GUIDELINES ON

BIOSECURITY

PURPOSE

- These Guidelines are to be used by Project Managers conducting rodent and cat eradication projects based on the PII Resource Kit for Rodent and Cat Eradication.
- The Guidelines cover advice on planning and implementing biosecurity for the island.

1 INTRODUCTION

- The purpose of biosecurity is to:
    - Keep the island free of the target species you have eradicated
    - Keep the island free of new invasive species
    - Prevent the export of invasive species from the island to other islands.
- Biosecurity activities involve prevention, surveillance and management of incursions of invasive species.

2 IDENTIFYING THE RISKS

2.1 THE RISK SPECIES

- Concentrate on identifying the species that are the greatest risk to the island. With limited resources it may not be possible to address all possible biosecurity threats, so effort should be directed where it is most needed. The key is to identify those threats that pose the most severe risk to the values of the island.
- Consider the risk posed by invasive species that is being targeted in the eradication if they were to re-invade after the operation, and those that are not currently on the island but are on neighbouring islands.
- Confirm the species of rodents present on surrounding islands. Different species have different swimming strengths and this is important information in determining the risk from potential sources and their proximity to the island being restored. Refer to the Guideline on Rodent Identification for visual characteristics of species.
- Use DNA sampling to confirm exact rodent species of the population on the island and surrounding islands. This can give a useful guide to previous invasion sources and hence possible reinvasion risks (as well as confirming the source(s) of any future invasion(s)).
- Consult widely with the local communities when researching the biosecurity risks to the island. Local communities are a great source of information on species present on the island and on surrounding islands. It is also an effective way to find out what the local community perceives as the high risk invasive species.
- Invasive species that are a common problem in the Pacific include:
    - Rodents
    - Cats
    - Weeds

- Snails
- Reptiles: snakes, geckos, lizards and frogs
- Ants

- Information on these invasive species can be found on the Global Invasive Species Database. See the Resource Kit Further Information Section.

2.2 THE PATHWAYS

2.2.1 HUMAN-ASSISTED PATHWAYS

- In the Pacific, the main pathways are those used by people, such as different types of boats travelling between the islands.

- When identifying pathways, consider illegal activity – as they are uncontrolled they can be significant pathways.

- Some example human-assisted pathways

Pathway	Activity
Small boats	Fishing
	Transport and movement between islands
	Harvesting of local resources (legal and illegal)
	Tourism
Commercial boats	Cargo
	Ferries
	Fishing fleets
	Tourism
All types of boats	Ship wrecks
Research Organization	Research
Government	Fisheries inspection, military, customs, police
Commercial aircraft	Cargo
	Passenger and tourism
Government aircraft	Fisheries inspection, military, customs, police
Private aircraft	Tourism

2.2.2 NATURAL PATHWAYS

- In the Pacific, a rodent swimming from a nearby island is the most common natural pathway.

- Rodents have been known to swim many hundreds of metres between islands. How far an invader can swim will depend on: species, water temperature, currents, wave conditions, marine predators etc.
- As a guide, in New Zealand conditions, the distances between islands that present an acceptable level of risk and are considered able to be managed by surveillance and response techniques are :
    - Mouse - 100m
    - Pacific Rat - 100m
    - Black rat - 600m
    - Brown rat - 1500m
- An island separated from islands containing invasive species by distances less than those above will be under significant risk from natural re-invasion.
- Cats, in general, do not like swimming and have not been known to invade islands more than 100 m offshore under their own steam. Feral cat populations on islands further offshore are almost certainly the result of intentional human introductions as domestic pets.
- Other, non-swimming natural pathways are rare and unpredictable ways of invasion.
- Some examples of natural pathways:

Pathway	Invasive Species
Swimming	Rodents
Driftwood	Mongoose
Carried by birds	Weed seeds
Carried by storm winds	Invasive birds

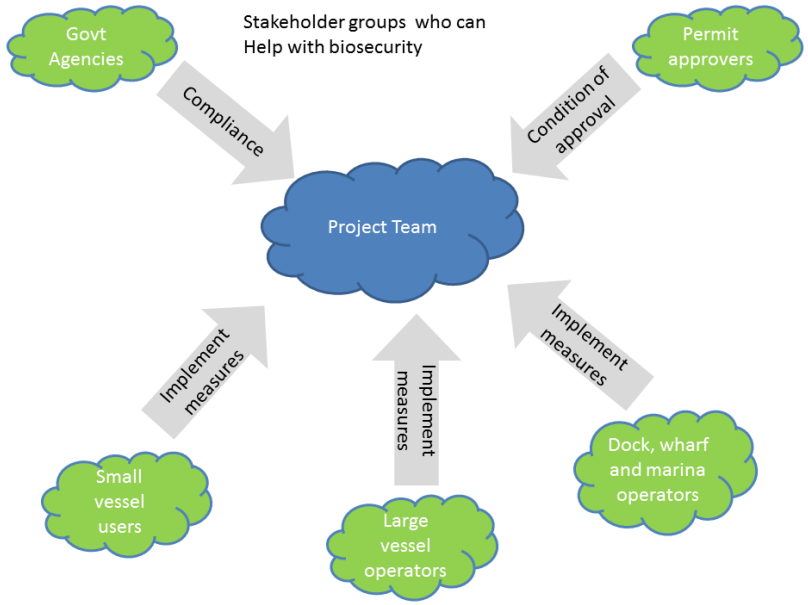
3 PREVENTION

3.1 PREVENTION STRATEGY

- The principle of prevention is to place multiple barriers along the pathways of introduction to reduce the movement of invasive species onto the island in question.
- Prevention actions include:
    - Placing multi barriers in the way of invasive species getting onto vessels.
    - Frequent inspection of all items loaded onto (or off) each vessel.
    - Placing multi barriers in the way of invasive species getting off vessels.
- As many stakeholders as possible need to be convinced to implement prevention measures, including the vessel operators.

- There are a number of different stakeholders that can help the project team in ensuring biosecurity prevention measures are widely implemented.

- Types of stakeholders relevant to biosecurity prevention are shown below:



Stakeholders	Explanation	Their role in biosecurity prevention
Small vessel users, e.g. the community, tourists, local fisherman	The public that use small vessels to travel between islands. The project team have direct access to the captain/user of the vessel. There could be a large number of these.	Implement measures.
Large vessel operators, e.g. cargo ships, tourist passenger boats, Government vessels.	Larger vessels owned by companies. Implementing measures would need approval by owner as well as captain.	Implement measures.
Dock, marina and wharf operators	Organizations that run the infrastructure at departure and arrival points.	Implement measures.
Aircraft operators	Organizations and people responsible for the loading, unloading and operating of	Implement measures.

	aircraft.	
Airport operators	Organizations and people responsible for the running of runways and airports	Implement measures.
Access approvers, e.g. landowners, Departments of conservation	Organizations and people who approve access to the island.	Make implementing measures condition of access approval.
Government Agencies, e.g. Ministry of Fisheries, Police Force, Quarantine Department	Statutory bodies that are responsible for ensuring regulatory compliance.	Ensure compliance of regulations.

- For operators of vessels (large and small) and docks, marinas etc., the project team need to convince them to implement a set of prevention measures specific to the risks and pathways you have identified in section 2.
- For access approvers and Government Agencies, the project team needs to convince them to make the implementation of relevant prevention measures conditions of access to the island.
- The relevant prevention measures will depend on the risk species and pathways identified (see Section 2)
- When engaging with stakeholders emphasise the benefits to them of an invasive-free island and the role of biosecurity in achieving it.
- Focus your effort on boats that frequently visit the island.
- Pay close attention to boats that come from islands that have high risk invasive species.
- Keep the instructions to boat users simple. People will soon stop doing difficult or time consuming measures.
- When engaging with stakeholders remember you will need to:
    - Inform. You will probably have to explain the background of the threat of invasive species and the need for biosecurity measures.
    - Motivate. If it is going to take effort on their part, people need to understand the importance of the actions and how they will benefit from the results of the actions.
    - Equip. Provide people with the knowledge and tools to carry out the measures. Instructions will need to be simple, easy to follow and not take too much effort. The project team may need to supply some pieces of equipment, such as bait or bait stations.
- See the Resource Kit Further Information for example materials.

3.1.1 SMALL VESSELS

- You want to convince as many small vessel operators as possible to adopt relevant prevention measures.
- Follow the steps

  - Identify which prevention measures from Section 3.2 are most appropriate to apply.
  - Design material that communicates what instructions you need boat users to follow.
  - Communicate the instructions to vessel operators.

- Consider using a range of ways of communicating the prevention measures, for example:
  - Placing signs at key departure and arrival points
  - Handing out information leaflets at key departure and arrival points
  - Distributing pamphlets
  - Holding community meetings
  - Placing adverts in newspapers
  - Running radio adverts
- When designing the material, consult with your target audience to ensure your material is easy to understand and relevant to them.

3.1.2 LARGE VESSELS

- For larger commercial and government vessels you will need to seek the approval of the management or owners of the vessel for the captain and crew to implement prevention measures.
- Identify which prevention measures from Section 3.2 are most appropriate to each type of vessel.
- Work collaboratively with the owners and captains of each vessel to agree what measures the vessel operators will implement.
- Consider providing supporting material, training and equipment, e.g. bait stations, to the boat operators. Ensure the project budget covers any expenses.

3.1.3 DOCK, WHARF AND MARINA OPERATORS

- Identify which prevention measures from Section 3.2 would be useful at each place of departure and arrival.
- Work collaboratively with each operator to agree what measures they will implement at their facility.
- Consider providing supporting material, training and equipment, e.g. bait stations. Ensure the project budget covers any expenses.

3.1.4 ACCESS APPROVERS

- An approval process for landing on the island, e.g. a protected conservation area, provides an opportunity for making the implementation of prevention measures a condition of access.
- Identify which prevention measures from Section 3.2 would be most useful and would be able to be made part of an approval application.
- Consult with the people or organization authorized to approve access and work to have them make the implementation of the measures a condition of approval to access the island.

3.2 PREVENTION MEASURES

- Reducing the frequency of vessels travelling to the island will reduce the likelihood of an incursion.
- Focus effort on detecting and stopping the highest risk invasive species (as determined in section 2.1).
- When planning to visit a number of islands. Visit the islands that are invasive-free (or have less chance of invasive species escaping onto your vessel) before visiting islands with invasive species. Visiting islands in order of least risk decreases the chances of you transporting invasives from invaded islands to invasive-free islands.

3.2.1 ON SHORE (BEFORE TRAVELLING TO THE ISLAND)

- For canoes and small boats that are brought ashore ensure they are stored away from food and known locations of invasive species. This reduces the risk of invasive species stowing away when boats are left unattended.
- When not in use remove anything that could attract invasive species, e.g. food, freshwater, fishing remains, rubbish, from boats. This reduces the risk of invasive species stowing away when boats are left unattended.
- Clean all equipment and clothing before packing. This reduces the risk of carrying weeds, seeds, insects etc. onto the boat.
- Clean footwear of any soil and mud. Insects and seeds often stowaway on them. Many disease-causing fungi and bacteria are carried in soil
- Transport and store all food and supplies in sealed water tight containers. Food in any open containers attracts rodents – smell is a key food trigger. Once they find the source they will chew through packaging. Water tight also means “insect tight” and it will save your gear if it accidentally goes for a swim overboard
- Avoid use of cardboard boxes, tramping packs for transportation etc. Rodents can easily gain access by chewing through. Use plastic boxes, dry bags: containers that cannot be chewed through and that can be sealed.
- The loading area where any luggage and containers etc. are packed should be clean, tidy, well lit and rodent-proof. This will reduce the risk of invasive species getting into the containers during loading.

- When making containers or rooms rodent-proof seal all holes with material that rodent cannot chew through, e.g. steel wool. Rats can get through holes as small as 12 mm; mice can get through holes as small as 6 mm.
- Educate passengers and crews on how to avoid bringing invasive species aboard.
- All passengers should search for invasive species when packing their personal luggage.
- Luggage and containers must be sealed once packed. Invasive species are difficult to detect if they are able to get into unattended containers.
- Wharfs, docks and marinas should be kept clean and free of food and rubbish. Reducing food sources will reduce the size of a resident population.
- Implement invasive species control (such as bait stations, traps, etc) at wharfs, docks and marinas. Smaller populations will reduce the chance of invasive species getting aboard vessels.
- Search all risk cargo (soil, timber, and food supplies) prior to loading. This is particularly relevant for bulk shipments which are normally consolidated in a warehouse before being loaded. Ideally everything should be in the warehouse a minimum of 24 hours before loading and alternatively everything could be held on the ship for as long as possible for departure with bait stations or traps baited and set. Consider any space a rodent could hide in or any item it might be attracted to – they need to be checked prior to departure.
- Light up gangways and ramps at night in docks, wharfs and marinas. The light will discourage nocturnal rodents.

3.2.2 ON THE BOAT (DURING TRANSIT)

- When visiting more than one island, visit the invasive-free ones first. This will minimize the risk of moving invasive species between islands.
- Check the boat for signs of invasive species before you load the boat.
- Implement control methods, e.g. bait stations, on larger boats. This will help kill any invasive species that evade onshore measures.
- Keep boats clean, tidy and free of food and rubbish. This reduces the places to hide and the food supply for invasive species.
- Educate passengers and crews on how to detect invasive species and what to do if they find any.
- If a rodent is discovered do not throw it over board alive– rodents are good swimmers. Humanely dispatch of any caught invasive species. Search the boat for sign of further rodents before reaching the island (or turn back to the port of departure, if possible, for a thorough search).
- When tying up in port, look for ways rats could board or escape from your boat, and take steps to stop them.

- For boats moored on buoys or anchor (i.e. around villages) position the mooring so boat remains in the water at low tide, fix mooring hoods to mooring line (where possible use a fixed mooring instead of an anchor), ensure nothing is suspended over the side of the boat, moor boat in areas free from shore-based rubbish and other food sources or concentrated rodent habitat.
- Larger ships should use line guards on ship-to-shore lines to stop rodents using mooring lines to get on and off the ship.
- Do not run mooring lines ashore unless you absolutely need too.
- Do not land at night, unless you absolutely need too - rats are more active at night.

3.2.3 AT THE ISLAND

- Only unload what must be unloaded. The less taken off, the less chance of transporting invasive species onto the island.
- Before unloading at the island, all packed gear should be thoroughly inspected for sign of rodent exposure (chews marks, gnawed holes, etc).
- Unpack containers, luggage and cargo in enclosed, well lit, tidy areas. This will allow easy detection and capture of any invasive species that do escape. The more secure the area the easier to stop the invasive species escaping onto the island.
- When leaving, remove all rubbish from the island. Rubbish provides a great food source to many invasive species.
- All food waste, particularly fruit and vegetables, must be collected and removed from the island.
- Do not remove anything from the island that could contain invasive species.
- Apply the 'On shore' measures to ensure you do not export invasive species from the island

4 SURVEILLANCE

4.1 RODENTS

- Surveillance should start straight after the eradication operation is complete i.e. as soon as all evidence of rodents taking bait has gone (usually 2 to 3 weeks after the last bait has been distributed in aerial or hand-broadcast operations or any time after the last bait has been taken from bait stations).
- See the Guidelines on Rodent Surveillance Techniques for the details of the techniques.

Accessible Islands

For islands that are close enough to be visited often:

- Deploy a permanent network of traps/tracking tunnels/bait stations.
- Use GPS to record the location of all devices.
- If the island is sufficiently small, deploy the detection devices (1 or 2 per hectare) across the entire island.
- For larger islands, deploy detection devices as widely as possible while ensuring a range of habitats is covered.
- Consider non-target risks when using tunnels (e.g. seabirds).
- The detection devices should be kept well maintained to a high standard and serviced with regular visits.
- Service the traps/tracking tunnels/bait stations at least every 3 months – more frequently is better if distance and resources allow.
- On each visit, put out fresh tracking cards and wax tags for 7-10 days each time
- On each visit, supplement the permanent surveillance with visual surveillance techniques.

Remote islands

For islands that are rarely visited**:**

- Deploy a network of (empty) wooden trap tunnels which can be used for trapping, baiting or tracking cards. This will familiarize rodents with the tunnels so they will enter them when you later lay bait in them. Use 10-20 tracking tunnels – depending on the size of the island. A minimum of 100m spacing (doesn't have to be a strict grid, put them on most likely sites
- Use GPS to record the location of all devices.
- When visiting the island, use the established network of wooden tracking tunnels for 5 nights or longer. Check after the first few nights and regularly thereafter for the duration of the trip. This allows for the possibility of detecting something early enough to allow a response to be planned before the pick-up transport leaves port.
- Also deploy a network of wax tags with 15% peanut butter flavour incorporated into the wax for further surveillance.
- Consider non-target risks when using tunnels (eg. seabirds).
- On each visit, supplement the permanent surveillance with visual surveillance techniques.

4.2 CATS

- Surveillance for cats should start straight after the eradication operation is complete i.e. as soon as all evidence of cats has gone.
- See the Guidelines on Cat Eradication and Monitoring Techniques for details of the techniques.

- Surveillance should occur on six-monthly visits to the island.
- Use a wide range of surveillance techniques (see Guidelines on Cat Eradication and Monitoring Techniques) to survey the whole island looking for evidence of cats.
- The duration of each trip will depend on the size and nature (terrain and vegetation) of the island. Small islands with mainly sandy cover (good evidence of paw prints) can be surveyed within a day, while the larger islands with dense vegetation can take many days, if not weeks, to completely survey.

4.3 OTHER INVASIVE SPECIES

- Surveillance should start as soon as possible. There is no need to wait for the eradication operation to be completed.
- Each invasive species will require specialized surveillance techniques – seek advice from experts on specific species.

4.4 VISITOR PARTICIPATION

- Utilise visitors to the island as part of the invasive species surveillance. Encourage all visitors to look out for invasive species. The more people looking, the more likely you are to detect an incursion sooner rather than later.
- You will need to provide visitors with information to tell them what to look out for, how to identify the invasive species, and who to contact if they think they have detected one.
- Confirm all sightings. Be aware: many casual sightings are false alarms.
- Request visitors record as much information as possible on any sightings. Including: the time, the place – as accurately as possible, photographs and a detailed description of what they saw.
- Providing invasive species sighting forms for visitors to complete is a way of making it easy for visitors to report a sighting. Standard format forms are also an effective way of ensuring the correct information is captured. You would need to create a template form.

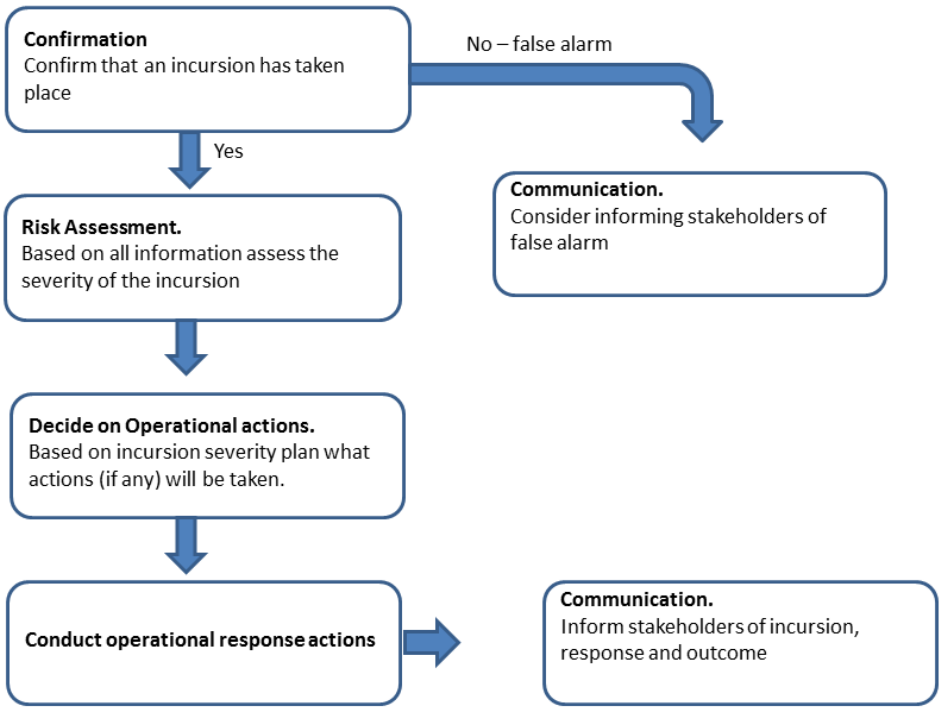
5 INCURSION RESPONSE

- Consider using community members as part of the incursion response team. With local knowledge and a sense of connection to the island, the community will be a great asset to the team.

- If an incursion is confirmed review the biosecurity prevention measures to see if any changes are required to stop further incursions.

5.1 STRATEGY

- The operational response will depend on the exact details of a particular incursion. As there are many different factors that affect a scenario you will NOT be able to pre-emptively create a detailed operational response plan for every likely scenario.
- Response planning should concentrate on preparing a management decision making plan that will help the project manager to make the right decision based on relevant information gathered at the time of the incursion.
- Key parts of a decision making plan are:



- Time is of the essence in responding to incursions - The response should occur as soon as possible, ideally before the invasive has a chance to breed and establish a population (it may be pregnant or there may be more than one animal present).

- The decision management plan will be recorded in the Biosecurity Plan.

5.2 PREPARATION

- An incursion response kit should be put together, and held in storage by the agency responsible for dealing with such events.
- The response kit should include all the equipment that will be required immediately a possible incursion is notified to complete the confirmation and any immediate eradication.
- See Appendices 1 and 2 for examples of what to include in an Incursion Response Kit.
- Assign a person who is to lead the response. This person should have experience in the invasive species, the island and the community in question. They can then plan and delegate tasks as required.

5.3 CONFIRMING THE INCURSION

- Confirm all sightings/evidence of incursions before planning any operational response actions. The information required to confirm the incursion should be recorded in the Biosecurity Plan.
- Also collect any information that will be needed to plan a suitable response.
- If physical evidence (such as fur, captured animal, etc) is found and is of the eradication target species, and you have taken DNA samples from the species on the island before the eradication, use the DNA to establish whether the individual is from the original island population (if so, the operation did not eradicate all target species) or from a population from off the island (if so, it is a new introduction that evaded the biosecurity measures).
- The best method of confirming a rodent incursion is to use a certified rodent detection dog to indicate whether a rodent is present – it should also be able to locate where on the island the rodent is (if the island is small enough). However it is unlikely that such a dog would be available in most instances, so other methods (such as tracking tunnels, etc) need to be available for use.
- If the sighting of the invasive species was made by another person, interview that person as soon as possible (do not rely on second-hand information) and record or write everything down, including when the sighting took place and when the interview took place. Take account of their experience but do not judge a sighting on one experience alone.
- The most important factors are how well they saw it, i.e. how close, how long, what visibility. Ensure the exact location of the sighting is recorded, if necessary take them back to the location. Try to establish other evidence that supports or challenges the story.
- Detail exactly what has been seen (live animal, dead animal, footprints, droppings, etc.), where this occurred, who saw it and who reported it. If possible ask the person to describe exactly what they saw.

- Do not ask leading questions like 'was it brown?' or 'was it this big?' as this can lead to false information. Ask 'open' questions like 'what did you see', 'what colour was it', 'how big was it', 'where did you see it' and 'how long did you observe it for'.

- The reliability of the information is extremely important – if the information is very trustworthy, you can proceed immediately with a response.

- If the information is lacking in some detail or the possible presence of a species cannot yet be confirmed, continue with standard surveillance techniques, and increase these if desired. However, if the island is distant, ensure you take a range of management options with you to use just in case. Be prepared to stay on the island for some time, or allow for replacement personnel after a set period.

5.4 ASSESSING THE RISK

- Based on the information gathered during the confirmation assess the severity of the risk.

- Consider seeking independent expert advice for the decision.

5.5 RESPONSE ACTION OPTIONS

- A response uses many similar techniques to surveillance but the clear aim here is not only to find if any invasive species are present, but to kill or remove them before they breed or do significant harm to native wildlife or plants.

- The level of response can vary enormously, depending on a range of factors, such as the size of the island, the type of invasive species detected, the location and distribution of the sign located, the vulnerability of any native species on the island to the invasive species, whether there are already some invasive species on the island, etc. The best response for each situation is often decided through having gained eradication experience and through knowledge of the particular island. There is no one standard response.

- The best response to a rodent incursion is to use a certified rodent detection dog to indicate where they are. However it is unlikely that such a dog would be available in most instances.

- The next best response is to use a trap/bait station network already in place on the island or where this is not possible, establish a grid of traps and bait stations. Having a network in place reduces the risk of neophobic rats (i.e. afraid of new objects) avoiding newly established traps or stations. However if mice are the target, they may be more prone to investigate new objects.

- A sparse but extensive network covering as much of the island as possible is probably better if a grid has to be established. Try to extend the grid for at least 500m from the site of the sighting or sign that has been detected. One or two devices per hectare targeting preferred habitat is sufficient, but it doesn't need to be an exact grid because invading rodents are likely to travel. Wider spacings between traps can be used for larger rat species, use shorter spacing if mice or Pacific rats are suspected. Cover all major habitat types, but focus on preferred sites and known invasion sites. When targeting mice broadcast bait if possible unless the presence of non-target species that eat bait prevents this. A high density bait station grid for mice has a lower chance of success but can work.

- All traps and bait stations should be numbered and GPS mapped, and their location clearly marked with coloured tape or similar attached to nearby vegetation (do not attach tape to stations as it may deter the pest animals from going near it). Any member of the team should be able to find every trap or bait station site using the number system and the map.

- If in any doubt about the species of invasive species e.g. which species of rodent it is, take photos and keep samples of any evidence found (e.g. animals caught in traps, droppings, damaged bird eggs, etc.) for future reference. Keep any part-eaten baits, fur caught in traps etc. for future reference if needed, to confirm what species may have caused it (and for DNA testing where possible). Use experts to verify the evidence and confirm the species.

- In addition to the grid of bait stations or traps, check for signs in likely areas where the rodents or cats may be attracted to (or even have originated from) e.g. landing sites, wharfs, sheltered buildings, or anywhere with abundant food supplies for the animals (inhabited houses, coconut groves, rubbish dumps, etc.).

- Trapping and/or bait stations should continue for at least 2 weeks after the last sign has been detected and longer if at all possible. Bait stations can be restocked with a more weather-proof type of bait (e.g. waxed blocks rather than pellets) and left for weeks between checks if staff cannot stay on the island. Once there has been a prolonged period with no bait take or captures, the response can be downgraded, and standard surveillance methods should resume.

- For cats, a wider range of methods may be available. Searching for sign may be as effective as setting traps to determine areas where the cat(s) are – refer to surveillance methods in Guidelines on Cat Eradication and Monitoring Techniques. Effective methods include spotlighting at night for eye-shine (particularly effective in open areas such as beaches), looking for footprints in sand, looking for droppings. Once areas frequently used by cats are found, various options are available – shooting, either by ambush or at night using a spotlight (though great care need to be taken and experienced shooters only should be used); cage traps baited with a suitable bait such as fresh fish, chicken, red meat or commercial cat food; or leg-hold (Victor 1 ½ soft-catch) traps with suitable bait.

- If the invasive species has become too well established to undertake localized management measures (i.e. is widely dispersed over the island or very numerous) in some cases the best option may be to abandon any attempt for immediate management and save resources in order to plan for another complete island eradication at a later date. Consult experts for their advice on this.

5.6 COMMUNICATION

- Stakeholders should be informed of the outcome of any possible incursions: whether real or false alarms.

- Communication can be included as part of the routine stakeholder communication.

- For major incursions or false alarms that may receive extensive publicity consider sending out a special communication explaining what has happened.

- Remember - it is important to keep key stakeholders correctly informed of project status at all times.

- It is especially important to tell all stakeholders when the invader has been captured or killed, and the island is once again free of that invasive species. Use this communication as an opportunity to further push the biosecurity prevention messages.

6 APPENDIX 1 – CAT INCURSION RESPONSE KIT CONTENTS

- Example generic contents of an incursion response kit for cat eradications. A basic response kit would expect to contain the list below. Other equipment specific to each project should also be added. The 2nd and 3rd columns can be used to make a check list when putting together the kit.

CAT INCURSION RESPONSE KIT

Item	Number/amount	Included in kit?
REFERENCE INFORMATION		
Biosecurity Plan, Feasibility Plan, Project Plan		
Laminated copies of relevant PII Guidelines (Biosecurity; Rodent Identification; Trapping; Rodent Bait & Baiting; Rodent Surveillance Techniques; Cat Eradication and Monitoring Techniques).		
Laminated Map of island		
List of GPS locations and/or physical description of location of any permanent monitoring devices already established on island		
Species identification material		
Contact details for experts		
RECORD KEEPING		
Water proof notebooks		
Copies of maps for note making		
Pens/pencils		
GPS and spare batteries		
Compass		
Data sheets for traps/tunnels		
Flagging tape (colour coded)		
Vivid marker pens		
Specimen containers (jars, zip lock bags) & labels		
70% ethanol		
Sharp knife or dissecting tools (e.g. scalpel and tweezers)		

Digital camera and spare batteries		
50m tape measure		
DETECTTION		
Spotlight and batteries, and spares or means to recharge batteries		
LED headlamps or personal torches, plus spare batteries		
ERADICATION		
Cage/Live traps		
Fresh baits/lures (red meat, chicken, fresh fish - and/or means to obtain these e.g. fishing line or net)		
Back-up (non-perishable) types of baits/lures (e.g. tinned catfood, tinned fish, vacuum-packed or freeze-dried fish, freeze-dried rodents)		
Leg hold traps		
Toxin or toxic bait		
Firearms (shotgun &/or rifle) and ammunition, cleaning equipment		
Spare plastic bags (zip-lock preferred) for bait, etc.		
SAFETY AND OTHER EQUIPMENT		
Rodent-proof and waterproof containers for all equipment to be packed in.		
Insect spray (either long-lasting broad-spectrum aerosol type or preferably mixable type e.g. Ripcord) and means to apply this. [for use in containers and equipment etc. if invertebrate infestation is discovered or suspected]		
Tools (hammers, spades, pliers, thin wire for tying traps to trees, thicker wire for trap-cover hoops/pegs, etc.)		
Disposable Gloves (for handling baits, traps or dead animals)		
1st Aid kit		
Boat & safety gear		
Nails, staples		
Ropes		
Two means of long-distance communications: Two-way Radio and/or Satellite phone and/or Emergency locator beacons, and spare batteries or means to charge these.		
Fishing lines, etc.		
Personal protective equipment e.g. protective and/or sunglasses, sunscreen, disposable or washable protective clothing (if handling toxins), leather or rubber boots.		
Tent and sleeping equipment		
Food, water and cooking implements		
Generator (and fuel), or solar panel and inverter , or other means to recharge batteries, radios, phones, laptops		

7 APPENDIX 2 – RODENT INCURSION RESPONSE KIT CONTENTS

- Example generic contents of an incursion response kit for rodent eradications. A basic response kit would expect to contain the list below. Other equipment specific to each project should also be added. The 2nd and 3rd columns can be used to make a check list when putting together the kit.

RODENT INCURSION RESPONSE KIT

Item	Number/amount	Included in kit?
REFERENCE INFORMATION		
Biosecurity Plan, Feasibility Plan, Project Plan		
Laminated copies of relevant PII Guidelines (Biosecurity; Rodent Identification; Trapping; Rodent Bait & Baiting; Rodent Surveillance Techniques; Cat Eradication and Monitoring Techniques).		
Laminated Map of island		
List of GPS locations and/or physical description of location of any permanent monitoring devices already established on island		
Species identification material		
Contact details for experts		
RECORD KEEPING		
Water proof notebooks		
Copies of maps for note making		
Pens/pencils		
GPS and spare batteries		
Compass		
Data sheets for traps/tunnels		
Flagging tape (colour coded)		
Vivid marker pens		
Specimen containers (jars, zip lock bags) & labels		
70% ethanol		
Sharp knife or dissecting tools (e.g. scalpel and tweezers)		
Digital camera and spare batteries		
50m tape measure		
DETECTTION		
Tracking tunnels		
Dye and paper for tracking tunnels		
Bait for tracking tunnels (peanut butter/oats, pieces of coconut, etc.)		

Sticky hair tunnels		
Indicator baits, (wax tags, wax candles, soap, coconut pieces, eggs, , chocolate)		
LED headlamps or personal torches, plus spare batteries		
ERADICATION		
Snap traps (mouse and rat-sized), with length of cord for each trap to attach to anchor-point (plus trap covers and pegs if required)		
Fresh baits/lures (red meat, chicken, fresh fish - and/or means to obtain these e.g. fishing line or net)		
Bait stations		
Toxin or toxic bait		
Spare plastic bags (zip-lock preferred) for bait, etc.		
SAFETY AND OTHER EQUIPMENT		
Rodent-proof and waterproof containers for all equipment to be packed in.		
Insect spray (either long-lasting broad-spectrum aerosol type or preferably mixable type e.g. Ripcord) and means to apply this. [for use in containers and equipment etc. if invertebrate infestation is discovered or suspected]		
Tools (hammers, spades, pliers, thin wire for tying traps to trees, thicker wire for trap-cover hoops/pegs, etc.)		
Disposable Gloves (for handling baits, traps or dead animals)		
1st Aid kit		
Boat & safety gear		
Nails, staples		
Ropes		
Two means of long-distance communications: Two-way Radio and/or Satellite phone and/or Emergency locator beacons, and spare batteries or means to charge these.		
Fishing lines, etc.		
Personal protective equipment e.g. protective and/or sunglasses, sunscreen, disposable or washable protective clothing (if handling toxins), leather or rubber boots.		
Tent and sleeping equipment		
Food, water and cooking implements		
Generator (and fuel), or solar panel and inverter , or other means to recharge batteries, radios, phones, laptops		