Wind	Bird	Overall
Animal pests											
Argentine ant	VL	L	VL	L	P		U	N	N	N	Very likely
Cat	VL	L	U	P	L		U	N	N	N	Likely
Darwin's ant	VL	U	VL	L	P		U	N	N	N	Very likely
Feral deer	U	N	U	U	U		N	U	N	N	Unlikely
Feral pig	P	U	U	U	P		U	U	N	N	Possible
Ferret	U	U	P	P	P		U	P	N	N	Possible
Hare	P	U	U	U	P		U	U	N	N	Possible
Hedgehog	P	U	L	L	U		U	N	N	N	Likely
Kiore	U	U	P	P	P		U	U	N	N	Possible
Mouse	VL	VL	VL	VL	VL		P	U	N	N	Very likely
Norway rat	VL	L	VL	VL	VL		P	VL	N	N	Very likely
Plague skink	VL	VL	VL	VL	L		P	U	N	N	Very likely
Possum	P	U	P	P	P		U	U	N	N	Possible
Rabbit	P	P	P	P	P		U	U	N	N	Possible
Ship rat	VL	VL	VL	VL	VL		U	P	N	N	Very likely
Stoat	L	P	L	L	P		U	VL	N	N	Very likely
Weasel	P	P	L	L	P		U	P	N	N	Possible

Weed pests											
Boxthorne	VL	P	VL	L	P		P	N	N	VL	Very likely
Moth plant	VL	P	VL	L	P		P	N	VL	P	Very likely
Rhamnus	VL	P	VL	L	P		P	N	N	VL	Very likely
Pathogens											
Kauri dieback	VL	U	VL	L	Y		P	N	N	N	Very likely

N = no risk, U = unlikely, P = possible, L = likely, VL = very likely

### Consequence of pests arriving on islands

The table below is an example assessment of consequence for pests arriving on islands with resident communities. Add or delete pests to your island and assess the consequences as appropriate

Costs are indicative, based on known incursion costs or using similar costs from proxy species. Actual costs will depend on infestation size and the island where an incursion occurs. Infestations of pests such as Argentine ants and rodents will also have commercial crop, human health and domestic maintenance costs.

Consequence						
	Possible ecological impacts	Possibility of control	Possibility of eradication	Incursion cost	Re-eradication cost	Overall
Animal pests						
Argentine ant	E	L	L	\$10-100k	Millions	Extreme
Cat	H	H	H	\$10-20k	\$100,000s	High
Darwin's ant	VH	L	L	\$10-20k	Millions	Very high
Feral deer	H	H	H	\$10-20k	\$100,000s	High
Feral pig	H	H	H	\$10-20k	\$100,000s	High
Ferret	H	H	M	\$10-50k	\$100,000s	High

Hare	M	H	M	\$10-20k	\$10,000s	Moderate
Hedgehog	M	M	M	\$10-20k	\$100,000s	Moderate
Kiore	VH	L	H	\$10-30k	Millions	Very high
Mouse	E	M	M	\$10-30k	Millions	Extreme
Norway rat	VH	M	H	\$10-40k	Millions	Very high
Plague skink	H	N	N	\$10-50k	Millions?	Extreme*
Possum	H	H	H	\$10k	\$100,000s	High
Rabbit	H	M	M	\$10-20K	\$100,000s	High
Ship rat	E	M	H	\$10-50k	Millions	Extreme
Stoat	H	M	M	\$10-50k	Millions	High
Weasel	M	M	M	\$10-50k	\$100,000s	Moderate
Weed pests						
Boxthorne	VH	M	L	\$1-10k	\$100,000s	Very high
Moth plant	E	M	L	\$10-50k	\$100,000s	Extreme
Rhamnus	VH	M	L	\$1-10k	\$100,000s	Very High
Pathogens						
Kauri dieback	M	N	N	N/A	N/A	Extreme*

L = low, M = moderate, H = high, VH = very high, E = extreme, N = no current technique.

**Process:**

Step 1	Identify the high-consequence pests within reach of protected islands (southern districts may have a shorter list than northern districts). When new pests appear, assess their potential consequences, and if considered severe, add them to the list of pests that require risk assessment.
Step 2	Categorize the types of traffic arriving, approaching or passing in proximity to your islands. List their routes, departure points and customary stop-overs in transit.
Step 3	Consider the frequency and volume of this traffic.
Step 4	Create a table based on the example in Resources, that derives a Likelihood (categorised as Very High, High, Moderate, Low, Very Low) based on the volume and frequency of each traffic type.
Step 5	Risk = Likelihood x Consequence, where Likelihood is related to the proximity of the pest, how common it is, and the frequency and volume of traffic potentially carrying it; and Consequence is related to the severity of impacts on island species and ecosystems. If all the invaders listed have severe consequences then Risk will have a similar ranking as Likelihood, and Risk can be categorised similarly as Very High, High, Moderate, Low, Very Low).
Step 6	Use this Risk Assessment table to help prioritise the actions needed to reduce the island biosecurity risks.

**Standards:**

1	Each district demonstrates a thorough up-to-date knowledge of <ul style="list-style-type: none"> <li>invasive pest threats to its vulnerable islands</li> <li>all vectors and risk pathways by which the pests will reach them</li> </ul>
2.	This risk assessment is included in your Island Biosecurity plan.

**Resources:**

Below is a list of pests that exist on the New Zealand mainland and are recognised as having high consequences for native species and ecosystems. However this list can only be a starting point. New pests will become established in New Zealand, and new understanding of the impacts of exotic organisms develop. New control techniques will be developed. Additionally some pests will not be relevant to some regions, for example where their range is limited by temperature.

**Commented [KV2]:** Should this be a separate document rather than embedding in BP?

### *Mammals*

- **Rats and mice** are the most common mammalian invaders. Likely vector – humans with whom they typically travel as stowaways on craft or in freight. Rats and mice are capable of swimming or rafting to islands. Norway rats are the most proficient swimmers, able to cross up to 2 kilometres of water. Swimming distance varies according to body size and water temperature. Loss of heat determines rates of exhaustion. Avian predators may also transport live rodents over water as prey.
- **Stoats, weasels, ferrets** - Likely vector – swimming. Stoats are capable of swimming more than 3-5 km in warmer waters. Humans are unlikely vectors. Where they have travelled greater distances (e.g. 5 km to Kapiti Island) they may have been aided to some extent by floods and rafting.
- **Hedgehogs** - Likely vector – farm supplies such as hay or straw. Also possible with transport of buildings.
- **Possums** - Likely vector – transport of buildings or farm supplies, and floods and rafting. One adult rafted on a log to within reach of the Kapiti Island shoreline (5km) after a severe flood.
- **Wallabies** - Likely vector – Humans. Animals are occasionally translocated illegally or released as unwanted pets when mature. All five species of wallabies in New Zealand are declared unwanted organisms (Dama, Parma, Bennetts, Brush-tailed rock and swamp wallabies).
- **Cats** - Likely vector – humans. Most cats reaching islands are generally transported on boats. They may be taken ashore or swim from passing vessels (Urupukapuka intercepted two cats swimming spontaneously from ocean-going yachts moored offshore).
- **Deer** – Vector – swimming.

### *Reptiles*

- **Plague skink** aka Rainbow skink – declared an unwanted organism – arrived in Auckland in 1960s, now widespread in the North Island around human habitation. Recently established in the South Island at Blenheim and Havelock where eradication attempts are underway. Likely vector – freight especially potting mix, bark, soil, potted plants, stacked timber, ropes. Plague skinks lay their eggs in warm dry soil, potting mix is especially favoured. Eggs are white and about the size of a little fingernail. Inform MPI Hotline if found in South Island or islands off the South Island.  
ID guide for invasive invertebrates:  
<https://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/invertebrates/invasive-invertebrates>
- **Red-eared slider turtle** – deliberate or accidental cage liberations, sold via the pet trade when small and cute, but a purchase that is often regretted as they grow. May be capable of breeding in northern NZ now or in the future. Regularly found near urban areas throughout the country.

### *Amphibians*

- **European alpine newts** - Deliberate release near Waihi. Discovered in 2013. Prolific breeders. Both a disease vector and a potential predator of NZ's native frogs. Declared an unwanted organism. Eradication led by MPI with DOC and Waikato Regional Council assistance, yet to be confirmed (2019).

- **Australian frogs** 3 species naturalised and widespread. Moved by people, usually as tadpoles. Eat invertebrates, and potentially spread amphibian diseases to native frogs. For information on each species:
  - [Brown tree or whistling frog \(\*Litoria ewingii\*\)](#),
  - [Green and golden bell frog \(\*Ranoidea aurea\*\)](#)
  - [Southern bell frog also known as Growling grass frog \(\*Ranoidea raniformis\*\)](#)

### *Invertebrates*

- **Ants** - Likely vectors of [invasive ants](#) are human craft, vehicles and bulk freight as a group of workers with a queen is necessary to start a new colony. [Argentine ants](#) established in NZ (Auckland 1990). One island eradication achieved (Tiritiri Matangi Island - 200ha). [Darwin Ants](#) established in NZ (Auckland 1959, independently in Christchurch 1979). Closely associated with towns and ports. One eradication attempt underway on Rangitoto Island (discovered in 2016). Commercial beehives may have been the vector. [Big-headed ant](#) established in NZ (Auckland 1942)
 

ID guide for invasive invertebrates:  
<https://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/invertebrates/invasive-invertebrates>
- **Wasps** - Numerous species of wasp have arrived in NZ on freight. Not just the German wasp (1945) and then the common wasp (1978), but also the Australian paper wasp (1880s), Asian paper wasp (1979), and most recently European paper wasp (2016). The lesson here is to check freight for paper wasp nests (especially timber or plants) Regarding single adult wasps - Only over-wintering mated queens can start a new colony. During winter they hide, so winter freight could potentially carry a hidden fertile queen.
- **Mosquitos** have been transported around the world in freight as larvae in stagnant water (e.g. potted plants, tyres). The lesson here is to ensure nothing that might contain tiny pools of water should be allowed through DOC's quarantine process.
- **Spiders and Mites** - New Zealand has a huge diversity of native spiders (about 2500 species) fewer than half of which have been described. The number of exotic spiders is limited in comparison. It's important to protect island spiders from competing species from elsewhere, whether NZ natives or exotic. Use an insecticide spray powerful enough to kill spiders and mites available when decontaminating and checking vessels, vehicles and freight.
- **Slugs and Snails** - Where exotic slugs and snails are not already established on pest-free islands it's important to keep them off, as they are a threat to some threatened plant species (e.g. ngutukaka/kakabeak) and could prevent an island from being used as a threatened plant sanctuary if they establish. The small European garlic snail (*Oxychilus alliarius*) established on Stephens Island/Takapourewa, probably via importation of exotic plants.

### *Pathogens*

Our understanding of pathogenic threats is improving but still inadequate. New and novel pathogens of native species and ecosystems are discovered in New Zealand every year. Some with very delayed impacts are discovered long after they have been spread by humans.

Our strategy to manage these risks is to practise hospital-grade disinfection standards to remove known and unknown cryptic organisms from traffic to vulnerable islands.

Some examples of key pathogens of note in the last decade are:

- [Amphibian chytrid fungus](#) and [Chytrid fungus](#) (*Batrachochytrium dendrobatidis*) – A fungal disease that is a major threat to New Zealand’s native frogs. The fungus has been confirmed in introduced frog populations all over New Zealand and in native frog populations on the Coromandel Peninsula and in the Whareorino Forest. The fungus thrives and spreads in damp conditions. People can spread the amphibian chytrid fungus by moving soil or water on vehicles, animals, or gear.
- [Psittacine \(parrot\) beak and feather disease](#) – one of many wildlife viral diseases, a robust virus that can remain viable for months or years. Common in free living and captive Australian parrots in NZ such as wild rosellas, cockatoos, galah. Found in the wild in NZ in some kakariki populations. There is concern about potential impact on kakapo, kea, kaka, and orange-fronted kakariki. Strict controls around movement of parrots and strict hygiene measures for people in contact with parrots are necessary to limit spread. Often fatal to the parrot, but some birds can be carriers with no symptoms. There is no treatment.
- [Kauri dieback](#) and <https://www.kauridieback.co.nz/> (*Phytophthora agathidicola*) and other Phytophthora are soil and water borne – see kauri dieback [hygiene procedures](#)  
ID guide for kauri dieback: <https://www.kauridieback.co.nz/recognising-symptoms/>
- [Myrtle rust](#) (*Austropuccinia psidii*) – a potentially lethal fungus for native plants within the Myrtaceae family (e.g. ramarama, swamp maire, pohutukawa, rata). Generally wind-borne, but in Australia the people monitoring spread became the vector. Very high hygiene requirements are required where people are likely to have touched or brushed against infected plants.  
ID guide for myrtle rust: <https://www.myrtlerust.org.nz/identifying-myrtle-rust/>
- [Didymo](#) (aka rock snot or *Didymosphenia geminata*) – an invasive alga introduced by humans on damp gear from the Northern hemisphere. Cells survive if not completely desiccated.
- Mosaic viruses and mawhai/native cucumber (*Sicyos mawhai*). Mawhai is threatened by at least 3 mosaic viruses: cucumber, watermelon and zucchini mosaic viruses. The populations of mawhai on the Kermadecs and remoter islands to the northeast of the North Island are relict populations remaining after mawhai has been lost from the North Island, South Island and islands off the northern end of the South Island. [Cucumber mosaic virus](#) has a wide host range (over 1200 plant species including many vegetables and ornamental garden plants). It is spread by both aphids and humans. Islands with Mawhai require strict controls on not growing cucurbits and on food waste disposal.
- Dog diseases can be transferred to seals
- *Toxoplasmosis gundi* (a pathogen found in cat faeces and soil) is a threat to dolphins.



## 5 Quarantine

### 5.1 Introduction

Quarantine is about intercepting invasive pest organisms before they can reach pest-free islands. In broad terms it means hygiene for all traffic destined for pest-free islands.

Sound quarantine comprises a range of inspection, elimination and sanitising practices through which visitors, their gear, machinery, all classes of freight, plants and animals, vessels and aircraft are guaranteed to be free of pest organisms of all target taxa.

Organisms are intercepted at or before points of departure (pre-border), while in transit or at points of arrival (at the border).

Quarantine is biosecurity's first line of defence for islands vulnerable to invasion. It is the only secure means of closing island borders to invaders.

#### 5.1.1 Purpose

A process to guard against transfer of pest organisms to islands

#### 5.1.2 Principles

For assurance of quality and rigour, the following principles and rules govern DOC's quarantine practices.

- Prevention is more efficient, effective and affordable than reacting to pest arrivals
- Quarantine comes first - all work relating to travel to pest-free islands fits around it
- Quarantine applies to everyone and everything destined for pest-free islands. No exceptions.
- Like biosecurity generally, quarantine succeeds only if it is given the time, priority and resources it requires
- To be effective, quarantine practices must be uncompromising
- Quarantine's functions are amplified by equally uncompromising mandates to veto departures or landings carrying any risk of pest incursion
- Pre-border quarantine benefits significantly from interceptions earlier rather late in the supply chain
- DOC has zero-tolerance for rushed last-minute inspections

#### 5.1.3 Quarantine standards

DOC's quarantine systems protect pest-free islands to two standards, chosen according to the values at risk at island destinations:

- **Plant and animal pest** standard is the most common, and means free of all visible plant matter, animal matter and soil.
- **Pathogen (plus plant and animal pests)** is a more demanding standard because it aims to intercept everything and requires, as a final step, cleaning with disinfectant to destroy invisible microorganisms as well.

### **Determining which of the two standards to apply**

The island biosecurity plan should identify which islands **always** have pathogen standard applied. These include:

- Islands that are Nature Reserves (or other legal instrument that prohibits unrestricted public access)
- Islands that have species (plant or animal) that are vulnerable to known pathogens (see examples below)

The island biosecurity plan should identify which islands are managed to the plant and animal pest standard. These include:

- Islands with unrestricted public access

Note that islands with a resident community that also have public conservation land may be managed to another standard, for instance one applied by a Regional Council through a Regional Pest Management Plan (Waiheke, Aotea/Great Barrier, Rakiura/Stewart are examples). DOC must follow the Regional Pest Management Plan requirements and may choose to apply higher standards to DOC controlled activities.

### **Examples of sites with species vulnerable to known pathogens:**

- Native frog islands need a strenuous effort to eliminate potential sources of chytrid fungus
- Southern islands with streams may need to be protected against *Didymo*
- Seabird islands may have a requirement to protect against chicken diseases
- Northern islands with kauri dominated plant communities need protection from Kauri dieback disease.
- Islands with small genetically-depleted (and therefore possibly immune-compromised) populations such as Chatham Island black robins.

Identify activities, goods and personnel that carry additional risk of transporting pathogens to uninfected sites (see examples below).

Apply pathogen standards on the occasions when goods or personnel associated with high risk of transporting pathogens are going to islands usually managed to the plant and animal pest standard.

### **Examples of personnel, activities or goods with high pathogen risk to species or ecosystems**

- People who have contact with captive birds, reptiles, or amphibians through work, home or leisure activities
- People who work with plants or plant diseases commercially (horticulture, silviculture, nurseries) especially with kauri and plants in the myrtle family
- Gear associated with activities where people handle wildlife, or have close encounters with their faeces, nests/burrows.
- Goods **from a known pathogen site** that have been in contact with soil, natural water bodies, plants and animals (includes vehicles, tools, tents, fishing gear, wildlife capture gear).

Summary	Island sites	
Personnel, activities or goods:	with species vulnerable to known pathogens	without species vulnerable to known pathogens
<ul style="list-style-type: none"> <li>with high risk of pathogens</li> </ul>	Apply pathogen standard.	Apply pathogen standard.
<ul style="list-style-type: none"> <li>with low risk of pathogens</li> </ul>	Apply pathogen standard.	Apply plant and animal pest standard.

**Commented [KV3]:** This table needs work. It doesn't suit islands like Urupukapuka which has high visitation and camping – you can't expect that to be pathogen level.

DRAFT

## 5.2 Biosecurity facility management

Biosecurity facility is the building or room/s provided to meet the biosecurity requirements of goods and personnel going to pest-free islands. It includes a cleaning area, cleaning tools, quarantine rooms, and storage space for equipment and supplies dedicated to pest-free island use.

Ideally the quarantine space is divided into three rooms with one-way flow between them:

- Receiving Room to hold goods that have been cleaned but not yet inspected
- Inspection Room for inspecting and repacking goods into sealed containers
- Clean Room for holding inspected goods without risk of recontamination until transport.

Where the quantity of goods is always small enough to be inspected and repacked in one event, the need for a receiving room and clean holding room is reduced.

### 5.2.1 Security and management

Objective:	To secure biosecurity facilities from misuse and pest organisms.
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#### Process:

Step 1	Install security devices on all entrances and exits to biosecurity facilities.
Step 2	<p>The Operations Manager will:</p> <ul style="list-style-type: none"> <li>• Assign one staff member as the lead custodian for each biosecurity facility.</li> <li>• Assign one or two back-up custodians to assist the lead and cover for absences.</li> <li>• Task these custodians with overall management and security of the facility.</li> <li>• Ensure that all custodians understand their responsibilities and are trained in biosecurity protocols</li> <li>• Ensure that all staff know who the lead and back-up custodians are</li> <li>• Include reporting on facility security and management standards in custodians' MORs.</li> <li>• Report on facility security and management standards in their own MOR.</li> <li>• Mandate custodians to unilaterally (1) insist on compliance with all facility standards, and (2) authorise or veto access to the facility.</li> </ul>
Step 3	Limit the number of facility keys/swipe cards, which are held solely by the custodians. Custodians can temporarily allocate keys to staff they have authorised for access but must be able to account for each key at all times. A written record of key-users is recommended.
Step 4	Keep biosecurity facilities closed and locked at all times when not in use.

	The custodian receives advance notice of all requests for facility use and retains oversight of access at all times. High-risk uses or access are vetoed if there is reasonable concern about breaches of biosecurity standards.
Step 5	After every authorised use of a biosecurity facility, the custodian is responsible for checking that the security standards have been met.  This responsibility can be delegated to a trained/experienced colleague for a given instance of facility use, but responsibility returns to the custodian once the checks following that specific use are completed.
Step 6	Treat any unauthorised access to the biosecurity facility or other breach of security and/or management standards as a potential arrival of pests into the defended quarantine rooms until the facility is proven clean and secure.  Put measures in place to prevent recurrence of the breach of standards.

**Standards:**

1	Biosecurity facilities are secured and managed solely for biosecurity purposes.
2	Each biosecurity facility has a lead custodian and back-up custodians assigned to it.
3	There is a strictly limited number of keys to each biosecurity facility. The custodian knows who holds each key at all times.
4	Biosecurity facilities are closed and locked at all times when not in use.
5	Biosecurity facility access is authorised solely by custodians.
6	All breaches of biosecurity facility security are remedied swiftly.

## 5.2.2 Signage at biosecurity facilities

Objectives:	DOC's biosecurity facilities are identified and easy to find. Rooms defended from pests (quarantine rooms) are clearly identified and have clear requirements for entry.
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### Process:

Step 1	Install standardised DOC-branded biosecurity signage (see below) to (1) the exterior of the facility at all approaches and entrances, and (2) at the road entrances.
Step 2	Install signs at each entry to rooms defended from pests to identify the function of the room beyond and establish requirements for entry. Use the ready-to-order standardised signs or order customised ones where necessary from Blue Star.

### Standards:

1	Every Biosecurity Facility is identified as such on the outside of the building with a sign that meets the DOC's Outdoor sign standard and is clearly legible from a distance.
2	Every Biosecurity Facility is also signposted from the road where building signage is not legible from the road entrance.
3	Within the building, every defended quarantine room has a sign communicating purpose and key requirements for entry.

**Commented [AW4]:** I have asked Brendon Clough to supply font size for reading from 10m, 20m, and 40m. No responses.

**Commented [KV5R4]:** Roadside signs as per speed limit.

**Commented [AW6R4]:** Yes the problem is that the signs are defined by travel speed and not by distance. I have come up with guidelines when distance is more appropriate than travel speed – see specs

### Specifications

The following sign templates in green and yellow with DOC logo have been designed and are ready to order from the [Blue Star webpage](#):

- Biosecurity Facility (ACM sign for exterior of building, and road entrances in 3 sizes). For legibility from 10 metres, choose sign with 90mm cap height of primary message. For legibility from 20 metres, choose sign with 120mm cap height. For legibility from 50 metres, choose sign with 160mm cap height.
- Quarantine Room - Authorised persons only – Keep doors closed (A vinyl or ACM sign for entry to rooms defended from pests)
- Quarantine Room - Authorised persons only – Keep doors closed – No Shoes Beyond this Point (A vinyl or ACM sign for entry into quarantine rooms where pathogen standard is routinely applied, and quarantine room footwear is supplied)
- Quarantine Room – No Entry, Exit Only (a vinyl or ACM sign for exit doors where there is one-way flow)

Order in ACM or vinyl as these are permanent signs.

For wording or other modifications to existing templates contact the Creatives Services Team via the [DOC intranet signs webpage](#) or [ygan@doc.govt.nz](mailto:ygan@doc.govt.nz). Modifications may include:

**Commented [AW7]:** Not yet true. Stefan Sebregts has mocked up one. Creative Services team not responsive to requests.

- Biosecurity Facility sign can be modified to include a secondary message such as street address, or location/district name.
- Where there are several quarantine rooms, they may be distinguished with separate names (Receiving Room, Inspection Room, Clean Room).

### Resources:

- [DOC intranet signs webpage](#)
- [Blue Star webpage](#) – for ordering signs already designed
- Outdoor sign standard 1994 [DOCDM-797893](#) – design guidelines
- Sign standard FAQ and update [DOCDM-218811](#)
- Approved No (pest) symbols for use on island biosecurity signs are available but optional. The purpose is to remind visitors and staff of the suite of pests that DOC aims to exclude from quarantine rooms and islands <http://intranet/recreation/managing-assets/recreation-symbols/>
  - [no rats](#)
  - [no weed seeds](#)
  - [no ants](#)
  - [no skinks](#)

### 5.2.3 Management of pests and pathogens

Objectives:	To ensure the biosecurity facility does not become a source of pest or pathogen contamination.
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#### Process:

Step 1	Identify, in the regional or district island biosecurity plan, which pests or pathogens could contaminate the biosecurity facility, and therefore need to be included in the pest and pathogen management plan.
Step 2	<p>For each group of pest and pathogens, identify which tools will be used, where, and frequency of use (a simple pest and pathogen management plan for the facility within the island biosecurity plan, reviewable every few years as tools and knowledge improve, and as number of pests or pathogens increase).</p> <ul style="list-style-type: none"> <li>Identify experts to contact for advice for each pest/pathogen group if needed.</li> <li>Consider how to respond to a major outbreak of a pest in the building.</li> <li>Under what circumstances would it be necessary to close the biosecurity facility? Which biosecurity facilities could be used as an alternative?</li> </ul>
Step 3	From this, create an annual schedule of actions and assign responsibility for tasks. (Reviewed annually or when staff absences or turnover make this necessary).
Step 4	In quarantine rooms where pathogen standards are required only occasionally, then quarantine rooms are prepared for pathogen standard inspection, by cleaning floors and horizontal surfaces with SteriGENE. Then cleaned again after the inspection.
Step 5	<p>Assigned staff</p> <ul style="list-style-type: none"> <li>undertake the actions in accordance with the annual schedule</li> <li>maintain a discoverable log of actions (including cleaning actions)</li> <li>maintain a log of pest interceptions within the defended Quarantine Rooms (animals including invertebrates require more detail than soil or seeds, where presence only should be noted).</li> </ul>

#### Standards:

- 1 No animal pests enter the quarantine rooms or compromise function.
- 2 Pest-detection and kill devices are kept in a fully functioning state.
- 3 Quarantine rooms are always clean, tidy and uncluttered. Any rubbish generated is removed daily. The floor space is kept clear and clean.



4	Annual management of pest and pathogens is scheduled, routine, systematic and sustained. Responsibilities are clearly assigned.
5	The annual schedule and records of actions completed are discoverable (whether stored in a notebook or on DOCCM)
6	Records of pest interceptions within the defended space (quarantine rooms) are discoverable, and allow for analysis of interceptions at site over many years.

## Specifications

### Within quarantine rooms (the defended space)

- Mount heavy items (such as shelving/benches/freezers) on castors. This facilitates floor and wall cleaning, applying pesticide to floor/wall edges, and pest capture.
- When pathogen standards are routinely required, provide specific quarantine-room-only footwear, and signs requiring removal of personal footwear at entry to quarantine room.
- Quarantine rooms are sealed to prevent all visible invertebrates from entering. Doors and windows seal completely when closed. Ventilation openings have mesh over them. Interior linings have no unsealed gaps or recesses.

### General management for all pests and pathogens

After every use of the quarantine rooms

- Remove rubbish and unnecessary objects to minimise refugia for pests.
- Sweep/vacuum floor and empty dust buster/vacuum cleaner bags.

At least annually:

- Check the entire facility for signs of pests, damage or gaps, and list any actions required on the monthly checklist. If you have authority, do the actions. If not, seek authority. If actions remain unactioned, bring them up as critical issues at your MOR.

### Pathogens

Before use of quarantine rooms for occasional pathogen management

- When pathogen standards apply only occasionally (ie for specific high risk goods, activities or personnel), clean floors with [SteriGENE](#) before use of the Quarantine rooms

After every use of the quarantine rooms when pathogen standards routinely apply:

- When pathogen standards apply (both **routinely or on occasions**), clean floors with [SteriGENE](#) after sweeping or vacuuming.

Monthly

- Maintain a supply of [SteriGENE](#). Top up any products used in quarantine processes e.g. diluted [SteriGENE](#) in spray bottles

- When Pathogen standards apply, wipe all horizontal surfaces with [SteriGENE](#)
- When Pathogen standards apply, disinfect Quarantine room footwear with [SteriGENE](#).

At least annually:

- Spring clean – All items are removed from where they are stored and surfaces beneath them are cleaned and disinfected. Clean all surfaces thoroughly using [SteriGENE](#), including walls and ceiling.

### **Invertebrates**

Maintain the pest proof seals to the quarantine room. Check for gaps 3 times a year.

Use the following pest management options according to label instructions:

- Methrins – Residual (long acting) insecticide sprays applied to surfaces (permethrin has the longest residual impact). Particularly useful for crawling insects. Apply around windows, doors, ventilation points, and along wall/ceiling edges, wall/floor edges. Follow label directions regarding frequency of application. Note that it will need to be reapplied after cleaning the surfaces.
- Pyrethroids as an aerosol - Fast acting (no residual impact) insecticide sprays in automatic aerosol dispensers. Aerosol droplets must contact insect to be effective. Follow label directions regarding number of dispensers required for the size of the room, and space them to get coverage. Schedule monthly checking, and replace spent canisters immediately.
- Insect sticky traps with approved covers ([Trapper Pest Monitor](#) from Bell Laboratories and supplied by Key Industries is recommended) – These devices combine detection and control, and provide evidence if insects penetrate the defended space. Best placed alongside walls where crawling insects are more likely to encounter them. Check the devices at least monthly. Record closures and interceptions. Replace quarterly or more frequently if the tackiness deteriorates. Note: The Trapper Pest Monitor is capable of capturing mice and plague skinks too. Mice must be excluded by rotating cover to close archway. The trap must only be used with archway closed. If they are used with the intention of capturing plague skinks or it is likely, then service sticky traps daily to meet animal welfare requirements. See the Plague skink and Rodent sections below for special instructions if this is likely.

### **Plague Skink**

If plague skinks are present outside the Quarantine room, consider additional Trapper Pest Monitor sticky traps placed alongside walls within the Quarantine room, and increase checking frequency to daily. Welfare laws require devices set to trap vertebrates of any kind to be checked daily no later than 12 hours after sunrise. Close them down if checking the following day is not possible (eg close on last day of the week and reopen on the first day of week). Release non-target native reptiles using cooking oil following these [instructions](#).

Service sticky traps daily and record both what you did (eg opened/closed/checked) and what pest evidence was found (eg skink, fly, nil) and whether it was released or euthanased.

### **Rodent**

Use one or more of the following devices to detect and eliminate rodents within quarantine rooms.

- Traps - Use at least two rat traps per Quarantine room for rats. Use at least two mouse traps per Quarantine room. Service all traps weekly (See Surveillance tools section for further information on which rodent traps to use).
- Bait stations –Use at least one bait station per room. Brodifacoum is the preferred toxic bait to target mice and all species of rat.
- Tracking tunnels – Detection only. Place alongside walls for best effect. Check the cards weekly. Refresh lures at every check. Replace the cards monthly, or more often if ink is dry or card is spoiled. Record checks and suspicious tracking in the pest control log. Seek expert advice on interpreting tracks until you become proficient.
- Rodent glueboards – The use of these is strictly controlled under the [Animal Welfare \(Glueboard Traps\) Order 2009](#) by MPI for vertebrate welfare reasons. Read the [Code of Practice for Rodent Glueboard Use DOC-1488105](#) before deciding whether to deploy them. Glueboards must be checked daily without fail within 12 hours of sunrise or closed to prevent vertebrate access if checking is not possible within this time. Use to target any rodent species requires obligatory daily recording of checking data. MPI assesses compliance annually. Euthanase or use cooking oil to release animals.

Commented [AW8]: Update once finalised.

## Outside the quarantine rooms

### Invertebrates

Within the building and on building exterior surfaces - Use Methrin based surface sprays as outlined for the Quarantine rooms. This is effective against ants, spiders, flies, wasps, bees, praying mantis, cockroaches, crickets, beetles.

Vigilance outside the building – Be vigilant for ants in high numbers, or wide trails of ants. If these signs are found or large quantities of ants penetrate the building, have the ant species positively identified by an expert. If Argentine ants, Darwin ants or Big-headed ants are positively identified, then additional ant control measures inside and outside the building are required. An ongoing contract with a professional pest control company is recommended for control of invasive ant species. If this is not possible, then seek expert advice on how to meet professional standards.

**Wasps** - The *Vespula* and paper wasps that pose an island biosecurity risk are the mated overwintering queens or whole paper wasps nests transported on plants or timber. Wasps mate in autumn (April-May) and hide during winter before emerging to start a new colony. Risks can be reduced by searching and controlling local wasp nests in March.

**Spider control** – keep the exterior of the building clean. Apply methrin based surface spray only if necessary and after washing.

### Plague Skinks

Awareness and vigilance – know whether plague skinks have been found locally. Report new detections of plague skinks outside the North Island to the MPI Hotline and inform DOC's plague skink experts (Rod Hitchmough or James Reardon).

If plague skinks are present within the district – 3 times a year (spring, summer and autumn) | schedule surveillance for skinks using tracking tunnels inside and outside the building, and check under any debris or stored materials. If skinks are found, have the skink species positively identified by an expert. Seek expert opinion for skink control options.

Commented [AW9]: Added

Insect sticky traps with approved covers (as outlined for the Quarantine rooms) may be used to capture plague skinks inside buildings if MPI animal welfare requirements are followed. Release non-target native reptiles using cooking oil following these [instructions](#).

## Rodents

At least one of the following techniques or devices are used to detect or control rodents within the building.

- Tracking tunnels inside the building - as outlined for the Quarantine rooms.
- Trapping for mice and rats inside the building - as outlined for the Quarantine rooms.
- Note that rodent glueboards are not permitted outside the pest proofed Quarantine rooms.

Use rodent bait stations outside the building. Use a rodenticide approved for mouse control in the [Status List DOCDM-22655](#). Brodifacoum is the preferred toxin for targeting mice as well as rats. Secure the bait in the bait station.

Service bait stations at least monthly. Dispose of any bait that no longer looks fresh, top up bait, and record actions what you did, state of bait, any evidence of bait take.

If the bait is regularly all gone then either service more frequently, or provide more bait. Recording weight of bait and working out how much has been removed is not necessary but useful for comparisons between periods, and an indicator of fluctuations in local rodent populations. Autumn is the highest risk time for rodents to move inside.

## Resources:

- [Status List DOCDM-22655](#) (used to identify appropriate pesticides for mouse control)
- [Code of Practice for Rodent Glueboard Use DOC-1488105](#)
- [DOC-2694052](#) Rodent glueboard checking data Ms Word template
- [DOC-2767863](#) Rodent glueboard checking data MS Excel template
- [SteriGENE instructions DOC-6118380](#)
- [TRAPPER Pest Monitor](#) and [TRAPPER MC Glue Trap](#)
- [Instructions for Lizard removal from Insect Sticky Traps](#) DOC-6133826
- [Example of a plan and schedule of pest control and hygiene as EXCEL document](#) DOC6073287
- [Record of Quarantine interceptions](#) DOC-6135450

## 5.2.4 Packaging and containers

Objective:	<ul style="list-style-type: none"> <li>To prevent contamination of cleared gear in transit to pest-free islands by using only fit-for-purpose packaging and containers.</li> </ul>
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This task applies to items that are packed into containers or packaging in a biosecurity facility. For treatment of over-sized or awkward items, see instead [task\\*\\*\\*\\* Cleaning, inspection, storage and transport of goods that cannot pass through a Biosecurity facility](#).

**Commented [JL10]:** Update number and title once finalised.

### Process:

Step 1	<p>Have clean, fit-for-purpose containers or secure forms of packaging (see <i>Specifications</i> for suitable options) stored in the biosecurity facility's clean quarantine room ready for use.</p> <p>Containers should be cleaned prior to storage using <a href="#">SteriGENE</a> at a dilution rate of 1:50, then air-dried in a space controlled for contamination.</p>
Step 2	<p>Inspect containers inside and out for contaminants before packing gear into them.</p> <p>Reject containers or packaging if any part is contaminated or structurally compromised.</p>
Step 3	<p>Handle containers and packaged items carefully in transit to avoid damage and contamination:</p> <ul style="list-style-type: none"> <li>Keep loaded container weights manageable</li> <li>Place on cheap new tarpaulins in transit, or check and clean the bases prior to disembarkation on arrival</li> </ul>
Step 4	<p>Once containers have been emptied, check for damage, clean if necessary (if cleaning on-island, contain the contaminants or dispose of them safely) and store in a designated pest-free area.</p> <p>Do not re-use packaging for quarantine purposes, but recycle it where possible.</p>

### Standards:

1	All freight that passes through a biosecurity facility travels to pest-free islands in containers or packaging meeting the <i>Specifications</i> below.
2	Irrespective of design, containers and packaging protect the contents from contamination by pest animals, weeds and pathogens at all times during transit.
3	All pest-free island-bound containers are cleaned, dried and inspected, inside and out, before use.

### Specifications:

#### Suitable container designs are:

- Any size and shape of bucket with a fully sealable press-on lid (20L round or square is ideal).

- Any size of barrel with a fully sealable screw-on lid.
- Any form of sturdy bin on which the lid can be secured tightly for a fully moisture-proof seal.
- Any form of dry-bag capable of being sealed without the possibility of pest organisms hiding in fabric crevices and wrinkles (e.g. transparent heavy-duty polythene bags).
- Any diameter of plastic pipe to which fully sealable caps can be fitted to each end.

**Containers should have the following qualities:**

- Ideally manufactured in New Zealand. Avoid cheap imports as these are often not durable.
- Clear biosecurity labelling.
- Constructed out of materials that are:
  - Impervious to moisture, i.e. plastic, metal or plasticised fabric. Wood can only be used when cleaning to pathogen standard is not required.
  - Durable (shatter-, fracture- and rip-proof) and UV-stable.
  - Easily cleaned, dried and inspected both inside and out.
  - Do not have corrugations or small crevices, e.g. corflute is unsuitable.
- Robust and abrasion-resistant bases.
- A minimum of structural elements that can conceal contaminants.
- Moisture-proof seals.
- Incapable of overload that could compromise seals, or injure users.
- Sturdy and secure handles, lids and fastenings that will not be dislodged or broken in transit.
- Recyclable when discarded.
- Colour-coding options (useful for effective gear organisation).
- Stackable.
- A range of capacities.
- Cube-shaped containers are better than round ones for efficient use of space on vessels and helicopters.

**Suitable packaging materials for awkwardly shaped items are:**

- Heavy-duty transparent polythene plastic that is secured with duct tape, refrigeration tape or heavy-duty cable ties. This is available as bags or in tube form, which can be cut to length and sealed at each end.
- Thin cling-film wraps can be useful, but be careful to ensure such wraps are protected from abrasion.

Any packaging materials must be un-used. While the recycling of used packaging is encouraged, it should not be re-used for quarantine purposes.

### Resources:

Suppliers of suitable containers include:

- Stowers Containment Solutions Ltd. [www.stowers.co.nz](http://www.stowers.co.nz)
- IFP Group Ltd (Auckland). [www.ifpgroup.co.nz](http://www.ifpgroup.co.nz)

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### 5.2.5 Quarantine flow - dirty to clean practices

Objective:	To keep the risk of cross-contamination within biosecurity facilities to a minimum.
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The integrity of cleaning, inspection and clearance processes in the biosecurity facility rely on a one-way (non-reversible) flow of people and freight from a contaminated to a clean state.

#### Process:

Step 1	Adjust biosecurity facility lay-out or operating procedures as needed to ensure flow is one-way, with clean items clearly separated from contaminated items. (See schematic design below).
Step 2	Preserve the integrity of the one-way flow by: <ul style="list-style-type: none"> <li>• Having separate entry and exit doors.</li> <li>• Clearly articulating operational rules and supervising facility use.</li> <li>• Separating steps in the quarantine process by room.</li> <li>• Having self-closing doors between each room</li> <li>• Having signs on every door about room function and rules of entry.</li> </ul>

Schematic design of an ideal biosecurity facility with one-way gear and freight flow (arrowed).

All doors are self closing.



#### Standards:

1	The flow of people and freight through the biosecurity facility is in one direction only.
2	There are clearly identified separate areas for dirty items, items being inspected and cleared clean items.
3	All users of the facility are aware of the one-way flow and the reasons behind it. Visitors are informed with a map showing the direction of flow.



### 5.2.6 Monthly checks and annual review

<b>Objectives:</b>	To ensure that biosecurity facility maintenance and hygiene actions are completed to schedule, and issues are identified and resolved.  To provide the Operations Manager with visibility of standards met by Biosecurity facility operations and assist continuous improvement.
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#### Process:

Step 1	Use MORs to report on the month's actions completed, uncompleted, and issues or risks to be resolved. See resources for a suggested <a href="#">monthly checklist</a> .
Step 2	Seek an annual biosecurity facility review from a peer in another district and reciprocate. Reviewer submits a report to the Operations Manager.

#### Standards:

1	The Operations Manager has visibility of biosecurity facility management being maintained as scheduled.
2	An annual biosecurity facility review by an independent peer provides written feedback and recommendations to the Operations Manager.

#### Resources:

- Example of a quarantine store monthly checklist ([DOC-6010065](#))
- Questions for an independent reviewer to ask and comment on during a quarantine store review ([DOC-6010195](#))

## 5.3 Quarantine procedures

### 5.3.1 Information prior to departure

Objective:	Everybody going to a pest-free island is aware in advance of the biosecurity requirements, and is prepared accordingly.
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#### Process:

Step 1	<p>Create a pre-departure information sheet on the biosecurity requirements for each island or group of islands using the templates provided (see <i>Specifications</i> for recommended contents, and <i>Resources</i> for templates and examples).</p> <p>Keep the text as concise as possible to encourage people to read it in full.</p>
Step 2	<p>Provide the pre-departure information sheet to DOC and DOC-authorized island visitors well in advance of their travel to the island (at a minimum ten working days prior), to provide enough time for gear to be cleaned prior to inspection.</p> <p>Where cleaning to pathogen standard is required, post small bottles of SteriGENE along with the information sheet, to assist visitors in compliance.</p>
Step 3	<p>Ensure that the required bookings for quarantine inspections have been made.</p>
Step 4	<p>Where islands are publicly accessible without DOC supervision or authorisation, add links on the island's or district's page on the DOC website to:</p> <ul style="list-style-type: none"><li>• The DOC webpage on visiting pest-free islands (see <i>Resources</i> for the link).</li><li>• A pre-departure information sheet on biosecurity requirements.</li></ul> <p>See section 8. <i>Advocacy and outreach</i> for further recommendations for getting biosecurity messages to the public.</p>

**Commented [JL11]:** Update once finalised – note this might not be written for quite a while yet... But would still want to link to it from here I think.

#### Standards:

1	All DOC and DOC-authorized visitors to pest-free islands receive pre-departure information which prepares them to meet biosecurity requirements.
2	Each district that has pest-free islands has a link from their DOC website page(s) to <a href="http://www.doc.govt.nz/parks-and-recreation/know-before-you-go/visiting-pest-free-islands/">http://www.doc.govt.nz/parks-and-recreation/know-before-you-go/visiting-pest-free-islands/</a> .

#### Specifications:

##### Pre-departure information sheet contents:

1. The level of cleaning required of gear prior to it being presented to DOC for inspection. This will depend on whether the island requires cleaning to pest and pathogen level or to pest level only. See [5.3.2 Cleaning and disinfecting gear](#) for guidance on this.

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Include information, preferably with photos, on the pest organisms to look for, useful cleaning tips, and what “clean enough” looks like (e.g. show a photo of the underside of a boot that is clean enough to pass an inspection).

2. The fact that people and goods within certain risk categories will require extra precautions, that they must let DOC know at least ten days prior to departure if they fall into any of these categories, and that if they fail to do so they risk having their trip vetoed by biosecurity staff.

These risk categories and the corresponding extra precautions will vary between islands. Examples of risk categories include: people with high-risk pets (e.g. pet chickens, parrots and other birds), people who have recently been in areas with known risk pathogens present (e.g. kauri dieback), and people who have recently been handling wildlife (e.g. bird banding). See section [5.3.2 Cleaning and disinfecting gear](#) for more detail on risk categories.

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3. What to expect during the inspection process (so that people are prepared for the level of intrusiveness), and that DOC biosecurity staff are the ones who will decide whether or not people have met the cleanliness standard.
4. Any high-risk gear that visitors should not bring because a communal set is kept on the island for island use only, e.g. gaiters and backpacks.
5. Any specific items that are prohibited to protect the island (for example cucumbers are prohibited from some northern islands because Cucumber Mosaic Virus can infect the plants in the native cucumber genus *Sicyos*).
6. That DOC biosecurity staff have the authority to prevent people and/or gear from going to an island if biosecurity standards are not met.
7. A self-check quarantine checklist (see *Resources* below for a template and examples), where people tick off the required quarantine actions as they complete them, then sign it before giving it to DOC biosecurity staff when presenting for inspection.

## Resources:

- Template for pre-departure self-checklist, this includes a pathogen-standard section that can be deleted if not applicable: [DOC-6156441](#)
- DOC webpage on visiting pest-free islands: <http://www.doc.govt.nz/parks-and-recreation/know-before-you-go/visiting-pest-free-islands/>
- Example DOC website pest-free island pages:
  - Pest-free Hauraki gulf: <https://www.doc.govt.nz/pestfreehaurakigulf>
  - Know before you go, Te Hauturu-o-Toi/Little Barrier Island: <http://www.doc.govt.nz/parks-and-recreation/places-to-go/auckland/places/little-barrier-island-nature-reserve-hauturu-o-toi/know-before-you-go/>

### 5.3.2 Cleaning and disinfecting gear

Objectives:	To ensure that personnel and goods have been through an appropriate cleaning and disinfecting process.
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#### Process:

Step 1	Identify in the Island biosecurity plan, for each island or island group, what pests and pathogens they are free of and must be kept free of. Identify the islands where pathogen standard must be routinely applied. (see specifications for criteria).
Step 2	Set up a cleaning area. Ensure tools and supplies for cleaning and disinfection are always available and maintained.
Step 3	Schedule time for cleaning and disinfection of goods and personal gear (of staff, contractors, volunteers) going to pest-free islands, plus cleaning of vehicles and vessels that transport them.
Step 4	For each consignment or travel plan to an island not routinely requiring pathogen standard, the biosecurity lead assesses equipment, activities and personnel for high pathogen risk (see specifications for criteria). Where pathogen risks are high, pathogen standard should be applied, even when it's not a routine requirement for that island.
Step 5	Do the cleaning.
Step 6	Where inspection is not immediate, store cleaned goods in the clean, pest-proof receiving space or room in the Biosecurity facility to prevent recontamination. Once cleaned, goods and their containers should not touch soil or vegetation prior to inspection.

#### Standards:

1	Cleaning and decontaminating goods and personal gear going to pest-free islands is a defined step in the quarantine process. It is planned and allocated the time and resourcing it requires.
2	Whether cleaned and decontaminated off-site or at the biosecurity facility, cleaning and disinfection is done according to the Specifications below, and prior to entering the inspection room or inspection space.
3	The <a href="#">Biosecurity checklist including the pathogen standards</a> are provided to and followed by all high risk visitors and personnel, and all equipment for high risk activities.
4	No goods or personnel move from a known disease outbreak area to an island without seeking specific advice from a recognised expert or a veterinarian.

**Commented [AW14]:** Update once finalised

**Commented [JL15]:** I would change it to "No goods or personnel move from..."

## Specifications:

### Cleaning tools/resources recommended at Biosecurity Facility:

- Vacuum cleaner and/or dust-buster
- air compressor
- water blaster
- Steam cleaner
- scrubbing brushes,
- wire brushes,
- small metal picks or O ring picker
- tweezers
- plastic bowls
- head lice combs – for velcro
- clean rags
- [SteriGENE](#) - See DOCCM 6118380 for instructions and information
- plastic spray bottles
- washing machine
- hot and cold running water
- pallets and/or shelving to keep clean inspected items off the floor
- good lighting
- a pair of glasses if needed
- a chest freezer

### Disinfecting with SteriGENE

Pathogen standard requires that as well as being visibly clean, the items are disinfected with [SteriGENE](#). The lowest dilution of SteriGENE used to meet pathogen standard is 1:50 (2%). This is double normal strength and is used because it is effective on resistant spores such as Kauri Dieback spores. See DOC-6118380 for full [SteriGENE](#) instructions and information.

### Outer clothing and wet weather gear

#### *Plant and animal pests only standards*

- Scrub and rinse very soiled clothing prior to washing (eg gaiters, over trousers, parka).
- Unroll hoods on parkas prior to washing.
- Wash and dry clothing, even wet weather gear, and check for residual mud afterwards.
- Empty and vacuum pockets and cuffs to remove lint.
- Comb velcro to remove seeds, hair and fluff.
- Check clothes for seeds in the weave (especially socks) or seams.

#### *Pathogen standards*

- Clean to plant and animal pest standards
- Include a wash (or pre-wash, scrub, rinse) if not already clean, and then wash with [SteriGENE](#) instead of laundry detergent.
- EITHER personal gaiters are banned from going to the island, and island-based gaiters are provided instead (where the island has storage facilities).
- OR Where personal gaiters are permitted, all of the above for plant and animal pest standard, plus use [SteriGENE](#) as a soak or wash or interior and exterior spray.

#### **Footwear**

##### *Plant and animal pests only*

Remove inner sole and vacuum out lint and dirt.

External scrub and rinse, or put through a full wash (internal and external). Remove any contaminants around tongue and laces, under inner sole, in ankle padding, around rand, and in grooves of sole.

Use a small metal pick or sharp knife to remove all contaminants from sole remaining after scrubbing (stones, sand, mud, seeds, cow pats, grass)

Check again once dry.

##### *Pathogen standards*

Either wash or soak in [SteriGENE](#) or spray all over external surfaces with diluted [SteriGENE](#).

#### **Packs**

##### *Plant and animal pests only*

Packs are permitted on the island provided that:

- Vacuum out all compartments.
- Scrub and wash off all visible soil.
- Check padding for seeds

##### *Pathogen standards*

- Either ban personal packs from the island and provide island-based packs (where the island has storage facilities), or,
- If personal packs are permitted, all of the above for plant and animal pests, plus use [SteriGENE](#) as a soak or wash or interior and exterior spray.
- Packs must not be used for transporting gear to the island. If taken, packs must travel inside sealed containers so they arrive uncontaminated.

#### **Field equipment/gear/tools**

This includes optical equipment, wildlife capture equipment, chain saws, scrub bars, safety gear, etc.

##### *Plant and animal pests only*

- Identify cavities that can accumulate dirt. Disassembly may be necessary to clean properly (eg covers and air filters on line trimmers, chainsaws, generators, chain saw helmet liners and visor hinges)

- Vacuum or wipe out all cavities, including cases, tool boxes and carry bags.
- Ensure free of soil, vegetation. Wipe or brush off soil
- Comb Velcro to remove seeds, hairs, fluff.
- Check any hollow tubes for soil, invertebrates, mice (an air compressor can blow out invertebrates or dust). Cap both ends of hollow tubes once cleaned and checked.

#### *Pathogen standards*

- Clean as above then wash, spray or wipe down with [SteriGENE](#)

After cleaning: Items too big for sealed containers, should be wrapped either in multiple layers of heavy-duty cling film, or in plastic sheet sealed with duct tape or refrigeration tape.

### **Fresh food**

#### *Plant and animal pests only*

Do not pack fresh food in cardboard boxes owing to the risk of invertebrates hiding in corrugated cardboard. Use sealed containers as per section \*\*\* Packaging and Containers.

No home-garden or farmers' market produce. All fruit and vegetables must come from commercial distribution lines.

#### *Pathogen standards*

Leafy vegetables (Cabbage, lettuce, silverbeet, spinach, celery etc). Remove roots if still attached. Remove as many outer stems or leaves as necessary to ensure no soil or invertebrates remain.

Wash if needed. Dry before packing. Reject if not able to be thoroughly cleaned.

Onions, leeks, garlic – remove roots and outer skin if carrying soil. Cut the green tops off leeks or split vertically to find the soil where the leaves diverge from the stem.

Roots and tubers (potatoes, kumara, yams, carrots, parsnips, beetroot, etc) Purchase these pre-washed where possible. Remove any leaves. Scrub vegetable in cold water with brush to remove soil and invertebrates. Dry before packing.

Mushrooms – visual inspection, wipe off residual compost with damp cloth if necessary.

Fruit – visual inspection. Wipe with damp cloth if necessary.

Meat – for long trips without sufficient fridge or freezer space on the vessel, freezing prior to packing or as part of packing may be useful, especially if a whole packed container can be frozen as one solid mass.

### **Long shelf-life food**

#### *Plant and animal pests*

No previously open packets or jars of food. Visually inspect cartons or packets for holes or other damage. Check for pest organisms such as ants around honey and jam jar lids. Check for weevils and Indian meal moth in flour, spices, cereals and biscuits, dried fruit (frass, caterpillars, cobwebs and pupae may be seen inside clear plastic). If found, insects and their eggs can be killed by freezing the food overnight.

#### *Pathogen standards*

No previously open packets or jars of food. Visual check for pest organisms insects. No food contaminated by insects (even if frozen to kill them).

**Resources:**

- [Biosecurity checklist including pathogen standards](#)
- [National Wildlife Biosecurity Guidelines \(Australia\)](#) - an overview of pathogen risk management in wildlife. Appendix B provides recommended biosecurity protocols. Appendix C provides a table of Infectious diseases of concern in Australian wildlife, including pathways and biosecurity practices.
- [Conservation dog-handler team SOP](#) Section 6.1 Provides Dog health requirements the handler is responsible for to reduce disease transmission risk between dogs and wildlife.

**Commented [AW16]:** May need replacing with the updated document

**Commented [AW17]:** This should probably go in the Translocation of native species section.

**Commented [KV18R17]:** Agree

DRAFT



### 5.3.3 Inspection of personnel and goods

<b>Objective:</b>	To ensure all personnel and goods travelling to a pest-free island do not travel until they have been inspected and declared as meeting the relevant pest standard (either plant and animal pests or pathogen standard).
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**Process:**

Step 1	<p>Establish clear expectations - The biosecurity lead makes sure the rules applying to inspections are supported by the Operations Manager and understood by all staff within the district.</p> <p>Inspections are conducted in an approved quarantine facility wherever possible (if no facility or items too big to fit then in another space conducive to quality inspections and in which sources of contamination can be controlled).</p> <p>notice of the need for an inspection is required at least 10 working days prior to intended departure date. Notice includes information on trip leader, party numbers, visit purpose and freight types and quantity.</p> <p>People preparing for inspection receive an information sheet and must be notified of whether they are preparing to plant and animal pest standard or pathogen standard. If pathogen standard, they are supplied with SteriGENE enough to disinfect the gear that they are preparing. A discussion between biosecurity lead and members of the party, or at least their leader, may be required to discuss how to prepare unusual items.</p> <p>Inspections are scheduled and staff time to do inspections is booked at least 5 working days in advance.</p> <p>Inspections must be conducted in a timely fashion without compromising quality. Sufficient inspectors and time are allocated for the number of people and quantity of gear.</p> <p>Travel will be vetoed in the event of non-compliance.</p> <ul style="list-style-type: none"> <li>• No ranger inspects and clears the goods that they were responsible for cleaning. Another inspector puts them through the inspection and keeps them accountable.</li> </ul>
Step 2	<p>Respond to a request for an Inspection – Make sure you have names and contact details, party number, visit purpose, freight type and volume. Determine the standard to be met. Have a conversation with the party leader. Check for issues that would invoke pathogen standard where this would otherwise not be required. Provide advice on cleaning tricky or unusual items. Let them know that cleaning equipment at the biosecurity facility can be used.</p> <p>Send out pre-departure information and SteriGENE if pathogen standard is required</p> <p>Assess the number of inspectors required and book staff time.</p> <p>Consider whether there are special circumstances that warrant the services of a pest detection dog if available.</p>

Step 3	<p>Prepare for an inspection – Make sure the quarantine room is clean to the required standard. Disinfect with SteriGENE if required. Make sure the vehicles and vessels transporting the gear after inspection are clean to the required standard.</p> <p>Brief any assistant inspectors on which standard is being applied, what pests and pathogens pose a risk to the island, any goods that are banned from the island, what questions to ask, where to look. If they are uncertain or have any concerns they should refer to the biosecurity lead.</p> <p>Decide whether to process the whole party as one group or divide into several groups, depending on capacity of the room and number of inspectors.</p>
Step 4	<p>Pre-Inspection – Brief the people going to the island on what will happen in the inspection room and how the space is used. Don't assume they have absorbed everything in the pre-departure information.</p> <p>The biosecurity lead (or delegate) controls of the movement of people and goods through each space in the biosecurity facility and minimises the number of times and length of time that the doors have to be opened for the flow of people and goods from one space to the next.</p>
Step 5	<p>Inspection - Inspectors interview each person individually and check the goods they are responsible for cleaning. Inspector looks for evidence that the cleaning was thorough (by looking in places where residual contaminants (such as soil, seeds, invertebrates) might hide (in places like footwear, socks, velcro, pockets, hinges). If inspectors find significant contamination, they reject items, or hand them back for further cleaning. Unless freight is newly purchased AND retail seals are not broken, it must be unpacked and checked for contaminants.</p> <p>The person leading a biosecurity inspection is authorised to postpone or cancel travel to islands in circumstances where they believe biosecurity measures have not been undertaken appropriately or there is a less than acceptable attitude of personnel towards biosecurity compliance.</p>
Step 6	<p>Clearance and Repacking - Once satisfied, the inspector declares the inspected items cleared for transport, moves them to the repacking site and authorises repacking.</p> <p>Only cleared for transport items can be packed and sealed. The seal is not to be broken prior to arrival in on-island receiving room to ensure no contamination en route. With large quantities of freight or unaccompanied freight it can be useful to add a sticker or label showing that it was “inspected on (date) by (name)”. A label of contents is also useful.</p> <p>Personal gear required during travel is packed in quickly resealable containers such as barrels, or pails marked for this purpose. Minimise number of containers that are required. Sealing with tape is not required,</p>
Step 7	<p>Storage or Exit to Transport - Once packed and sealed the containers are either stored in the ultra-clean room or the people and their gear exit directly to the transport. The gear should not be placed on the ground after inspection.</p>

Step 8	After the Inspection – Record any detections in the log. Remove any rubbish and contaminants found. Clean the room. Disinfect if required. Record the cleaning actions in the log.
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**Standards:**

1	No gear or freight is cleared for transport to a pest-free island without being inspected first.
2	Rangers trained in island biosecurity inspection, and appointed to Inspector role by the Operations Manager, interview all personnel and inspect all goods including personal gear travelling to the island.
3	Goods once inspected and passed are separated from uninspected goods.
4	Containers (except the minority required during travel) are sealed
	Goods once cleared for transport and repacked are stored in the pest-proof ultra-clean storeroom until ready to load directly onto a vehicle. Containers are not set down directly on the ground once packed and sealed.

**Specifications**

Clothing inspection - inspect pockets, cuffs, Velcro, zips, seams and socks closely. Seeds may be found with a combination of sight and feel.

Footwear inspection – remove inner sole, visual inspection of soles and other parts above. Feel inside to check an invertebrate hasn't hopped in! Check for grass seeds in ankle padding and tongue.

Quality assurance – Where large quantities of goods are inspected, or the goods are not travelling with a person, it's recommended that a mark is placed on the outside of each sealed container, showing who inspected it and on what date.

Clearly separate inspected goods from yet to be inspected goods – Use internal shelving, supermarket trolleys, tables (or other means) to separate inspected gear from gear waiting to be inspected. Label the different areas within the quarantine room so people can see how to use the different areas.

### 5.3.4 Cleaning, inspection, storage and transport of goods that cannot pass through a Biosecurity facility

Objective:	To ensure that non-standard goods too large or awkward to pass through a biosecurity facility comply with biosecurity standards.
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Goods that this applies to include:

- Heavy or non-portable machinery e.g. vehicles, diggers, trailers, power-barrows
- Construction and fencing materials
- Loose materials in bulk e.g. gravel, bark chips, sawdust, stock feed, loose potting mix
- Structures e.g. sheds, huts, water tanks, toilets, houses
- Household furniture and appliances
- Fadge-loads of equipment/materials

For quarantine procedures for live organisms, see [5.3.8 Taking domestic stock to islands](#), [5.3.9 Translocating native animals to islands](#) or [5.3.10 Taking plants and seeds to islands](#).

**Commented [JL19]:** Update once finalised.

#### Process:

Step 1	Where possible, install plant and machinery (preferably brand new) permanently on islands, or find an on-island source of materials (e.g. bark chips) to avoid the biosecurity risks associated with shipping non-standard goods.
Step 2	Determine in advance the volume and types of non-standard goods to be shipped. Make it clear to all staff that the shipment of goods presented too late for full inspection will be vetoed.
Step 3	Plan in advance how to clean, inspect, transport and store the non-standard goods, and procure any necessary additional services/equipment (e.g. a shipping container).  See <i>Specifications</i> for detail on best practice for the above processes for specific types of goods.  Contact the local territorial authority for guidance on the regulations that they have the power to enforce under the Biosecurity Act 1993. Negotiate co-operation in managing the risks if appropriate.
Step 4	Agree on quarantine measures with suppliers (follow steps in <a href="#">5.3.7 Supply chain quarantine</a> ). See <i>Specifications for specific goods</i> for recommendations.  Minimise the time between manufacture and transport to the island, and have cleaning carried out at the source site if possible.
Step 5	Clean goods thoroughly. Cleaning by DOC staff is preferred for quality assurance. See <i>Specifications</i> for detail on cleaning procedures.

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	Alternatively, build cleaning into the contract with the supplier, or contract it to a trusted commercial cleaner. Ensure the required standards are understood. DOC biosecurity staff must inspect third-party cleaning of non-standard goods before approving shipment.
Step 6	<p>Inspect goods thoroughly (see <i>Specifications</i> for methods). This can occur at the final point of departure for the island, or at an earlier stage provided that storage and transport is up to standard (see <a href="#">5.3.6 Transport management</a>) and the goods are not set down in an uncontrolled area at any point after the inspection.</p> <p>Without exception, veto the shipment of goods presented too late for full inspection.</p> <p>Reject goods that are contaminated and have them cleaned again before re-inspection.</p>
Step 7	<p>Minimise storage where possible by having goods be transported directly from supplier to point of departure where they are given a final inspection.</p> <p>Where necessary, store goods in a secure space where there is no risk of recontamination, and ensure that storage instructions are clear, e.g. that shipping containers are not to be opened. See <i>Specifications</i> for detail on recommended storage options.</p>
Step 8	<p>Transport goods following the steps in section <a href="#">5.3.6 Transport management</a>.</p> <p>Also see <i>Specifications</i> for specific recommendations when transporting non-standard goods.</p>
Step 9	<p>On arrival, immediately inspect goods at a designated on-island outdoors inspection area to detect any contamination that has taken place in transit.</p> <p>Follow the steps in <a href="#">5.4.2 Arrival procedures</a>.</p>

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### Standards:

1	No goods escape inspection and clearing for transport because they cannot pass through a biosecurity facility. Alternative inspection measures are planned well in advance of delivery.
2	Goods that cannot pass through a biosecurity facility are free of pests and organic matter, and are cleaned to pathogen standard where required, prior to transport.
3	Pre-departure storage secures clean goods against contamination.
4	Goods that fail an inspection, or that are presented too late for a full inspection, are not shipped.
5	Goods are re-inspected immediately on arrival at the island before being approved for use.

## Specifications for all goods:

### **Cleaning and decontamination**

Where manual cleaning of goods is possible, clean and disinfect goods on a clean area of hardstanding (preferably concrete) where run-off is managed.

Clean goods thoroughly, dismantling parts where necessary to allow for complete cleaning. Air compressors or small handheld vacuum cleaners can be useful for dislodging organic matter from difficult-to-reach crevices.

Disinfectant or commercial steam cleaning is required for goods that need to be cleaned to pathogen level. Disinfectant (1:50 dilution of SteriGENE) should remain in contact with hard surfaces for at least 1 minute. If possible, allow disinfected goods to drip dry.

Fumigation can be a useful treatment where complete decontamination is difficult to achieve through manual cleaning. See *Resources* for links to information on fumigation options, fumigators, and health and safety guidance.

See *Specifications for specific goods* for other recommended decontamination methods where manual cleaning is not possible, e.g. for loose material in bulk such as gravel.

### **Inspection**

For non-standard freight it is recommended that goods undergo both a thorough visual inspection and a pest-detection dog inspection, where possible.

The inspection area must itself be clean, to avoid contamination and to allow identification of pests coming from the inspected goods. Ensure appropriate biosecurity response tools are available during inspection in case a pest is found.

Hit solid objects with something hard during inspection to disturb pests (this works particularly well for ants). A torch is essential for inspection of recesses.

### **Storage**

If goods must be stored, use clean, intact and sealable storage units such as shipping containers or large purpose-built storage facilities.

Storage units used must have pest detection and control devices installed prior to cleaned goods being stored (see *Specifications* section on pest management inside a biosecurity facility in *5.2.3 Management of animal pests* for guidance). Fumigate the unit with an insecticide while the stored goods are inside it, then keep it sealed until the item is transported to the island. See *Resources* for links to information on fumigation options, fumigators, and health and safety guidance.

Access to storage units must be restricted to authorised persons only, who are made aware that the unit must be kept closed to prevent contamination.

### **Transport**

See **\*\*\* Transport management** for general transport process and standards.

Use heavy-duty transparent polythene plastic wrap, or new and intact tarpaulins or fadges, sealed with duct tape, refrigeration tape or heavy-duty cable ties, to protect goods from contamination while in transit. Protect these wraps from abrasion in transit.

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Avoid stopping at locations where pests are not controlled while in transit. If this is not possible, the number and duration of stops must be minimised. If a vehicle or vessel transporting unsealed goods is forced to stop in an uncontrolled area, do not travel on to the island until it is certain that the goods remain pest-free.

### **Specifications for specific goods:**

#### ***Loose material in bulk (e.g. aggregates, sawdust, bark chips, stock feed)***

These materials are high-risk vectors and are also extremely difficult to inspect and clean. First consider whether there is a less risky alternative, e.g. using on-island sources of wood for making wood chips instead of bringing bark chips to the island from elsewhere.

If loose material is taken to the island, quarantine measures must occur at the source site and in the supply chain.

Only use suppliers where:

- Adequate preventative management is undertaken of any weed/animal pest risks at the source site (e.g. quarry, pine forest).
- For pathogen-standard islands only: The source site is not contaminated by soil/surface run-off, and water used in quarrying, logging, processing and/or cleaning equipment is from a clean source.
- Any necessary treatments are in place to remove contaminants. Fumigation or freezing can decontaminate for many pests. For heavy aggregates, treating and/or transporting the material in a clean rotating concrete-mixer truck can give some confidence that any pests present are crushed.
- The material is not stored in contact with soil at any time after production. Where possible, arrange for the material to be produced immediately prior to being loaded directly onto the transport without set-down.

Trays of trucks or trailers used to transport loose material in bulk must be free of soil and organic matter. Where the island requires cleaning to pathogen standard, they also must be sprayed with a 1:50 dilution of SteriGENE and left for a holding period of 5 minutes before being loaded with material.

#### ***Timber and construction/fencing materials***

Best practice is to have seasoned, treated, timber taken directly from a kiln, treated with a residual insecticide via spray or fumigation, sealed in plastic, then transported or put into storage without any set-down.

Where this is not possible, the following is recommended for unsealed timber and materials:

- Only accept bundled supplies if they will be unbundled for inspection.
- Inspect pieces of timber individually before bundling them again, immediately prior to departure.
- If in large quantities, lift and jostle materials with a forklift immediately prior to a pest-detection dog inspection, to disturb any pest animals.
- Take bundled materials apart immediately upon arrival on the island for re-inspection.

## Heavy machinery

Assume that all heavy machinery will have weed seeds or fragments. It's helpful to know which weeds were present where the machinery has been recently used.

Heavy machinery should be hoisted and chocked, or driven over a pit, to allow thorough cleaning of the underside (only by the licensed operator of the heavy machinery, with appropriate health and safety procedures followed).

When cleaning, use a crowbar/stiff brush and a water-blaster or air compressor to remove all soil and organic matter from difficult-to-reach areas. Pay particular attention to machinery undersides, tracks, rollers, tyres, wheel arches, guards, blades, engine bays, grills, foot wells, pedals, mats, seats and gear lockers.

Heavy machinery can be sealed in a shipping container or large sealable storage facility for fumigation.

See *Resources* for a link to the NPCA Machinery and vehicle hygiene guidelines.

## Vehicles

This refers to situations where a vehicle is taken onto an island itself, not where it is used to transport quarantined goods. For the latter situation, see instead section [5.3.6 Transport management](#).

Immediately prior to the transport, the vehicle should be cleaned on a hard surface at a location where the re-contamination likelihood is relatively low (e.g. close to point of loading onto barge).

All vehicle parts must be cleaned thoroughly to remove all cobwebs, insects, seeds, and other organic matter. Pay particular attention to the underside, engine compartment, tyres, wheel arches, grills, footwells, pedals, mats and seats.

Enclosed spaces should have an insecticide sprayed into the spaces which are then sealed for at least an hour, then vented for 30 minutes, prior to loading.

If necessary, clean to pathogen level using a 1:50 dilution of SteriGENE, allowing disinfectant to remain in contact with surfaces for at least 1 minute and ideally letting the vehicle drip dry.

## Scaffolding/pipes

Have these cleaned thoroughly by the supplier using water-blasting or air-blasting. Unbundle before visually inspecting them, using an air compressor to blow air through pipes with open ends. Spray the interior with insecticide then wrap all open ends with tape. Inspect them using a pest-detection dog prior to their transport to an island.

## Resources:

- DOC intranet page on managing kauri dieback: <http://intranet/natural-heritage/threats-to-biodiversity/kauri-dieback-disease-and-its-management/what-to-do-to-manage-kauri-dieback/>
- Worksafe 2017 guide - Keeping safe from harmful substances while inspecting or unpacking containers: <https://worksafe.govt.nz/dmsdocument/950-keeping-safe-from-harmful-substances-while-inspecting-or-unpacking-containers>

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- MPI approved treatment (e.g. fumigation) providers: Follow the “Approved NZ treatment providers” link on this MPI website: <https://www.mpi.govt.nz/importing/border-clearance/transitional-and-containment-facilities/find-treatment-options-and-provider/>
- MPI 2019 guide - Approved biosecurity treatments: <https://www.mpi.govt.nz/dmsdocument/1555-approved-biosecurity-treatments-for-risk-goods>
- NPCA Machinery and vehicle hygiene guidelines and logbook to prevent the spread of pests and weeds: <https://www.bionet.nz/assets/Uploads/Publications/A16-KeepItClean-2015-HR.pdf>

DRAFT

### 5.3.5 Transport management

Objective:	To maintain quarantine throughout the transport chain to pest-free islands.
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This applies to routine transport of quarantined goods by DOC and external operators to pest-free islands. It applies to vehicles, vessels and aircraft.

For transport in emergency situations, see section 5.3.5 *Quarantine for emergency situations*.

For quarantine of vehicles being themselves taken onto pest-free islands, see section 5.3.4 *Cleaning, inspection, storage and transport of items that cannot pass through a biosecurity facility*.

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#### Process when using external operators:

Step 1	Assign a specific staff member to manage the relationship with external transport operators, to ensure continuity. Include performance in this area in their MOR.
Step 2	<p>Identify preferred transport operators who agree to comply with biosecurity measures. Collaborate with territorial local authorities to do this, where applicable.</p> <p>Develop an ongoing relationship with these operators and reciprocate their support by using their services exclusively. It is recommended to maintain a written list of preferred operators.</p> <p>Do not use operators whose craft are contamination risks, or whose attitudes and behaviours demonstrate an unwillingness to comply with biosecurity measures.</p>
Step 3	<p>Formalise an agreement with the operators on biosecurity measures for vehicles, aircraft, vessels and associated infrastructure such as hangars and garages (see <i>Specifications</i> for best practice measures).</p> <p>In areas where the Pest-free Warrant (see <i>Resources</i>) system is in place, this is the recommended means of formalising an agreement.</p>
Step 4	<p>Sustain the relationship with the operators by regular face-to-face contact and updates on biosecurity best practice.</p> <p>Provide in-person training in the use of pest control and detection devices and supply them with functional devices and fresh lures/baits. Coach them in suitable biosecurity messaging for other users of their services.</p>
Step 5	<p>Schedule inspections of vehicles, aircraft, vessels and associated infrastructure at least twice annually and more often as risks demand. Use pest-detection dogs in the scheduled inspections.</p> <p>Supplement regular inspections where possible with opportunistic checks.</p>
Step 6	Where possible, plan use of transportation so that:

	<ul style="list-style-type: none"> <li>The risk of moving pests between islands is minimised where islands are visited sequentially on a trip. Completely pest-free islands should be visited first before islands where any pest species are present (see <a href="#">5.5.3 Reverse and inter-island quarantine</a>).</li> <li>Loading and unloading take place during daylight hours, when visibility is better, and many pests are less active.</li> </ul>
Step 7	Inform all drivers/skippers/pilots prior to a trip of the destination island's pest status and the corresponding biosecurity requirements.
Step 8	<p>Inspect vehicles, vessels and aircraft for biosecurity risks close to, or immediately prior to, departure (see <i>Specifications</i> for inspection details).</p> <p>The use of pest-detection dogs is recommended in all cases, especially for operators with whom there are no biosecurity agreements in place.</p> <p>If a pest is known or suspected to be present, follow the process in section <a href="#">5.3.12 Interceptions and reporting of interceptions</a>. Do not continue the trip until the transport is confirmed pest-free. Use detection dogs where possible to confirm the absence of pests.</p>
Step 9	<p>Eliminate opportunities for recontamination when transferring people and goods between a biosecurity facility and transport, or between different means of transport.</p> <ul style="list-style-type: none"> <li>Minimise the number of transfers</li> <li>Use only clean metal transfer trolleys</li> <li>Wrap items in new, intact, tarpaulins</li> <li>Time movements so that goods are loaded directly onto a vessel or aircraft immediately prior to departure, not set down on the ground.</li> </ul>
Step 10	Maintain quarantine standards on arrival at the destination island by following the process in <a href="#">5.4.2 Arrival procedures</a> .
Step 11	<p>Maintain quarantine standards if moving between islands or leaving an island and returning to the mainland by following the process in <a href="#">5.4.3 Reverse and interisland quarantine</a>.</p> <p>If moving between different sites on an island by helicopter, assess the risk of spreading localised pests (e.g. localised weed infestation) more widely on the island. Apply biosecurity measures as required, e.g. using only pre-inspected pest-free landing sites, cleaning the skids, scheduling a surveillance check of all landing sites at a later date.</p>

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### Process when using DOC operators:

Step 1	<p>Designate a specific vehicle and covered trailer for biosecurity use only.</p> <p>If this is not possible, designate a specific general-use vehicle and trailer to use routinely for biosecurity purposes. Agree with team that bookings of this vehicle for biosecurity uses take precedence over other uses.</p>
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Step 2	Park/moor DOC vehicles/vessels in a location where pests are absent or regularly controlled and monitored (see <i>Specifications</i> ).
Step 3	Train regular DOC transport operators (e.g. boat skippers) thoroughly in biosecurity requirements and refresh them annually on best practice. Include the biosecurity aspect in their position descriptions and MORs.  For infrequent transport operators, preferably train them thoroughly on biosecurity requirements. Where this isn't possible, they must be briefed on these requirements prior to departure.
Step 4	Plan transportation for so that: <ul style="list-style-type: none"> <li>• The risk of moving pests between islands is minimised where islands are visited sequentially on a trip. Completely pest-free islands should be visited first before islands where any pest species are present (see <a href="#">5.5.3 Reverse and inter-island quarantine</a>)</li> <li>• Loading and unloading take place during daylight hours, when visibility is better, and many pests are less active.</li> </ul>
Step 5	Inform all drivers/skippers/pilots prior to a trip of the destination island's pest status and the corresponding biosecurity requirements.
Step 6	Clean and inspect the means of transport, following the <i>Specifications</i> below, to ensure it meets the standards before island-bound goods are loaded onto it.  If a pest is known or suspected to be present, follow the process in section <a href="#">5.3.12 Interceptions and reporting of interceptions</a> . Do not continue the trip until the transport is confirmed pest-free. Use detection dogs where possible to confirm the absence of pests.
Step 7	Eliminate opportunities for recontamination when transferring people and goods between a biosecurity facility and transport, or between different means of transport. <ul style="list-style-type: none"> <li>• Minimise the number of transfers.</li> <li>• Use only clean metal transfer trolleys.</li> <li>• Wrap items in new, intact, tarpaulins.</li> <li>• Schedule movements so that goods are loaded directly onto a vessel or aircraft immediately prior to departure, not set down on the ground.</li> </ul>
Step 8	Maintain quarantine standards on arrival at the destination island by following the process in <a href="#">5.4.2 Arrival procedures</a> .
Step 9	Maintain quarantine standards if moving between islands or leaving an island and returning to the mainland by following the process in <a href="#">5.4.3 Reverse and interisland quarantine</a> .

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	If moving between different sites on an island by helicopter, assess the risk of spreading localised pests (e.g. localised weed infestation) more widely on the island. Apply biosecurity measures as required, e.g. using only pre-inspected pest-free landing sites, cleaning the skids, scheduling a surveillance check of all landing sites at a later date.
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### Standards:

1	Measures are in place to minimise biosecurity risks at all sites where vessels/vehicles/aircraft are moored/parked.
2	Agreements that govern transport by external operators include biosecurity requirements.
3	All DOC staff involved in transportation to islands are trained in biosecurity, can recognise risky situations and activities, and know the appropriate response.
4	Only guaranteed pest-free vehicles, vessels and aircraft are used to transport quarantined goods.
5	No goods that have not undergone quarantine processes are added to cargo prior to departure.
6	Transportation is stopped without exception in the event of a known or suspected quarantine breach, until the breach has been remedied to the satisfaction of DOC biosecurity staff.

### Specifications:

#### **Vehicles and trailers**

##### **Cleaning and inspection**

DOC vehicles used to transport quarantined gear and staff must be kept free of rubbish, food and other non-essential items.

Vehicles must be cleaned thoroughly, inside and out, before every use for biosecurity purposes. Air compressors or small handheld vacuum cleaners can be useful for dislodging organic matter from difficult-to-reach crevices. Vehicles must always be swept and ideally the outside/the tray is also hosed. If the island requires quarantine to pathogen standard, surfaces that will come into contact with quarantined goods should be cleaned with a 1:50 dilution of SteriGENE.

Trailers should be kept covered when not in use. Clean and inspect trailers for pests and organic matter prior to loading quarantined goods. Loaded items should then be fully covered with a new, intact tarpaulin.

##### **Storage**

Vehicles and trailers, when not in use, should be parked under cover in a secure area where pests are controlled. (see the *Specifications* section on management inside a biosecurity facility in *5.2.3 Management of animal pests* for detail on pest control).

Clean and inspect any vehicles or trailers before storage within a biosecurity facility.

Where vehicles are parked outside, replace gravel/grass with a concrete pad or other hard surface that is kept clean. Run control and/or detection devices for risk species (see the *Specifications* section on management outside a biosecurity facility in 5.2.3 *Management of animal pests* for detail). Remove weeds from the surrounding area as far as is possible, in particular during the season when they set seed.

## **Vessels**

### **Cleaning**

DOC vessels used to transport quarantined gear and staff must be kept free of rubbish, food and other non-essential items. Any essential items that could be potential food sources for pests must be securely contained.

Vessels must be cleaned as thoroughly as possible before every use for biosecurity purposes. At a minimum the area where quarantined goods will be stored and where people travelling to islands will stand should be free of organic matter.

### **Biosecurity equipment**

Equip vessels with the required biosecurity equipment for maintaining quarantine at the destination island(s). Keep this equipment in a suitably marked and sealed container, with items replaced/refreshed as necessary.

The equipment will vary with situation, but at a minimum includes:

- Scrubbing brushes for footwear
- Fish bin or bucket for footbath
- Spray bottle of 1:50 dilution of SteriGENE. SteriGENE is to be used to clean footwear where quarantine is being done to pathogen standard. It is used either immediately prior to boarding the vessel (if the vessel has itself been thoroughly cleaned to pathogen standard), or immediately prior to disembarkation from the vessel onto the island (if the vessel itself could be a source of pathogen contamination).
- Disposable cloths/wipes
- Aerosol can of insecticide spray
- Sealable bags or containers for any pest or suspect item found onboard
- Spare cable ties and/or duct tape for resealing bins

### **Monitoring and control measures**

Vessels should have proven rodent and insect control devices permanently on board that are well-situated and well-maintained. Secure these to the vessel using heavy-duty adhesive Velcro or by wedging them between immovable objects.

The devices used will vary according to the nature and design of each boat, but standard devices are:

- Rat and mouse bait stations and/or traps in all holds and areas where island-bound goods are stored. At a minimum: 1 for rats and 1 for mice per vessel, plus 1 extra for each 7m of boat length, plus 1 for each individual food or rubbish storage area.

- Insect sticky traps with approved covers or residual insecticide sprays are applied in all holds and areas where island-bound goods are stored. Note insect sticky traps must be checked daily where it is possible to catch lizards, and must be able to be closed securely from access by animals when not in use.

Pest monitoring/control devices must be checked and refreshed on a regular basis (at a minimum monthly but more frequently if necessary, to avoid deterioration), as well as immediately before any gear is loaded for each island trip. Management of these devices must be included in the Vessel Operating Plans for all DOC vessels used for biosecurity purposes.

#### **Vessel inspection**

Before each use to travel to a pest-free island the vessel and onboard control devices should be inspected for weeds/seeds, pest sign (including droppings and chew marks) and invertebrates, with the hull and other metal areas being banged while doing this to pick up invertebrates attempting to move away from noise. Remove/kill any found and report any of note.

#### **Vessel mooring/storage**

All doors and sealable compartments on-board must be kept closed, and gangways withdrawn or elevated, when a vessel used for biosecurity purposes is unattended.

Where possible, vessels should be stored in a secure facility where pests are controlled (see the *Specifications* section on management inside a biosecurity facility in 5.2.3 *Management of animal pests* for detail). Any vessels stored within the biosecurity facility must be cleaned and inspected before being brought into the facility.

Where vessels on trailers must be parked outside, replace gravel/grass with a concrete pad or other hard surface that is kept clean. Run control and/or detection devices for risk species (see the *Specifications* section on management outside a biosecurity facility in 5.2.3 *Management of animal pests* for detail). Remove weeds from the surrounding area as far as is possible, in particular during the season when they set seed.

Where vessels must be moored, tie up at brightly lit pontoons where possible. Rodent guards must be fitted to all ropes linking the vessel to the mainland. Run control and/or detection devices for risk species in the marina, and remove weeds from the surrounding area as far as is possible, in particular during the season when they set seed.

#### **Boat design and fittings**

Where DOC boats are being bought or refurbished, the ability to rodent-proof the boat should be considered carefully. Areas used for storing island-bound supplies should be fully sealable against pests.

Biosecurity signage must be fitted to vessels to reinforce quarantine messages.

#### **Aircraft**

##### **Take-off and landing sites**

Take-off and landing sites should be confined to hard surfaces where possible (e.g. concrete helipads, roads, carparks).

Where a hard surface site is unavailable, the landing site should be pre-inspected for weeds and animal pests where possible. The cleanest available sites should be used, and any necessary weed/pest control measures implemented.

### Hangar pest monitoring and control

Collaborate with the aircraft company to agree on biosecurity protocols at the hangar. This must include ongoing pest monitoring and control (see 5.2.3 *Management of animal pests* for guidance), and regular (6-monthly recommended) pest-detection dog inspections of the hangar and associated infrastructure, as is done in Fiordland.

### Cleaning and inspection

Aircraft must be kept clean of organic matter and free of rubbish and other non-essential items.

Aircraft, as well as any nets/strops, should be inspected by the pilot and DOC biosecurity staff together immediately prior to any quarantined gear being loaded for islands. A torch is required for a thorough inspection. Ask whether DOC can supply its own nets, in which case use clean, inspected nets, use them only for biosecurity purposes, and store them in a biosecurity facility.

During inspection, particular attention should be paid to the luggage hold, skids/landing gear (top and bottom) and below the main cabin floor (See photo below. Rodents have been found in this area on a helicopter, having entered via the skids. This area can be inspected by lowering the belly panels).



### Resources:

- Information on Pest-free Warrants: <https://www.doc.govt.nz/parks-and-recreation/places-to-go/auckland/auraki-gulf-marine-park/known-before-you-go/pest-free-auraki-gulf/pest-free-warrant/>



### 5.3.6 Supply chain quarantine

Objective:	To prioritise biosecurity through the supply chain from original source through to receiving the goods.
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This applies to all large unsealed or bulk goods going to a pest-free island. It does not apply to small packages of easily inspected items.

#### Process:

Step 1	Assign a specific staff member to manage the relationship with suppliers and supply chain quarantine, to ensure continuity. Include performance in this area in their MOR.
Step 2	Collaborate with territorial local authorities to identify preferred suppliers who agree to comply with biosecurity measures. Develop an ongoing relationship with these suppliers and use their products over others. It is recommended to maintain a written list of preferred suppliers.
Step 3	Work together with all parties in the supply chain, from the source to delivery of the goods to DOC, to develop biosecurity measures that protect goods from contamination. See <i>Specifications</i> for recommendations on how to best approach this collaboration.  Identify parties where additional training in biosecurity is required, and provide support for such training.
Step 4	Make biosecurity best practice a leading component of any agreement or contract for goods or services. Add a clause on the right to refuse goods that do not meet biosecurity standards, and a requirement for auditable records to be kept.  In areas where the Pest-free Warrant (see <i>Resources</i> ) system is in place, encourage or require suppliers to obtain a Pest-free Warrant.
Step 5	Inspect supplier premises and/or processes to check the agreed biosecurity measures are being applied correctly.
Step 6	Plan ahead for receipt of deliveries from the supplier to ensure the goods can be immediately placed in the appropriate facility to maintain quarantine and that the required checks are made before the goods are accepted.

#### Standards:

1	Large unsealed or bulk goods are only sourced from suppliers who are party to an agreement to comply with biosecurity measures.
2	Agreed biosecurity measures protect goods from contamination from source to delivery.
3	The DOC staff member assigned the responsibility of maintaining the DOC-supplier relationship sustains biosecurity agreements through regular face-to-face contact and support.

**Specifications:**

Developing good working relationships with suppliers

- Allocate time to the relationship, in recognition of its importance towards good biosecurity.
- Ask open questions (nothing that requires a YES/NO response) of the supplier when learning about their processes and products.
- Ask questions to learn the process of the product from accessing the raw materials, to converting it to something useful, to storing, transporting, delivering it.
- Do an onsite visit to get more context, because the picture in your head never quite matches reality.
- Get to know them as people and create a non-threatening environment. You can never guess which things will trigger someone until you know them. Assume nothing.
- Ask them for their own ideas on how their products could be kept clean/uncontaminated. They often have more resources at their disposal than you know about.
- Where a detection dog is used in inspections, recognize that it is just one tool focusing on just one or two pests out of the many. A dog can be a distraction for people being interviewed, or it can be viewed as a threat, or it can create a false sense of security if it finds nothing. The human's part of the job (interviewing people, checking risky items/places that could be overlooked) should be done first.

**Resources:**

- Template for contract for services: <http://intranet/tools-and-services/ordering-and-purchasing-things/suppliers/supplier-sourcing-and-management-toolbox/templates/contract-templates/independent-contract-for-services-templates/>
- Information on Pest-free Warrants: <https://www.doc.govt.nz/parks-and-recreation/places-to-go/auckland/auraki-gulf-marine-park/know-before-you-go/pest-free-auraki-gulf/pest-free-warrant/>

### 5.3.7 Taking domestic stock to islands

Objective:	To prevent transferral of pests and pathogens when taking domestic stock to islands.
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**Process:**

Step 1	Seek guidance from territorial authorities, as these can have strong requirements and/or guidelines to manage domestic stock movement and the authority to enforce compliance.
Step 2	<p>Build a relationship with the receiving and source farm managers/owners, trucking company and barge operator. Agree on measures to minimise biosecurity risks, including:</p> <ul style="list-style-type: none"> <li>• Treating stock prior to transport (see <i>Specifications</i>).</li> <li>• Meeting the standards in section 5.4.1 <i>Transport management</i>. Where applicable, strongly encourage the use of trucking companies that hold Pest-free Warrants.</li> <li>• Minimising the time stock trucks and barges spend stationary at a site where a pest incursion could take place.</li> <li>• Treating stock on arrival at the island (see <i>Specifications</i>).</li> <li>• Taking stock feed from a source free of weeds that are not wanted on the island.</li> </ul> <p>Confirm that the farm manager and transport operators are prepared for the eventuality that stock are turned around if they fail quarantine inspections, and that a plan exists to maintain stock welfare in this situation.</p> <p>Be prepared to provide the necessary support should this situation arise, in order to maintain the relationship.</p>
Step 3	Where there are grazing agreements in place, work with Permissions staff to add conditions that effectively manage the risks of transferring weeds, pest animals and pathogens to islands.
Step 4	Ensure that stock movements are communicated far enough in advance to allow for pest detection dogs and any other inspection requirements to be scheduled.
Step 5	Have pest detection dogs inspect the truck, barge and any stock feed when stock are loaded onto the barge. Only approve barge departure when the dog inspection is complete.
Step 6	<p>If a pest organism is found during inspection, halt the movement of stock until the pest is dispatched. Assess the risk and if necessary, return the stock to the source farm. Report the interception to the local biosecurity lead.</p> <p>Support the farm manager and transport operators to improve their processes to enable pest-free stock movement.</p>

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Step 7	On arrival on the island, hold stock in a designated quarantine paddock for a minimum of 24 hours. Inspect this paddock regularly for unwanted weeds and manage them to zero density.
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**Standards:**

1	Measures to reduce biosecurity risks are agreed with farm managers/owners and transport providers.
2	Barges are only approved for departure once the stock truck and barge have been inspected by DOC biosecurity staff, preferably with the assistance of a pest detection dog appropriate to the risk species.
3	Stock are not transferred to the island if a pest species is found during inspection and/or the risk cannot be eliminated to the satisfaction of DOC biosecurity staff.

**Specifications:**

Encourage farm managers/owners to create a biosecurity plan that manages the movement of people, vehicles, machinery, stock, feed and seeds on and off the farm. Such a plan has direct benefits to them e.g. reducing risk of transferring stock diseases such as *Mycoplasma bovis*.

Shortly prior to transport of stock it is recommended to:

- Shear sheep.
- Move stock into weed-free quarantine stockyards at least 24 hours prior to leading onto transport, with weed-free feed and clean water.
- Give stock a quarantine drench and any necessary health checks and vaccinations the day before transport.
- Check stock immediately prior to loading into transport for state of health and any obvious quarantine concerns. Hose muddy feet if possible.

**Resources:**

- DOC veterinarian Kate McInnes

### 5.3.8 Translocating native animals to islands

Objective:	To prevent transferral of pests and pathogens when translocating native animals to islands.
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#### Process:

Step 1	Comply with Translocation Health Management Process requirements (see <i>Resources</i> for links).
Step 2	<p>Consult with specialists, including the DOC veterinarian, to identify:</p> <ul style="list-style-type: none"> <li>• Pathogen, weed and animal pest risks at the source site and the necessary quarantine measures to prevent their transfer to the destination island (see <i>Specifications</i> for general best practice).</li> <li>• Species-appropriate procedures for final checks and cleaning of animals before they are put into transport boxes. Be aware of the risk of enclosure/transport box materials and substrate absorbing disinfectants and becoming toxic themselves, particularly to frogs.</li> </ul> <p>Include these measures in the translocation plan and have this plan reviewed by an experienced biosecurity operator.</p>
Step 3	<p>Plan biosecurity procedures for everyone attending any on-island translocation ceremony, including dignitaries.</p> <p>Ensure that these measures, and the potential for a translocation to be cancelled if there is an irreparable biosecurity breach on the day, are known to, and accepted by, those dignitaries and their assistants well in advance.</p> <p>The authority of the biosecurity lead to insist on compliance by dignitaries must be upheld by managers and the Director-General.</p>
Step 4	Follow the steps in <a href="#">5.4.1 Transport management</a> to ensure any transport operators understand and comply with the biosecurity requirements. Where applicable, only use transport operators holding a Pest-free Warrant.
Step 5	Manage and clean equipment to be used during the translocation to minimise biosecurity risks (see <i>Specifications</i> for best practice).
Step 6	If the translocated animals are not going to pass through a quarantine facility (e.g. transferred directly from source site to island via helicopter or boat) then clearly define a temporary site for final quarantine inspection and/or treatment at the location where the transport containers will depart from the source site.
Step 7	Check and clean the animals being translocated as they are placed into clean transport boxes, based on consultation outcomes in step 2.
Step 8	<p>For transportation to the island:</p> <ul style="list-style-type: none"> <li>• Preferably: People working on the translocation at the source site (e.g. catchers) do not travel to the destination island, instead a separate team handles the animals on arrival.</li> </ul>

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	<ul style="list-style-type: none"> <li>Where this isn't practical: People wash hands, scrub boots clean of soil and spray scrubbed boots with a 1:50 dilution of <a href="#">SteriGENE</a> at the designated site for final biosecurity inspection immediately prior to boarding the transport. Assess the level of contamination of clothing and change outer clothes and footwear if necessary.</li> </ul>
Step 9	If at any point a pest is detected on or around people or items going to the island, halt the translocation until it is eliminated.

**Standards:**

1	The translocation plan clearly identifies pests and pathogens at the source site and the biosecurity measures to be implemented to prevent transfer to the island.
2	Biosecurity procedures are planned for everyone attending on-island translocation ceremonies including dignitaries, and are communicated to the dignitaries and their assistants in advance.
3	All transport containers and equipment are cleaned, disinfected and dried before and after each use.
4	Any substrate, including vegetation, in a transport container is inspected carefully and disinfected where necessary. Substrate and vegetation are not re-used and are not disposed of at the release site.
5	A site is designated for biosecurity cleaning and inspection at the point of departure when translocating animals directly from source site to island.

**Specifications:**

**Biosecurity measures to prevent transfer of pests and pathogens to the island include:**

- Where possible, apply a quarantine period on a planned diet that doesn't include viable seeds to allow undigested weed seeds to be passed from the digestive tract.
- Take biosecurity into consideration when planning any supplementary food supplies that are required at the release site, e.g. do not take live insects as has been done in the past.
- Where possible, pre-check helicopter landing sites for weeds during source site visits and remove them, or use an alternative weed-free landing site.

**Cleaning and managing translocation equipment to minimise biosecurity risks:**

- If possible, have two separate sets of equipment (other than the actual transport containers) at the source and the release sites.
- Do not use transport containers made of corflute, or any other materials which have small spaces present that can act as refugia for pests. See [5.2.5 Packaging and containers](#) for best practice for island-bound containers.
- If you are translocating frogs, consult specialists on how to minimise the risk to frogs from disinfecting equipment, transport containers and substrate.
- Clean, disinfect (by applying a 1:50 dilution of [SteriGENE](#) for hard surfaces, or soaking in a 1:20 dilution for 10 minutes for absorbent materials) and dry all equipment to be used in the translocation as close as possible prior to use and again before re-use or storage.

**Commented [JL39]:** Update once numbers confirmed.

- Where possible, use damp towels or other washable materials in place of organic substrate. Disinfect these using [SteriGENE](#) in place of washing powder at a rate of 50ml per 4.5 kg load of washing.
- If organic substrate must be used, inspect it for pest organisms before adding it to transport containers. If pathogens are a risk, disinfect it by soaking in a 1:20 dilution of [SteriGENE](#) for 10 minutes then dry completely before use.
- Do not take substrate from an area where plague skinks/invasive ants are present.
- Do not dispose of used substrate or vegetation at the release site, instead either return it to the source site or put it in urban rubbish disposal where appropriate.

**Resources:**

- See section \*\*\*\* for resources on pathogens that could be a risk during translocations
- Translocation intranet page: <http://intranet/natural-heritage/terrestrial/species-translocations/>
- Part A of Translocation Health Management Process, the Disease Risk Assessment Tool: [DOC-5659647](#)
- Part B of the Translocation Health Management Process, the Translocation Health Management Workbook: [DOC-5659653](#)
- DOC veterinarian Kate McInnes
  - [National Wildlife Biosecurity Guidelines \(Australia\)](#) - an overview of pathogen risk management in wildlife. Appendix B provides recommended biosecurity protocols. Appendix C provides a table of Infectious diseases of concern in Australian wildlife, including pathways and biosecurity practices.
- 

**Commented [JL40]:** Update once number and title finalised

### 5.3.9 Taking plants and seeds to islands

Objective:	To prevent transferral of pests and pathogens when taking plants and seeds to islands.
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**Process:**

Step 1	<p>Movement of live plants and seeds to pest-free islands should be avoided except under exceptional circumstances, due to the very high risk of transferring pests and pathogens.</p> <p>Consider the objective of the planned plant movements and seek plant specialist guidance on how to achieve it while minimising biosecurity risks. See <i>Specifications</i> for options.</p>
Step 2	<p>If seeds/plants are being sourced on the mainland then apply strict biosecurity measures at source:</p> <ul style="list-style-type: none"> <li>• Do not use a source nursery with known biosecurity risks.</li> <li>• Use only a nursery that has documented high-quality management incorporating monitoring and control of pest organisms including plague skinks, ants, amphibians, plant pathogens and weeds. The <i>Best Management Practice Guidelines</i> produced by Nursery Industry Accreditation Scheme, Australia, are a comprehensive guideline to follow pending the development of a New Zealand equivalent.</li> <li>• Build an ongoing relationship with the nursery to ensure that biosecurity is at the forefront throughout their processes (see section 5.4.2 <i>Supply chain quarantine</i>).</li> <li>• Do not source seeds/plants from areas where Kauri dieback, Myrtle rust or other plant pathogens are known to be present.</li> <li>• Specify in supply contracts that plants must not be treated with fungicides or insecticides for at least 4 to 6 weeks prior to supply, to enable detection of quiescent pests and pathogens.</li> </ul>
Step 3	<p>Inspect seeds and plants upon delivery and refuse any that are suspect, including plants with disease or insect pest damage. See <i>Specifications</i> for detail on inspection.</p>
Step 4	<p>On acceptance of delivered seeds/plants, move them into a biosecurity facility for storage until transfer. See <i>Specifications</i> for detail on storage.</p>
Step 5	<p>If plants, not seeds, are being transferred then before plants are taken from the biosecurity facility to be transported to the island:</p> <ul style="list-style-type: none"> <li>• Check surveillance devices in the room where plants were stored.</li> <li>• Carry out a final inspection of the plants for pests and diseases.</li> <li>• Put plants wholly into transparent plastic bags, spray inside with an insecticide and seal with cable ties for transport.</li> </ul>

Commented [JL41]: Update at the end once finalised



### Standards:

1	Plants and seeds are not taken to a pest-free island unless specialist advice determines that it is necessary in order to achieve island objectives.
2	If plants are transferred, they are bare-rooted unless it is absolutely necessary to transfer them rooted in a growing medium, in which case a peer-reviewed risk mitigation plan is in place and managerial authorisation is given.
3	The seed/plant supplier has documented high-quality nursery management and no known biosecurity risks.
4	Seeds and plants are inspected thoroughly on delivery from the supplier and rejected if there are any signs of pests or pathogens.

### Specifications:

Options if moving plants to islands is absolutely necessary to achieve island objectives:

Work through the following options in order, only moving on to the next one if a given option is not possible:

1. Ideally, propagate plants in on-island nurseries from on-island seed/plant and soil sources.
2. The next lowest-risk option is to take healthy, cleaned and treated seed to the island to propagate in on-island nurseries.
3. If it is not possible to grow on seed on the island, take bare-rooted hydroponically-grown plants from a nursery with high quality biosecurity standards, to re-pot in a sterile growing medium on the island.
4. If hydroponically grown plants cannot be sourced, take plants that have been grown in sterile soil at a nursery with high quality biosecurity standards, and put them through a thorough bare-rooting process (including submerging the plant in a sterilising wash that includes detergent), to re-pot in a sterile growing medium on the island.
5. If none of the above options are possible, then, in exceptional circumstances only, take plants rooted in a sterile growing medium from a nursery with high quality biosecurity standards to on-island quarantine areas where they are inspected again before planting out. A risk assessment, peer-reviewed risk mitigation plan and managerial authorisation process should occur in this situation, as is the case for animal translocations. See *Resources* for the animal translocation document that can be used as a guide.

Inspection on delivery at biosecurity facility:

On delivery of seeds/plants, inspect them thoroughly in a well-lit area for seeds, weeds, animal pests including ants and plague skinks, and for any signs of disease such as discoloration or curling of leaves (see 4.1.2 *Risk assessment Resources* for links to ant, skink and disease identification guides under ).

Target large, dense and/or close-growing plant species (e.g. grasses, sedges and flax) for particularly close inspection.

Shake/tap plants rooted in a growing medium and remove the top layer of soil.

Where translocation has been approved but risks remain high, a pest detection dog trained in the identified risk species (e.g. invasive ants and plague skinks) should also inspect the plants.

#### Storage of inspected plants:

Once plants have been accepted as pest- and pathogen-free, move them into a secure pest-free quarantine room unless they are to be transported to the island immediately.

Store plants elevated off the floor to minimise refugia for pests.

#### Disinfection of plants and soil:

If amphibian chytrid fungus is a risk, application of heat can be used to disinfect some plants. However, excessive temperatures will kill many plants, so contact native frog and plant specialists (see *Resources*) for the most recent information on applicable methods for the situation.

#### Resources:

- Technical Advisor David Havell for specialist information on island revegetation and movement of plants and seeds.
- DOC veterinarian Kate McInnes for information on animal diseases that can be spread during plant movements.
- Intranet Recovery Group page for links to other species specialists: <http://intranet/natural-heritage/recovery-groups/active-group-index/>
- Animal translocation application form (can be used as a guide for plant translocation risk mitigation plans): [DOC-5410274](#)
- Kauri dieback best practice guideline: [DOC-5657687](#)
- Myrtle rust in New Zealand website: <https://www.myrtlerust.org.nz/>
- Guaranteed sterile potting mix can be purchased from Daltons, Hauraki Plains: [www.daltons.co.nz](http://www.daltons.co.nz)
- To access the Best Management Practice Guidelines produced by Nursery Industry Accreditation Scheme, Australia, visit [www.ngia.com.au](http://www.ngia.com.au) or contact DOC mainland biosecurity staff.

### 5.3.10 Interceptions and reporting of interceptions

Objective:	To respond effectively to pest interceptions and to have an auditable record of the frequency, type and circumstance of pest species entering any contained area where pests are controlled for biosecurity purposes.
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This applies to all unexpected pests (including invertebrates and weeds/seeds, not only vertebrate pests) within a controlled area. This does not apply to the expected seeds and organic matter that are routinely removed from e.g. socks during quarantine cleaning and inspection.

#### Process:

Step 1	If an unexpected pest is sighted or captured in a biosecurity facility (or related contained area where pests are controlled for biosecurity purposes e.g. a vessel), halt all activities, seal off the area and make it known to all people present that a pest species has been sighted/captured.
Step 2	Kill/remove the pest immediately if possible.  If in doubt of the species or its origin, preserve the remains in ethanol (no lower than 70% concentration) and arrange further inspection by a specialist.  Immediately remove any obviously contaminated items from the area. Assess the risk that more of the same organism are present.
Step 3	If it is not possible to kill/remove the pest immediately, or it is suspected that there are more pests present, clear the area of people and equipment. Deploy control measures and surveillance tools.
Step 4	If there is uncertainty about how to control the pest, or if the pest control measures taken are not successful, seek advice from an Island Biosecurity Technical Advisor or an Island Biosecurity Senior Ranger (see <i>Resources</i> ).
Step 5	Only open the facility for use when it is certain that all pests have been killed/removed. Have a pest-detection dog inspect the facility before declaring it pest-free.
Step 6	Record all interceptions in the pest management register referred to in <a href="#">task *** Management of animal pests in biosecurity facilities</a> . See <i>Resources</i> for a template.  Keep this register available at all times for audit, and keep old records until such time as a full biosecurity audit is done.  Report all interceptions to an Island Biosecurity Technical Advisor (see <i>Resources</i> ), to update the national interception incidents database.
Step 7	Refresh any pest control tools that were depleted during the interception response.
Step 8	If quarantine processes must continue while a biosecurity facility is out of action owing to pest incursion, then apply the process in task <a href="#">**** When there is no biosecurity facility prior to travel</a> .

Commented [JL42]: Update once finalised

Commented [JL43]: Update number and title when finalised

#### Standards:

1	Biosecurity-compromised facilities or other defended spaces are immediately withdrawn from use until confirmed to be pest-free.
2	No people or goods compromised by pests in a facility or other defended area travel to an island until they are confirmed to be pest-free.
3	Every pest interception is promptly recorded in a readily available register.

### Resources:

- Record of interceptions [DOC-6135450](#)
- Biosecurity Facility Management – examples of pest and pathogen control plan, work schedule, records of actions, tracking issues and resolution (Excel spreadsheets) [DOC-6073287](#)
- Example: Whangarei quarantine store near miss monthly spreadsheet [DOC-5420035](#)
- Who's Who in Island Biosecurity [DOC-5491394](#)
- Pest invasion incident form [DOCDM-53216](#)

**Commented [KV44]:** We can improve upon this spreadsheet

**Commented [AW45R44]:** I have

**Commented [JL46R44]:** Is it the same link?

## 5.4 On-island quarantine

### 5.4.1 On-island quarantine facilities

Objective:	To have facilities and systems in place to maintain quarantine during the process of receiving personnel and goods on the island.
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**Commented [KV47]:** This section covers often visited islands with facilities well, but it's bit of a tall order for those remote islands that don't have regular visits (or even annually). It seems to include or doubles up on whats in 5.4.2.

This covers the preparation of receiving rooms and outdoor areas for the inspection of goods on arrival on a pest-free island. See section [5.4.2 Arrival procedures on islands](#) for details on the inspections themselves.

**Commented [JL48]:** Update once finalised

#### Process:

Step 1	<p>The Operations Manager appoints at least one staff member with the authority to ensure that the standards are met. They are responsible for ensuring that:</p> <ul style="list-style-type: none"> <li>• On-island quarantine facilities are maintained in good order.</li> <li>• Serviceable cleaning and pest control equipment is available at all times.</li> <li>• Quarantine processes are followed by all those accessing the island.</li> <li>• Actual and potential breaches of quarantine are remedied immediately and do not compromise facility function.</li> <li>• The register of on-island quarantine actions is maintained.</li> </ul>
Step 2	<p>Set up a quarantine receiving room and/or a designated outdoors inspection area, as per the <i>Specifications</i> below. An outdoors inspection area is necessary when there are no buildings on an island, or when over-sized goods are brought to the island.</p> <p>Clearly identify these areas to all users.</p>
Step 3	<p>Plan in advance how to respond if a pest is found during inspection within the receiving room or outdoors inspection area.</p> <p>Ensure all pest control devices required (see <i>Specifications</i>) are readily available, including when the receiving room is sealed.</p>
Step 4	<p>Create a register for on-island quarantine actions, including the date, the person and the action taken (e.g. cleaning, quarantine tool checking/refreshment, repairs and pest interceptions; see <i>Resources</i> for template).</p> <p>Make this register easily accessible to users and auditors.</p>
Step 5	<p>Create a system whereby every user of on-island quarantine facilities informs the person responsible for their maintenance of any supplies that need refreshing e.g. insecticide sprays.</p>
Step 6	<p>Immediately prior to receiving personnel and goods:</p> <ul style="list-style-type: none"> <li>• Ensure the receiving room is clean and as empty as possible. If using an outdoors area, ensure it is open and clear of clutter.</li> </ul>

	<ul style="list-style-type: none"> <li>• Check all sentinel and pest control tools are in place and functional. Refresh where necessary.</li> <li>• Record any actions in the register.</li> </ul>
Step 7	Inspect on-island quarantine facilities annually as per <i>Specifications</i> below and record actions taken in the register.

### Standards:

1	All islands with buildings of any kind have a suitable receiving room. All islands without buildings have a designated outdoors inspection area.
2	All islands are equipped with the means to dispatch or contain stowaway pests.
3	Receiving rooms/inspection areas are large enough and have sufficient equipment to process all the visitors and goods arriving on the island quickly and efficiently.
4	The on-island quarantine register is kept up to date with all actions, including cleaning, pest control tool checking/refreshment, repairs and interceptions.

### Specifications:

#### Points of first arrival

Process all incoming people and goods centrally at a single designated first point of arrival at an island. If this is not possible, then every location around the island that could potentially be a point of first arrival should have a pest-proof receiving room or a designated outdoors inspection area.

#### Receiving room design

The following receiving room options are ranked in order of acceptability:

1. A dedicated receiving room that is used solely for quarantine purposes.
2. A fully sealable multi-purpose room.
3. A non-sealable multi-purpose room within a fully sealable building.

Having a dedicated receiving room is recommended. Making the entire building sealable against pests is more difficult to achieve and removes the possibility of using the building as an indicator site for invading pests (buildings are generally attractive sites to pests).

Best practice for a receiving room:

- Is invertebrate-proof when entrances/exits are closed.
- Is external to the main hut or living quarters.
- Is as close as is practical to the arrival point.
- Has a sealed, easily cleaned, floor. Intact well-adhered wall-to-wall linoleum or painted concrete is recommended.
- Is not used for other purposes e.g. storage or overflow accommodation.
- Has adequate ventilation to avoid hasty inspections. All ventilation points are invertebrate-proof.
- Is well-lit.

**Commented [KV49]:** Not always possible

**Commented [JL50]:** Check once AW's mainland biosecurity facility section is finalised whether or not this is a standard, and delete/keep this one to match.

**Commented [AW51R50]:** My plan is to make a template that can either be used for interceptions just at one location or combined locations together. If they use a paper version it will have to be one for each location of course.

**Commented [KV52R50]:** Not sure this is a standard. It applies more to those islands that do have receiving rooms, it's not going to apply to the Subs for example.

**Commented [KV53]:** That's a big ask, the majority of islands don't. If they land at different locations i.e. Rangitira or Mangere, they should still go through the one central area.

### Receiving room pest control and surveillance

These pest control/surveillance tools are recommended at a minimum:

- Two mouse traps, in the corners or along the walls.
- One rat trap and/or rodent bait station.
- One tracking tunnel.
- At least one kickboard (plywood hinged so that it swings horizontally to a wall at floor level. A rodent entering the gap can be killed by kicking it closed).
- One can of insecticide spray.
- Two fresh insect sticky traps (not rodent glue-boards) in covers.

All control and surveillance devices should be checked on arrival, and the traps set before an inspection begins.

### Receiving room cleaning and inspections

Rubbish should not be left around the room's entrances and exits at any time.

Receiving room cleaning equipment should be labelled as such and used exclusively in the receiving room. At a minimum, this is:

- Floor broom, brush and pan
- Scrubbing brush
- Bucket
- Mop
- Disinfectant e.g. [SteriGENE](#)
- A vacuum cleaner is recommended where power is available
- Plastic bags (to collect any transit debris)
- Plastic containers and ethanol (at least 70% concentration; to preserve any collected pest remains)

The receiving room should be thoroughly inspected at least annually. This includes:

- Taking out all easily removable items from the receiving room and checking the entire room for any gaps, damage and pest sign.
- Inspecting pest control devices and replacing where necessary.
- Identifying any issues that cannot be immediately addressed using on-island resources and planning for their resolution on the next island visit.
- Recording any actions taken in the register.

**Commented [KV54]:** Where possible. Not all islands are visited annually.

### Outdoors inspection area

Preparing a dedicated outdoors inspection area is necessary if there is no receiving room or building, and/or over-sized goods are brought to the island that cannot be processed through a receiving room.

Best practice for an outdoors inspection area:

- Is clearly identified and known to all users.
- Is as close as is practical to the arrival point on the island.
- The surface is as easily cleaned and inspected as possible, ideally a concrete pad. Where this is not feasible, gravel is kept vegetation-free, grass is kept short, and a clean, intact, tarpaulin is put down under items being inspected where this is feasible.
- Is large enough that there is a stretch of open ground of at least a few metres between the items being inspected and the nearest cover. This increases the likelihood of identifying any pest that escapes during inspection.
- Is inspected regularly for weeds, and any weeds found are eliminated.
- Is kept clear of clutter and items that could act as refugia for pests.

#### **Resources:**

- Record of interceptions: [DOC-6135450](#)
- Biosecurity Facility Management – examples of pest and pathogen control plan, work schedule, records of actions, tracking issues and resolution (Excel spreadsheets): [DOC-6073287](#)
- Who's Who in Island Biosecurity: [DOC-5491394](#)



## 5.4.2 Arrival procedures on islands

Objective:	To intercept pest organisms that have been missed during pre-departure quarantine on the mainland or picked up in transit.
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This covers procedures at the time of people and goods arriving at an island. See section [5.4.1 On-island quarantine facilities](#) for the prior preparation of receiving rooms and outdoor inspection areas.

### Process:

Step 1	Assign a specific person the responsibility for the completion and integrity of post-arrival quarantine actions.
Step 2	If the island has no receiving room, put in place alternative measures to minimise quarantine risks. A recommended measure is to prohibit the opening of inspected personal bags and other goods onboard the transport.
Step 3	Prior to disembarking, inform all visitors clearly of the importance of the final inspection. All visitors and goods must proceed directly to the designated inspection area, bags/containers remaining sealed.
Step 4	Be vigilant when unloading the transport, with a designated person keeping watch for pests coming ashore.
Step 5	If quarantine is being done to pathogen standard and the vessel itself is a potential source of pathogen contamination, clean footwear and the bases of bags/containers with a 1:50 dilution of <a href="#">SteriGENE</a> (in a spray bottle or tray for boots) immediately prior to disembarking on the island.
Step 6	Where possible, inspect any over-sized items on-board the transport prior to unloading. This is particularly important if the vessel has stopped at intermediate destinations, or taken on uncontrolled freight. If this is not possible, inspect over-sized items immediately at the designated outdoors inspection area.

**Commented [JL55]:** Update once finalised

**Commented [AW56]:** Note that in the Inspection section it talks about if personal gear is required during travel (eg if more than 2 hrs travel time might require access to extra clothes, water, sunscreen, snack, lunch) minimise number of containers for this gear and these containers are not required to be sealed with fridge tape or cable ties.

### If there is no receiving room, follow steps 7-9:

Step 7	Inspect personal bags and goods in a designated outdoors inspection area immediately upon arrival, being vigilant for any pests.
Step 8	If a pest is found during the inspection, dispatch it immediately. If it escapes, record in detail what was seen to inform the incursion response. Report all pests found to the person responsible for post-arrival quarantine, who will initiate an incursion response if necessary.
Step 9	Record any interceptions and cleaning or other actions taken in the on-island quarantine register (see <i>Resources</i> for template). Report all interceptions to an Island Biosecurity Technical Advisor (see <i>Resources</i> ), to update the national interception incidents database.

**Commented [AW57]:** It's either called incursion or invasion database. Question requiring Karen's chairperson vote – the distinction between an interception and an incursion. To me An incursion does have to be reported nationally using the Pest Invasion Form. An interception is recorded locally. Question for Karen: When exactly is the switch from an interception to an incursion. If the pest is in the receiving room it's just before the last barrier to the island ecosystem.

**Commented [JL58R57]:** Officially it is the Island Invasion Incidents Database – but if we call it that here then it doesn't sound like the right thing to report an interception to. If we have a separate tab in the database for interceptions then we can call it something different (e.g. Interceptions Database) so that it doesn't confuse people.

**Commented [KV59R57]:** See my comment in definitions. If something is detected in the receiving room/outdoors checking area it's an interception. Beyond that the pest is in the wild and it's an incursion.

### If there is a receiving room, follow steps 10-13:

Step 10	Take people and goods into the receiving room and seal it, with no doors, windows or other entrances opened until inspection is complete.
Step 11	Open all bags, containers and wrapped items, and inspect the contents for pests or contamination before use or repacking. Contain and/or dispatch any pest discovered, and report it to the person responsible for post-arrival quarantine.
Step 12	If a pest is running free within the receiving room, cease all activities and keep the room sealed until the pest is located and dispatched using the available pest control tools.
Step 13	Once inspection is complete, clear the receiving room of items and rubbish, clean it to standard and check/refresh control devices as necessary. Record any interceptions and cleaning or other actions taken in the on-island quarantine register (see <i>Resources</i> for template). Report all interceptions to an Island Biosecurity Technical Advisor (see <i>Resources</i> ), to update the national interception incidents database.

**Standards:**

1	All personnel and goods are inspected immediately on arrival at an island, regardless of the length of stay ashore. Any goods that are contaminated beyond immediate remedy are rejected and returned to the mainland.
2	A specific person is assigned the responsibility for the completion and integrity of post-arrival quarantine actions.
3	The on-island quarantine register is kept up to date with all actions, including cleaning, pest control tool checking/refreshment, repairs and interceptions.

**Commented [JL60]:** Keep as a standard if it ends up being a standard for AW's section on mainland qx store maintenance

**Resources:**

- Record of interceptions: [DOC-6135450](#)
- Biosecurity Facility Management – examples of pest and pathogen control plan, work schedule, records of actions, tracking issues and resolution (Excel spreadsheets): [DOC-6073287](#)
- Who's Who in Island Biosecurity: [DOC-5491394](#)

### 5.4.3 Reverse quarantine and inter-island quarantine

Objective:	To prevent the transferral of pests, pathogens and native species between islands and from islands back to the mainland.
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This applies to all trips between islands and from islands to the mainland. See also the sections in 5.3 *Quarantine procedures* that apply specifically to the type of goods being transported.

#### Process for inter-island quarantine:

Step 1	<p>When planning inter-island trips:</p> <p>Where possible, plan for islands to be visited in order of decreasing sensitivity, i.e. visit pest- and pathogen-free islands first.</p> <p>Prohibit travel between islands where risk of pathogen transferral is high (e.g. from an island with chytrid-infected frogs to an island where frogs are chytrid-free), unless it is certain that full pathogen-level cleaning can be achieved.</p>
Step 2	<p>For pathogen-standard islands, where possible have separate sets of equipment and personal gear for each island that are kept on the island and not used elsewhere. In particular, equipment used to handle wildlife should not be moved between islands.</p> <p>Where it is not possible to have a full set of gear dedicated to the pathogen-standard island only, all gear being taken to it, including outer clothing and footwear, must be disinfected with SteriGENE and dried before moving between islands (see <i>Specifications</i> in 5.3.2 <i>Decontamination and checking of gear</i> for details).</p>
Step 3	<p>Before leaving an island for another:</p> <p>Sort any rubbish for disposal (e.g. recyclable, non-recyclable, compostable) and put into sealed bags within sturdy containers. Do not take onto another island.</p>
Step 4	<p>Check all gear is free of plants, seeds, animals, other organic matter and soil, before packing gear into sealed containers that have been cleaned with a 1:50 dilution of SteriGENE, or covering with new packaging for the trip.</p> <p>If heading to a pathogen-standard island, gear being taken must also be disinfected and dried (see step 2)</p>
Step 5	<p>Immediately prior to departure check that clothing and footwear being worn by all personnel is free of plants, seeds, animals, other organic matter and soil.</p>
Step 6	<p>On reaching the next island:</p> <p>Be vigilant when loading and unloading the transport. Ideally have a designated person keep watch for pests coming ashore or onto the transport.</p>
Step 7	<p>Do not open sealed containers until within the receiving room or in the designated inspection area.</p> <p>Inspect goods that were not within sealed containers in transit for stowaways immediately following their unloading.</p>

Commented [JL61]: Update once finalised

### Process for reverse quarantine when returning to the mainland:

Step 1	<p>Assess the risk of transferring pests and/or pathogens known to be on the island that are not wanted on the mainland.</p> <p>If the risk is high (i.e. pests/pathogens such as myrtle rust or invasive ants are on the island but not at the mainland destination) then cleaning, inspection and protection during transport must be as thorough as when heading to a pest-free island (see the relevant sections in <a href="#">5.3 Quarantine procedures</a> for details).</p> <p>If the risk is low (i.e. no known pests/pathogens are on the island that are not at the mainland destination) then cleaning and inspection can be more cursory.</p>
Step 2	Clean, inspect and pack all gear, and check that clothing and footwear being worn by all personnel is free of plants, seeds, animals, other organic matter and soil, to the degree of thoroughness decided on in step 1.
Step 3	<p>Unpack gear within a mainland biosecurity facility.</p> <p>Inspect goods that were not within sealed containers in transit for stowaways immediately following their unloading.</p>

Commented [JL62]: Update once finalised

### Standards for pathogen-standard inter-island quarantine:

1	Travel between islands where risk of pathogen transferral is high is prohibited unless it is certain that full pathogen-level cleaning can be achieved.
2	All goods and containers, as well as the clothing and footwear of personnel, are clean to pathogen standard before travelling from one island to another.
3	All goods are protected from recontamination by pests and pathogens while in transit.
4	Vessels or aircraft used for inter-island transport meet the standards in section <a href="#">5.3.5 Transport management</a> .

Commented [JL63]: Update once finalised

### Standards for visible pest-standard inter-island quarantine:

1	All goods, as well as the outer clothing and footwear of personnel, are clean to visible pest standard before travelling from one island to another.
2	All goods are protected from recontamination by pests while in transit.
3	Vessels or aircraft used for inter-island transport meet the standards in section <a href="#">5.3.5 Transport management</a> .

Commented [JL64]: Update once finalised

### Standards for reverse quarantine when returning to the mainland:

- 1 All goods and the clothing and footwear of personnel are clean to the standard required, and protected from recontamination while in transit, according to the level of risk of transferring pests and/or pathogens from the island to the mainland.

**Resources:**

DRAFT

#### 5.4.4 On-island hygiene

Objective:	<ul style="list-style-type: none"> <li>To prevent wastes generated on the island from contaminating ecosystems with pathogens or weeds or assisting colonisation.</li> </ul>
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#### Process:

Step 1	Your island biosecurity plan will identify which goods are prohibited from an island or islands. Make yourself familiar with this list and any other risks associated with food, human and weed waste.
Step 2	Ensure personnel travelling to islands, rangers buying island supplies, and rangers doing inspections receive the information on island-specific requirements regarding banned goods.
Step 3	Determine the bio-safe methods of disposal and create a simple waste plan (if it doesn't already exist).
Step 4	Provide enough waste containers and ensure there are signs on all containers to indicate the type of waste to be placed within.
Step 5	Ensure there are waste management instructions visible to visitors at the island base.
Step 6	Return inorganic waste to the mainland regularly, to prevent impenetrable piles where rodents can evade detection and capture.

#### Standards:

1	Every island has a plan for waste disposal
2	Instructions on how to dispose of the various types of waste, in accordance with the plan, are visible to all island visitors at the island base.
3	Where there is no island base, waste management in accordance with the island biosecurity plan is part of expedition planning and all participants are briefed.

#### Specifications

Waste management options are dependent on many island-specific factors. It's not possible to be prescriptive here. Considerations include:

- Germination and pathogen risk is climate dependent. Kermadec islands have greater risks than Sub-Antarctic islands.
- Disposal of compostable waste at sea is not allowed within marine reserve boundaries and is not appropriate in areas of high human population such as the Hauraki Gulf.
- Islands with resident rangers, a power system, and regular transport to and from island, have more waste disposal options than islands without.
- Island sewage systems (e.g. none, simple pit toilets, composting toilets, pumpable holding tanks with sewage removed from island, in ground sewage treatment systems) determine how human waste generated in the field is managed when brought back to base.

### Equipment and materials for island waste management

Compostable bags and rigid containers issued to field personnel so that food waste and human waste can be brought back to base easily and is still compostable.

Sealable containers for waste to be removed from island. Signs on all containers to indicate the type of waste to be placed within.

Freezers - Where islands have resident rangers and power, it's normal to use a freezer to hold meat wastes until removal from the island.

Incinerator – for burning waste while minimising fire risk

Enclosed composting bins or pits

**Commented [KV65]:** Needs clarification. Are you talking individuals poo bags (these are the exception) or sewage systems?

### Where island ecosystems are managed to pathogen standard

Options for food waste (in order of risk prevention) include:

- removal of food waste from island, sealed in bags and placed inside robust sealed containers (most preferred)
- heat treated (i.e. boiled or otherwise cooked) before composting within a container or deep pit.
- burned in an incinerator
- composted within a container or deep pit.

**Commented [KV66]:** How many islands have incinerators? How many islands allow fires? May be applicable only to a very few islands e.g. Urupukapuka, Motutapu, Matiu.

### Where island ecosystems are managed to maintain the value of their indigenous plant communities,

- Human faeces and food waste as for pathogen management
- Any weed waste generated is managed to prevent inadvertent spread of weeds. Methods may include:
  - cooking or burning,
  - a deep composting pit with a light excluding lid,
  - double bagging and sealing, within light-excluding heavy-duty plastic bags,
  - composting in Tradescantia bags - large (bivvy bag size) sacks made of black weed cloth, sealed to exclude light.
  - rotting in sealed barrels containing water (wild ginger barrels)
  - permanently covering sites with heavy duty black plastic for the life of the seed or spore bank (may be decades).

**Commented [KV67]:** The exception, not the rule.

### Resources:

For an example of plant viruses that threaten a native species and can be transmitted from food waste see [Mosaic viruses](#).

## Related documents

List all documents related to your guideline here and provide links.

### Including:

- Supporting technical documentation.
- Any forms referenced in the document.
- Any related policies, SOPs and guidelines.

## 6 Document history

Date	Details	Document ID and version	Amended by
DD/MM/20YY	e.g. first version of document published	doc-xxxxxxx revision #	
DD/MM/20YY	e.g. annual check – minor amendments		
DD/MM/20YY			
DD/MM/20YY			

## 7 Documents replaced

This guideline replaces the following documents which have been revoked:

- Island biosecurity best practice manual [DOCDM-20171](#)