OPERATIONAL PLAN

Title: Operational Plan for the Eradication of Rats from Far and Away Islands, Republic of Pacifica.

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Version History:

VERSION	DATE	AUTHOR	REASON FOR CHANGE
Version 1	30th September 2010	M. Toa and V. Reed	First complete version for review
Version 2	10th October 2010	M. Toa and V. Reed	Changes made after independent review
Version 3	20th November 2010	V. Reed	Removal of Environment Effect Assessment work as not required by GPA

Citation:

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[NB. This is a fictitious example that is intended for training purposes, based on real islands but with many details altered to present a particular scenario. Be aware that some situations, references and a few names are real, most are not!]

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EXECUTIVE SUMMARY

Explanation: *Summarize the key points of the Operational Plan*

Prompts

- *The executive summary is read by someone who wants to understand the key points of the project but has not time to read the whole Operational Plan*
- *The executive summary should contain enough information to give a team member a high level view of the whole project*
- *Keep the length to less than 1 page*
- *The Executive Summary is usually written last, after the main document is completed*

This Operational Plan for the eradication of Pacific rats (*Rattus exulans)* from Far and Away Islands in the Republic of Pacifica sets out the operational structure and outlines the individual tasks and responsibilities required to implement the field programme and fulfil the goal and objectives of the proposed project.

A number of planning and preparatory tasks will be required to be completed before the fieldwork is able to commence. A task schedule with assigned responsibilities is presented in chronological order as a way of ensuring all required tasks are carried out effectively and at the appropriate time.

The fieldwork will comprise three key stages – the cutting of tracks necessary to establish a grid system for baiting; the capture and transfer to captivity (for subsequent re-release) of 15-25 ground doves and the double application of bait to both islands.

The operation will be led by Vilimau Reed of the Department of National Parks and Conservation (NPC), and team members will be a roughly equal combination of NPC staff and villagers from Magaia village, along with two external experts, an experienced rat eradication technician and an aviculturalist.

Eradication of rats will be attempted using a cereal-based pelleted bait (Pestoff 20R) containing the anticoagulant toxin brodifacoum. This will be spread at a rate of 10kg/ha for the first application and 6kg/ha for the second. Additional quantities of bait will be applied in the coconut plantation on Far Island and on cliff areas on both islands. A total of 2825kg of bait will be ordered for the operation which includes a 20% contingency.

Planning documents and all necessary permits and approvals should be concluded by 5 March 2011 and a final decision to proceed will be made on that date. All work is aimed at enabling the first application of bait to commence on or as soon as possible after 1 July 2011. The second application of bait will commence at least 7 days after the first.

The captive ground doves will be released back onto Far Island when all bait pellets have broken down or been consumed, and there is no appreciable risk to the doves.

Monitoring and biosecurity programmes will be implemented following the conclusion of the baiting operations.

1. INTRODUCTION

Explanation: *Explain the purpose of this document, and set the scene*

Prompts:

- *Include what agency is responsible for the work*
- *Who has funded the work*
- *What is the purpose of the document, ie Provide details of how to eradicate XXXX from Island Y.*
- *The expected audience of the Operational Plan is the eradication team*
- *What documents were used as background information, for example, Project Design, Feasibility Study Report*
- *Include thanks to any people organizations that have provided support/help/advice etc to the preparation*
- *Remove this Help Box when the Operational Plan is complete*

The purpose of this document is to detail the planning and activities to eradicate the Pacific rat from the Far and Away Islands, Republic of Pacifica. The project is funded by Biodiversity International and National Parks and Conservation Department of Republic of Pacifica is the implementing agency. The Windward Marine Protected Area (WMPA) is a project partner and will take the lead in the biosecurity prevention activities (see Sagolo and Reed, 2010). Independent technical reviews of the Operational Plan have been co-ordinated by PII.

This Operational Plan is primarily aimed at the project manager and operational team that will implement the eradication. It details the timeframe, methods, sequence of events and responsibilities for the numerous tasks required to complete the eradication.

A Feasibility Study of the eradication project (Toa and Reed, 2009) concluded that the proposal was both feasible and worthwhile, and would have significant conservation value. It also outlined some issues relating to the project and a basic outline of tasks required to ensure a successful completion of the project.

The Project Plan (Reed & Toa 2010) outlined the proposed management framework that was to be put in place to support the successful implementation of the eradication operation.

2. GOAL, OBJECTIVES and OUTCOMES

Explanation: Record what the project will achieve (objectives) and the changes that will result (outcomes)

Prompts:

- *Copy and paste from the Project Plan*
- *The Goal, Objectives and Outcomes defined in the Project Plan will only change if there is a major change to the project – any changes will need to be consistent with the process defined in the 'Project Governance' Section of the Project Plan*
- *Remove this Help Box when the Operational Plan is complete*

The goal, objectives and outcomes remain as recorded in the Project Plan (Reed and Toa, 2010) and are included here for the benefit of the operation team.

2.1. Goal

The goal of the proposed project is:

"*Restoration of Far and Away Islands, Windward Group, as key sites for the conservation of Republic of Pacifica's indigenous biodiversity, through the eradication of Pacific rats*"

2.2. Objectives and Outcomes

The objectives that this project will achieve and the outcomes that will be seen as a result of achieving these objectives are:

Objectives	Outcomes
1. Eradicate Pacific rats (*Rattus exulans)* from Far Island	1.1 No Pacific rat population on Far Island.
	1.2 Increase in population size of native bird species on Far Island.
	1.3 Increase in native vegetation densities on Far Island.
2. Eradicate Pacific rats (*Rattus exulans)* from Away Islands	2.1 No Pacific rat population on Away Island.
	2.2 Increase in population size of native bird species on Away Island.
	2.3 Increase in native vegetation densities on Away Island.
3. Safeguard the ground dove populations on Far and Away Islands	3.1 Increase in population sizes of ground dove on Far and Away Islands.

4. Improve the capacity of NPC to undertake larger eradication projects.	4.1 NPC staff have skills to undertake further eradication projects of a similar size to current project.

The plans for monitoring of the project outcomes will be recorded in the project monitoring and evaluation plan (Reed, L. 2010).

3. PROJECT SITE & TARGET SPECIES

Explanation: Information that the eradication project team will require to complete the eradication operation

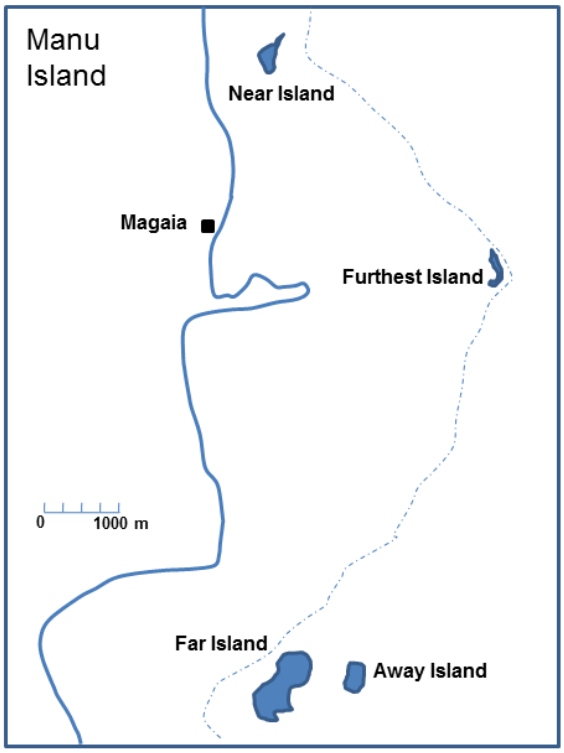
Prompts:

- *Copy and paste from Project Plan and update if necessary*
- *Only include the information that is relevant to the eradication team; you can use the Project Plan as the detailed site and target species information.*
- *Remove this Help Box when the Operational Plan is complete.*

3.1. The Site

The Windward Island group lies off the east coast of Manu Island, in the Republic of Pacifica. The group is made up of four islands, namely Far, Away, Near and Furthest (see Table 1 and Map 1).

Island ownership rests with the head of individual families in the main village of the Windward coast, Magaia, but the island group forms an integral part of the Windward Marine Protected Area (WMPA), established in 1999. All claimants have endorsed the islands as being part of the WMPA and they are included in the management plan for it. The WMPA is managed by a committee which includes leaders from the local village as well as government representatives from the National Parks and Conservation Department (NPC) and Ministry of Agriculture and Fisheries (MAF).



Map 1. Location of the Windward Islands off Manu Island, Republic of Pacifica

All of the islands are uninhabited, but are sometimes used by villagers from the Windward coast villages for harvesting of coconuts and other wild-growing crops. Far Island is visited very infrequently by one of the families and Away Island even less so (P. Matipo pers. comm. 2006). This region is not developed for tourism as yet, so the islands receive very few visitors apart from infrequent visits from scientists and conservation managers.

None of the islands have any wharves or permanent structures on them.

Weather patterns are typical for the region, with a wet season from October to April, and a dry season with often strong trade winds in the months June to September. The outer two islands have limited safe access spots and are often difficult to access during the trade wind season.

Table 1. Islands in the Windward Group, Republic of Pacifica.

ISLAND	SIZE	DISTANCE TO MAINLAND and/or NEAREST ISLAND	PEST STATUS
Far	108 ha	1.3km to mainland, 500m to Away	Rats present, Pacific rat
Away	25 ha	500m to Far	Rat-free until 2003, Pacific rat

Comprehensive details of the vegetation and fauna of Far Island are available in Jameson et al 1992. Away Island has also had some survey work conducted (e.g. Johnson 2003).

A wildlife survey report (McCormack et al 2000) found that Far Island is home to a number of endemic and internationally threatened species. These include:

- Crimson pigeon (endemic; Endangered)
- Ground dove (regional endemic, Vulnerable)
- Pacifica broadbill (*Myiagra pacifica*) (Endemic, Vulnerable)
- coconut crab (*Birgus latro*) (Vulnerable).
- Pacifican 'flying fox' fruit bat (*Pteropus pacificus*) (Endemic, Endangered)

Far Island also provides habitat for a number of other locally and regionally endemic birds (Turner 2000). This island is a breeding ground for the red footed and brown boobies (*Sula sula* and *Sula leucogaster*), black terns (*Sterna sumatrana*) and white terns (*Gygis alba*), great frigate bird (*Fregata minor*), and other seabirds, and is the last nesting seabird colony in Republic of Pacifica (WMPA, 2002).

Four skinks, two geckos and one snake species (the Pacifican boa *Candoia pacifica*) are present on the Windward Islands. None of these reptile species are threatened (McCormack et al. 2003b). Hawksbill turtles (Critically Endangered) nest on the beaches of Far and Away, and they and green turtles (*Chelonia mydas*) are often observed in the seas around the islands (P. Matipo pers comm.).

Collectively this group of islands make up approximately a third of the total number of small forested islands off the coast of the main islands of the Republic of Pacifica. Far and Away are the only two of these in relatively unmodified state and far enough offshore to provide a degree of surety against natural rat re-invasion. They therefore offer a limited and valuable potential resource for conservation of any of the Republic of Pacifica's biodiversity that is affected by the presence of rats.

Far Island

Far Island lies 1.3 kilometres from the Windward coast, and is only c.500m from Away Island. Far (108ha) is the highly eroded remains of a tuff cone (high point is 100 metres) that was originally circular in shape, but due to erosion, various portions of the rim are now gone (Singer 1983). Hence, Far has moderate slopes with some small areas of steep to vertical terrain, which is broken by a series of small bluffs (Turner 2000). On the north and west sides of the island are low marine cliffs up to 30m high (Singer 1983). The vegetation covering the whole island is native or only partially disturbed, with a relatively open understorey, only a few vine tangles and limited ground cover (Turner 2000). However there is a small plantation area on the island (at Vini Beach) supporting vegetable species and coconuts.

The vegetation of Far Island was considered by Jameson et al. (1992) to be of conservation significance because:

- coastal and lowland forests are rare and uncommon (respectively) in the Republic of Pacifica
- Species diversity is high, with over 160 species of plants recorded
- Several species are rare, the most significant being *Chionanthus vitiensis*, polo (*Solanum viride*) and pani (*Manilkara dissecta*)
- The vegetation is very important for the seabirds present.

Away Island

Away Island (25ha) is in effect a smaller version of Far. It is similar to Far in its geology, with a tuff cone (maximum height 70m) breached on the eastern side by the sea, though its cliffs are not so high. Its vegetation is also similar, though few formal surveys have been made. It is more difficult to land upon and is further offshore than Far Island so visits have been relatively rare.

Away Island contains the most intact lowland coastal forest assemblage in Republic of Pacifica and is of high conservation significance. The vegetation is very similar to that of Far (Jameson et al. 1992), but is practically unmodified and there are few coconut palms. One plant species is present that is found nowhere else in the country (*Suriana maritime*) (Jameson et al. 1992)) and another, *Boerhavia alba* is rare in Polynesia and has only been recorded from Away Island and Fanuatapu in Samoa.

3.2. The Target Species

The rat species present on Far and Away Islands is the Pacific rat (*Rattus exulans)*. Eradication will be needed on both islands concurrently because of the proximity of the two islands.

Further information can be found in the Feasibility study report of Toa and Reed (2009).

4. OPERATION DETAILS

Explanation: Describe the technical details of the eradication operation.

Prompts:
- *What methods are to be used?*
- *Provide detail on the method(s) and sequences/timing of these.*
- *Detail the density of bait/traps, and whether this varies over parts of island, how bait/traps will be distributed, who will do this, etc [Refer to relevant Guidelines e.g. Guidelines for Rodent Bait and Baiting]*
- *Ensure any tasks are included in the Task Schedule Section.*
- *Remove this Help Box when the Operational Plan is complete.*

Useful Tools:
- *Feasibility Study Report*

The basic outline of the fieldwork will be:

4.1. Establishment of track network:

1. Assemble team, bait and equipment in Port Pacifica. Ensure all items have been obtained and are functional. Get people, gear and food safely to Far Island (road transport to Magaia, then dinghies to island). Establish camp-site.
2. Cutting of central access line across island, using GPS to record exact track position
3. Cutting of perpendicular lines (i.e. at 90^{o}) to central line, at 25m intervals, to edge of coast or cliffs, using GPS to record exact track positions
4. Examine resultant network (GPS analysis and/or physical measuring) to ensure no gaps of more than 30m.
5. Re-cut or add any additional tracks if needed, and identify any areas where tracking is not possible (i.e. cliffs)
6. Re-examine to ensure network is satisfactory. Repeat if necessary.
7. When complete, move on to Away Island and repeat process there.

[At this stage the ground dove team will move onto Far Island and use the new tracks to facilitate access to all parts of the island to capture and remove the doves. The precise details of the ground dove capture and captive holding are outlined in Paua and Hawke 2010]

4.2. Baiting Operation:

1. Assemble team, bait and equipment in Port Pacifica. Ensure all items have been obtained and are functional.
2. Get people, gear and food safely to island (road transport to Magaia, then dinghies to island).
3. Establishment of campsite and storing of food, bait etc
4. Marking of 25m intervals along each track using tape measure and marking tape.
5. Shifting of bait in required amounts to pre-determined bait depots along central line
6. Final instructions to baiters on how to apply bait and where.
7. Baiters apply bait at 25m intervals along all tracks, and broadcast bait down cliff areas (application of bait at bottom of cliffs to be done by boat at same time if needed)
8. Supervisors to do random but thorough assessments of bait coverage

9. Wait a minimum of 7 days (transfer to 2nd island and do baiting there, or have a break off islands)

10. Spread bait in 2nd application

11. Dismantle camp, clean up and dispose of rubbish (incinerate or deep bury empty bait bags, etc)

4.3. Track-Cutting

Track cutting will be undertaken by a combined team of NPC staff and Magaia villagers, under the direction of the Project Manager or Assistant Project Manager and the Technical Co-ordinator.

It is estimated that up to 50km of track will be required on Far Island, and a further 10km on Away Island. It is thought that each two-person team could cut at least 2km of track per day. Therefore an 8-person team would require at least 7 days on Far and a further 2 days on Away to achieve this. If progress is not satisfactory, it is possible to bring additional workers to the islands. However, in many cases the amount of cutting will be relatively light, and in many cases it is thought that much more than 2km will be able to be cut each day by each team.

4.4. Bait Quantity Calculations

Table 2 presented below outlines the bait required to achieve each aspect of the operation. In total, just under 3 tonnes of bait (2825kg) will need to be ordered for this operation. This includes a generous contingency amount of 20% to allow for losses or damage in transportation, for possible over-generous application, and for any miscalculations (in island size, etc).

Table 2. Bait Calculations

Treatment Area	Details of Area	Bait Rate	Amount of bait required
First Baiting Application:			
Island size – Far Is	108 ha	10 kg per hectare	1080 kg
Island size – Away Is	25 ha	10 kg per hectare	250 kg
Coastline		No extra required	-
Cliffs (anything over 50o in slope)	10 ha	10 kg per ha extra application rate	100 kg

Special treatment area (coconut plantation, Far Is)	10 ha	Additional 4 kg/ha	40 kg
Total amount of bait for first round of baiting			**1470 kg**
Second Baiting Application:			
Island size – Far Is	108 ha (actual area)	6 kg per hectare	648 kg
Island size – Away Is	25 ha	6 kg per hectare	150 kg
Coastline		No extra required	-
Cliffs (anything over 50o in slope)	10 ha (actual area)	4 kg per ha application rate	40 kg
Special treatment area (coconut plantation, Far Is)	10 ha	Additional 4 kg/ha	40 kg
Total amount of bait for second round of baiting			**878 kg**
Sub-total (first and second round)			2348 kg
Contingency (20%)		20% of 2348 kg	470 kg
		Grand Total	2818 kg, rounded up to **2825 kg**

4.5. Baiting Strategy

In general, the rat eradication will follow the prescription for hand-broadcasting as outlined in the PII Rodent and Cat Eradication Resource Kit's Guideline for Bait & Baiting. This will involve the marking out of a grid system of baiting points (here requiring the cutting of some tracks), so that baiting points are on a 25m x 25m grid across the entire island. Parallel tracks 25m apart will be cut across the island, and along every track intervals of 25m will be marked using coloured marker tape. Any areas inaccessible by foot (e.g. cliffs) will be identified and using GPS mapping to determine the size of the gaps, a baiting strategy will be developed. This will probably just mean bait is thrown both from the top and the bottom of the cliffs to ensure adequate coverage of these areas. As no cliff area is more than 30m high, there are very unlikely to be any significant gaps (of 30m or more) in bait coverage. It is possible that a few bait grid-points on the coast may be easiest to access via a boat (guided to precise areas by GPS directions), but this will only be determined once the track network is established. Tracks will be of a 'rough' nature only, just enough to be comfortably walkable for a fit and experienced person. Each track will be given

a unique identification letter and the number of baiting points along each track will be known, so it will be possible to determine how much bait is required for each track.

The bait used will be Pestoff 20R cereal pellets (10mm diameter) containing brodifacoum. As per the Guideline, two separate baiting applications will occur, at least 7 days apart.

Bait will be spread at 10kg/ha for the first application and 6kg/ha for the second.

The Feasibility Study Report (Toa and Reed, 2009) identified the hermit crab bait uptake as a potential issue and recommended hermit crab monitoring and bait uptake trials to determine the correct bait rates. After further discussions with a number of experts it was agreed that increasing the spread rate by 4kg/ha in areas of high population would address the issue of crabs feeding off the bait. Hence, there was no need to undertake the crab monitoring and bait uptake trials. This increased bait rate will also be used on cliff areas where the slope may hinder thorough distribution of bait.

The track system should already be cut before baiting, and the 25m intervals along each should be marked with coloured marking tape. Therefore the baiters should be able to focus solely on moving along each track to throw bait out at each baiting point. Baiters will carry bait in a 20-litre plastic bucket with lid. They will have a plastic scoop that has been pre-prepared to hold 125g of bait. For ease of logistics the same scoops will be used for both bait applications. In the first application 5 scoops full of bait will be distributed at each baiting point. In the second application only 3 scoopfuls will be cast out at any stop, but this should still ensure bait is well spread out for any surviving rats to gain access to it.

Each bucket can hold c.15kg of bait, so the baiter should be able to make 24 stops per bucketful, and can carry extra bait in a backpack if needed.

There will be up to four baiting teams and 1-2 supervisors (probably the Project Manager and Technical Co-ordinator). Bait teams will each be made up of an NPC staff member and a local villager.

Far Island will have an estimated c.1728 baiting grid-points (16 bait-points per hectare, and 108 ha total). With 4 two-person teams this means an average of 432 stops per team, or 18 bucketfuls each for the first application, with each bucket-load taking c. 6km of walking (one way) to empty. With strategic depoting of bait beforehand, return along already baited areas will be minimised. It is thought each team could cover at least 48 stations per day, meaning that up to 9 days may be required to spread the bait. This is probably a very conservative estimate, and with additional help at times from supervisors it is expected the operation will take no more than 6 days to complete.

Once all baiters are adjudged competent to work on their own, they can work individually, and this may considerably speed up the operation. However, ensuring accuracy of bait coverage is paramount, so it is possible that two-person teams will be employed for the whole of the first baiting round at least. However it may also be possible to maintain effective communication across the 25m gap between lines by working along lines at the same time.

Away Island will have c.400 baiting points. It is likely that it can be fully baited within two days.

Table 3. Bait Scoop Size Calculation

Baiting Application	Details	Scoop Size
First application	10kg/ha on a 25mx25m grid = 16 stops per hectare = .625 kg (625grams) per stop	125g scoop (5 scoopfuls per stop = 625g)
Second application	6kg/ha on same grid = .375 kg (375g) per stop	125g scoop (using 3 throws only, rather than 5 = 375g)

5. NON-TARGET SPECIES

Explanation: The information required to manage the risks to non-target species.

Prompts:
- *Dangers to non-target species. Which will potentially be affected and how?*
- *Ensure tasks are included in the Task Schedule*
- *It is likely some individuals of non-target species populations will die due to the eradication operation. But the emphasis is on the risk to the species population, not the risk to individual animals. While some may die as long as in the long term the population is safe.*
- *Refer to Environmentally Acceptable Section of the Feasibility Study Report for issues that need to be addressed concerning non-target species.*
- *Remove this Help Box when the Operational Plan is complete.*

Useful tools:
- *Guidelines on Managing Environmental Effects*
- *Guidelines on Managing Non-Target Species.*

5.1. Ground doves

The ground doves are an endangered species and have been identified as being at risk from the baiting operation (Toa and Reed, 2009). It has been determined that captive holding of a number of doves off the island until the baiting operation has been completed and bait has disappeared is the best way of protecting this species from any potential harmful effects.

A separate document has been prepared (Paua & Hawke 2010) to outline the task of capturing, transporting and holding in captivity of ground doves, including the design of the holding cages and avicultural requirements such as foods for the doves.

In summary, a field team led by Falatau Paua and Ann Eagle (Auckland Zoo) will go too Far Island at the time the track-cutters leave the island. The track network will assist the movement of the

capture team and placement of mist nets and ground nets required to capture the doves. Doves will be placed in capture boxes and (weather permitting) will be taken off the island each day to the aviary facilities in Port Pacifica. Ann Eagle will accompany first consignment of birds after passing on finer points of capture and care to the field team. She or her assistant will be on-site at the aviary and/or travel to Magaia each day that more birds are caught. A maximum of 25 birds can be held at the aviary facilities, and once that number of birds has been reached the dove capture team will depart the island. A minimum number of 15 birds is desired before baiting should commence.

The doves will be held in the captive facilities until inspection of bait on the island indicates that the bait has decayed and no longer is a threat to the doves.

Bait will be placed under rat- and crab-proof wire cages in the different habitat types on Far Island, to measure the natural decay of bait pellets, as conducted in previous rat eradication operations (e.g. Merton *et al* 2002). This will simulate what will happen to any bait left uneaten by rats or crabs (and thereby posing a risk to ground doves). Once the bait within the cages has disintegrated it will be assumed all but a negligible amount of bait on the island has reached a similar state of decay and it will be safe to release the ground doves. Operational monitoring of bait decay will cease at this point (see Task Schedule). It is expected that the doves will be held for at least one month, and perhaps up to 6-8 weeks.

5.2. Crabs

Both hermit crabs and coconut crabs will eat the bait but will not be affected by it. Their presence will require extra baiting rates to compensate for the amount of bait likely to be consumed by them. Precautions will be necessary to ensure humans do not consume coconut crabs from the islands for several months after the baiting.

5.3. Other Species

Toa and Reed (2009) suggested several species of forest birds may eat bait on the ground, or consume carcasses of animals that have eaten bait and therefore be at risk on unintentional poisoning. It was considered that while losses of individual birds may occur, populations will not be at significant risk and the population levels will quickly recover by breeding and/or from recolonisation from the mainland. In view of this, any additional efforts to protect the species are considered unwarranted and uneconomic.

Many other species, such as seabirds, are unlikely to be affected at all.

Non-Target Species	**Risk**	**Prevention Plan**
The species at risk	*What could happen to the species*	*What will you do to avoid the risk*
Ground dove	May consume bait and some individuals could die	Capture and holding of up to 25 individuals in captivity until risk from baits is negligible

Hermit and coconut crabs	Consume bait, preventing rats getting access to sufficient bait	Increase bait rate based on advice from experts to ensure enough bait is spread.
Coconut crabs	Consume bait, which will not affect crabs but could pass toxins on to human consumers	Agreed no-take period for crabs from islands. Education for island users and warning signs
Other bird species	May consume bait and some individuals could die	No action – population should survive and any individual losses should be quickly recovered through breeding.

6. ENVIRONMENTAL EFFECTS

Explanation: The information required to manage and minimize any impacts to the environment

Prompts:
- *Ensure tasks are included in the Task Schedule*
- *Refer to 'Environmentally Acceptable' Section of the Feasibility Study Report for issues that need to be addressed concerning environmental effects. Ensure all relevant information has been sourced and resulting tasks are in the Task Schedule*
- *Remove this Help Box when the Operational Plan is complete.*

Useful tools:
- *Guidelines on Managing Environmental Effects*

6.1. Toxin Risk To Humans

All baiters will be instructed in safety procedures and be issued with protective equipment to minimise the very low risk of accumulation of toxins in their systems.

The Magaia village community will be advised of the start of baiting and have been informed several times of the need for a no-take period of 12 months or more for any wildlife, and 3 months for vegetables or fruit from the islands, to which they have indicated agreement. Further precautionary warnings will be provided in the local newspaper and on Pacifica Public Radio. Warning signs will be established at landing points on both islands, in both English and Pacifican languages.

6.2. Disposal of rubbish

An incineration pit will be dug on a designated portion of a sandy beach on both islands. Accumulated burnable rubbish (largely expected to be bait bags and some waste bait) will be placed in the pit and incinerated in suitable burning conditions. Ashes will be covered over with at least 30cm of sand. This will need to be repeated on both islands for the second bait applications.

Food scraps will be collected in a sealed bucket and the boat operator Paga Matipo will take them home to Magaia to feed his domestic pigs.

All non-biodegradable rubbish will be placed in rubbish sacks and removed from the islands for disposal at the official Port Pacifica refuse dump.

A latrine hole will be dug for toilet waste and this will be covered over at the end of the operation.

6.3. Un-used Bait

It may be possible that all bait purchased is used on the operation, but if all goes well, the contingency bait (up to 470kg) may not be required. Any un-used bait in good condition will be removed from the islands at the end of the second baiting round and returned to the NPC equipment store. End use has yet to be decided but it may be used for biosecurity purposes (e.g. in bait stations on the islands to prevent reinvasions). Another possibility is use to eradicate rats from Furthest Island in the near future, if all stakeholders are in agreement. However any subsequent use will depend on bait condition, and if it deteriorates it will be disposed of in an approved fashion (probably deep burial within the NPC compound).

6.4. Consents

Government Planning Authority (GPA) have reviewed the Project Plan (Reed and Toa, 2010) and decided that an Environment Effect Assessment is not required for this project. A letter confirming their approval for the project has been received by NPC.

7. ENSURING THE SAFETY OF PEOPLE

Explanation: The information required to ensure everybody (Operational Team, community, visitors) are not endangered by the methods, materials and transport used in the eradication.

Prompts:

- *Ensure tasks are included in the Task Schedule Section*
- *Consider how you will notify all visitors to the island of the operation and any dangers presented by the operation.*
- *Some of the notification may be undertaken as part of Stakeholder Engagement.*
- *If using bait, plan for placing warning signs at the eradication site*
- *Remove this Help Box when the Operational Plan is complete.*

Useful Tools:

- *Guidelines for Project Managers*

People's safety will be an important responsibility for the Project Manager.

All track cutters will be experienced in handling of track-cutting equipment (principally machetes and pruning saws). They will work in pairs for safety but will take care to keep a safe distance between them when using tools.

Life-jackets will be required to be worn for all personnel being transported to and from the islands. NPC will provide these from their own supply to add to those held by Paga Matipo. The boats will have paddles, spares kits and emergency equipment aboard.

Signs warning of the risk of baits (in both English and Pacifican) will be created at Conservation Design Centre, NZ, based on the standard NZ Department of Conservation (DoC) templates. English versions of wording will be translated to Pacifican by the Project Manager. They will be installed at the main landing points on each island by the baiting team upon their arrival.

Prior to baiting, the people involved in baiting will receive a formal briefing about potential risk of the toxin to humans and how to minimise this. All baiting staff will be provided with suitable protective gloves, dustmasks and a long-sleeved shirt. A copy of the Material Safety Data Sheet (MSDS) for brodifacoum will be taken to the islands. Instructions on labels of the bait bags will be read to all members of the baiting team and translated into Pacifican if needed to ensure everyone is aware of the safety requirements.

There will be a trained first-aider on all field trips (most NPC staff already have this qualification) and a comprehensive first aid kit. VHF radio and satellite phone contact with doctors at the Port Pacifica Hospital will be readily available in emergencies.

As the baiting team arrive at Magaia, the Project Manager will meet with village leaders and explain that baiting is commencing. The community at Magaia have already been consulted extensively about the project and are prepared to minimise their use of the islands for several months. The

agreed 'no-take' policy for the islands will be put into force at that time. All boat owners in the village especially will be made aware of the safety issues, as the principal means to get to the islands is by local boat.

8. LOGISTICS

Explanation: Include any useful practical information that the operational team will need to know to undertake the eradication

Prompts:

- *Detail how the Operational team get to the site, where will they stay, how will they move/navigate around the island, where will they source or store food and water, how will they communicate when at site (to each other and to off-site managers?)*
- *Detail how the materials and equipment will get from the place they are purchased from to the island. This is particularly important for poison bait if used. How does it get from the factory to the island? Where is it stored along the way? Who is involved in transporting and storing it? How will you ensure the bait remains in top condition?*
- *Maps, Tide times, Moon rise and set times, etc – are they useful?*
- *Ensure tasks are included in the Task Schedule.*
- *Remove this Help Box when the Operational Plan is complete.*

Useful Tools:

- *Guidelines on Operational Logistics*

8.1. Travel

The NPC's 3-tonne Dyna truck and crew-cab Hilux will be available to transport team members and equipment between Port Pacifica and Magaia. Some team members will be Magaia villagers so will not require vehicle transport. As the budget for vehicle running is limited, the PM or APM will ensure every trip is necessary and that available space is maximised.

Boat travel to and from the islands will be provided by Paga Matipo and his son Tonu. Two dinghies with reliable outboard motors will be available, and the project will have priority on these boats for the duration of the operation. Other boats and operators are available for hire at Magaia village if required.

8.2. Accommodation

Most locals will stay in their normal residences until required for the island work. External staff (the Technical Co-ordinator and Aviculturalist) will stay in a self-contained cottage that is part of the Harbour Guest House commercial accommodation.

If boat travel to islands is delayed, team members can either stay in Magaia as guests (an offer has been made for this option) or return by vehicle to Port Pacifica until the weather is suitable.

Accommodation on the islands will be in tents or under tarpaulins provided by NPC, or in the temporary huts that exist on Far Island.

8.3. Communication

VHF radios owned by NPC will be the primary means of communication between party members, to the boat operator and to NPC headquarters. The boat operator will be issued an NPC radio and charger for the duration of the operation, and he is familiar with its use. This will enable reliable communication and quick response between the boat operator and the field teams.

As current mobile phone coverage in Pacifica does not cover these islands, and NPC do not have a satellite phone, the Technical Co-ordinator will hire a satellite phone prior to departure from NZ for use on the islands, enabling a reliable back-up contact with NPC headquarters and the Aviculturalist, and for emergencies, etc).

8.4. Bait Storage and Transport

Upon ordering the bait, the Technical Co-ordinator will liaise with the ACP Manager to organise arrival of the bait to Port Pacifica at least two weeks in advance of the proposed start date of baiting. It will be picked up from the wharf by NPC staff and it will be stored in the NPC field equipment store. This will require a cleared space of at least 6m^2 to house the 3 pallets of bait. This will have been sprayed with long-lasting insecticide just prior to bait being placed in it, and will also have rodent traps set, to ensure no damage occurs to the bait. The Project Manager will ensure the bait is stored well away from any item that could contaminate the bait and make it less palatable (e.g. fuels, herbicides).

At commencement of baiting part of project, bait will be placed on the NPC truck (probably requiring restacking of pallets) and taken to Magaia. Prior to loading it on the boat each bag will be placed in a large dry bag (or alternatively in at least in two layers of large plastic sacks such as rubbish bin liners). Once on the island the bait bag will be removed from the dry bag so the dry bag can be taken back to Magaia for another bag of bait to be placed in it (several trips will be required to get all bait and people to island). As much bait as possible will be taken to the islands if the weather is suitable. Bait not immediately used for first bait applications will be stored wrapped in a tarpaulin or in dry bags under dense shade until used in the second application.

8.5. Other Equipment

This will be held at the NPC equipment store (clearly labelled and stored separately) until required. Where possible, it will be placed in sealable plastic buckets and bins.

Non-perishable food will be ordered well in advance, and in bulk, which will result in economic savings.

Fresh food will be purchased on the evening prior to the planned departure for each field team. Resupply can occur if necessary each time the boat travels to the island, but this would be kept to a minimum as it would require a cash purchase at the small Magaia grocery outlet (very limited range of foods) or an NPC driver from Port Pacifica to deliver.

9. EQUIPMENT LIST

Explanation: Keep a list of all equipment you need to take to the eradication site, use for monitoring and the biosecurity activities.

Prompts:

- *Create a checklist based on needs identified (equipment for the actual eradication work, supporting the field crew, safety, communications, etc.) in the sub-sections above, and check off each piece of equipment as you pack for the journey to the eradication site.*
- *Depending on the size of the project and the details of the monitoring activities and biosecurity activities it may help to have separate lists for: eradication operation; the monitoring and the biosecurity activities.*
- *For smaller project one combined list will be best.*
- *Remove this Help Box when the Operational Plan is complete.*

Equipment	Where used	Responsible for providing	Done? Y/N
Tents for up to 10 people	Both islands	Asst Project Manager (APM)	
Gas Cookers and bottles	Both islands	APM (from NPC stores)	
Pots and cooking utensils	Both islands	APM (from NPC stores) or buy extra	
Cups, plates, eating utensils, water bottles, bedding	Both islands	Everyone to supply their own	
Food and other consumables (AA batteries, toilet paper, matches, soap, etc)	Both islands	Asst Project Manager	
Basic Tool kit	Both islands	APM (from NPC stores) or buy extra	
Water	Both islands	Containers to be purchased/sourced by APM. Water to be sourced from NPC HQ supply (treated urban supply).	
Machetes, pruning saws	Track-cutting team, both islands	APM to organise – check NPC supplies, and purchase more if necessary. Magaia villagers ay have their own – APM to check.	
Dry-bags and	Both islands	Project Manager (Tech Co-ordinator	

waterproof bins		may be able to help from NZ)	
Bait (2825kg of Pestoff 20R)	Both islands (Take 2300kg to Far, 525kg to Away)	Technical Co-ordinator	
Bait buckets and backpacks for carrying bait	Both islands	Project Manager (Tech Co-ordinator may be able to help from NZ)	
Bait scoops	Both islands	Technical Co-ordinator	
Warning Signs and posts (+ nails and hammer)	Landing sites, both islands	Project Manager	
Personal protective equipment (PPE) – gloves, dustmasks, long-sleeved shirts	Issue 1 set to each baiter to take	Project Manager (Tech Co-ordinator may be able to help purchase from NZ)	
GPS	Trackcutting, all monitoring	2 available. Project Manager to purchase 2-3 more.	
Laptop and GPS software	Both islands	Project Manager (Technical co-ordinator has back-up)	
Marking tape (4 different colours)	Both islands	Technical Co-ordinator to get in NZ	
Lifejackets	Both islands	APM and Boat Operator to work together to ensure there are enough	
1st Aid Kit	Both islands	PM (should be one in NPC equipment store but check and update)	
VHF radios and charging devices	Two per team, plus boat operator	PM to obtain from NPC	
Satellite phone and charging device	Both islands	Technical Co-ordinator	
Generator, spares, fuel containers, and fuel	Both islands	PM	
Multi power board	Both islands	APM	

[Note: this list does not include items required for the ground dove capture team, which has been prepared separately. Wherever possible though, the same gear will be shared (e.g. drybags, plastic containers, camping equipment)]

10. OPERATIONAL TEAM

Explanation: The Operational Team is the Project Team for the eradications – those people who are going to be doing the eradication.

Prompts:

- *Complete the table indicating who is in the Operational Team and key responsibilities*
- *Remove this Help Box when the Operational Plan is complete.*

Useful Tools:

- *Guidelines for Project Managers*

Name	Role	Responsibilities
V. Reed (NPC)	Project Manager	Management of entire project and the project team. Preparation of Operational Plan, Task Lists, Biosecurity Plan, Monitoring and Evaluation Plan. External communication, Stakeholder engagement Selection of staff and delegation of tasks Leading baiting team Planning and reporting on the project Health and safety of the team
M. Toa (contracted to NPC)	Technical co-ordinator	Advice to Project Manager in planning Bait ordering and transportation Training of bait spreading team Overseeing track-cutting and bait-spreading team
F. Paua (NPC)	Assistant Project Manager/ Ass. Tech co-ordinator	To provide back-up to Project Manager, to lead or assist in leading field teams. Equipment and supplies procurement Upskill from working with technical co-ordinator. Lead field team to capture ground doves
NPC team (4) and Magaia villagers (4+)	Track Cutters	Cut tracks on both islands
NPC team (4, incl F.Paua) and Magaia villagers (4)	Baiters	Spread bait according to instruction
A. Eagle (Auckland Zoo)	Aviculturalist	Capture of ground doves, transfer to captivity, maintenance in captivity
Junior NPC officer – to be confirmed	Avicultural assistant	Lead aviary facility construction (following aviculturalist's instructions) Assist in capture, transfer and captive care of doves

(NPC)		
R. Suleosi (NPC)	Mapping, and computer support	Provide and maintain effective maps and software for GPS mapping required. Store and analyse all data from baiting and monitoring

11. TASK SCHEDULE

Explanation: This is your job list. What are the actions that need to be completed as part of the eradication, the monitoring and the biosecurity? When or in what sequence do they need to be done? Who is responsible for ensuring each task is completed at the correct time?

Prompts:

- *Consider the work required:*
  - *Pre-operational (selecting any further staff, contractors and transport, purchasing materials, monitoring, site preparation, consultation, permits, etc)*
  - *During the bait/trap eradication (what, how, when, who does the work, and for how long)*
  - *Post-operational(clean-up, return of staff and equipment, reporting etc)*
- *Ensure that actions are included that address all of the issues identified in the Feasibility Study Report and the Project Plan and they match all the things identified elsewhere in this plan.*
- *A table of Tasks should be created, in the order they are to be done. Each task should have the person responsible identified and the time by which the task needs to be completed.*
- *Major milestones should be highlighted in the Task Schedule by shading the row*
- *Depending on the size of the project and the details of the monitoring activities and biosecurity activities it may help to have separate schedules for: eradication operation; the monitoring and the biosecurity activities.*
- *For smaller projects one combined schedule will be best.*
- *In larger projects other, more complex, project management tools may be required: see Guidelines for Project Managers.*
- *Remove this Help Box when the Operational Plan is complete.*

Useful Tools

- *Guidelines for Project Managers*

Table of key activities for the eradication operation, the biosecurity and the monitoring activities

[Major milestones are identified in the table with bold on a shaded background.]

Tasks	Responsible	Complete by	Dependency	Complete?
Describe what	*Who is to*	*When must it be*	*What other task must be completed*	*Y = yes,*

needs to be done	*complete it*	*completed by?*	*before this action started*	*complete*
Operational Planning Stage				
First versions of Operational Plan, and Monitoring and Evaluation Plan	PM	15 December 2010		Yes
First version of Biosecurity Plan	D. Sagolo (WMPA)	15 December 2010		
Review of draft operational and biosecurity plans	PM to discuss reviewers with PII			Yes
Final reviewed versions of Operational Plan, Biosecurity Plan and Monitoring and Evaluation Plan	**PM and technical co-ordinator**	**15 February 2011**		**Yes**
Final reviewed version of Biosecurity Plan	**D. Sagolo (WMPA)**	**15 February 2011**		**Yes**
Prepare public educational material for biosecurity prevention awareness. (See Biosecurity Plan)	D. Sagolo (WMPA)	28 February 2011	Biosecurity Plan to be completed	
Start public awareness campaign for biosecurity prevention (See Biosecurity Plan)	D. Sagolo (WMPA)	First campaign completed by 30th May 2011. Three monthly reminders in each village	To start as soon as material is ready	
Implementation Stage: Pre-operation				
Produce an Environmental Effects Assessment (EEA) if required by GPA	Project Manager (PM) and technical co-ordinator	By 30 Jan 2011	PM to meet with GPA – decision to follow as to whether an EEA is required.	Not required- GPA have approved project based on

				Project Plan
Final agreement with local communities and key stakeholders	**PM aided by Director, NPC**	**28 February 2011**		
Approval to use toxin from Registrar of Poisons, MAF	**PM**	**By 5 March 2011**	**Formal application letter to be written**	
Permits to land, camp, cut tracks, capture doves, apply bait, burn rubbish – all from WMPA	**PM**	**By 5 March 2011**	**Formal application letter to be written**	
Obtain quality GIS map of islands and GPS software	PM & NPC GIS specialist	By 5 March 2011		
Further training/guidance in GIS software for PM as necessary	NPC GIS specialist	Any opportunity prior to July, but soon as possible		
Agreement with Pacifica Met Service for site-specific weather advice	PM	By 5 March 2011		
Decision to proceed with implementation	**PM in consultation with technical co-ordinator, Director NPC, and PEA and PII.**	**5 March 2011**		
Select and confirm teams (pre-operation monitoring, ground dove capture, track-cutting, and baiting)	PM	10 March 2011	Shortlist possible candidates from NPC and Magaia village	
Ground dove banding and pre-	NPC staff co-ordinated by R.	Any opportunity prior to June, but		

operation monitoring	Suleosi	as soon as possible		
Ordering of bait	**PM (may be delegated to technical co-ordinator)**	**15 March 2011**		
Flight tickets and accommodation booked, for Tech Co-ordinator and Aviculturalist	PM	By end of April		
Prepare English and Pacifican versions of warning signs	PM	By end of April		
Order warning signs	PM	1 May 2011	Pacifican version needs preparation	
Purchase safety equipment	PM (may be delegated to Technical Co-ordinator)			
Purchase dry bags and/or plastic bins and buckets	PM (may be delegated to Technical Co-ordinator)			
Training of team GPS and compass use	**PM to liaise with PII trainer**	**By end of May**	**Need to know which NPC staff are assigned to project**	
Shipping of bait	Bait supplier, in liaison with PM	To be confirmed - needs to arrive in Port Pacifica by 20 June.		
Prepare press release/ wording for advertisements and notifications for media	PM			
Completion of preparation of holding aviaries	**PM on advice from Aviculturalist**	**15 June 2011**	**Special equipment may need to be ordered well in advance**	
Project Readiness evaluation and	**R. View and N. Moore (Moore**	**15 June 2011**		

Report	**Consulting)**			
Arrival of bait in Port Pacifica	**PM**	**By 20 June 2011**		
Set precise date for start of operation. Advise all team members and other parties, incl boat operators of schedule	PM			
Gather and check available NPC camping equipment	PM		Create list of items required and get Proj Mgr and Tech Co-ord to check	Y – delegated to APM
Purchase any further camping equipment	Asst PM	Before first field trip	Check camping equipment already held by NPC	List created – need to buy
Track-cutting equipment		Before track-cutting trip (May-June 2011)	Check with Magaia villages what might be required	
Bait scoops purchased and calibrated	Tech Co-ordinator			
Implementation Stage: Eradication operation				
Food, transport, etc organised for trackcutting team	PM			
Track network cut to specification, and grid marked out on both islands	**Assistant PM and Technical Co-ordinator**	**May-June 2011**		
Capture of ground doves and transfer to captivity	**Assistant PM and Aviculturalist**	**June 2011**		
Obtain Met Service forecast, and decide on start date for baiting	PM and Technical Co-ordinator	June 2011		
Notify media and local communities of proposed date for baiting, and	PM	June 2011		

safety issues				
Field team notified of start date, put on standby	PM	June 2011		
Install warning signs	PM	On arrival on island for baiting team		
Start First Bait Spread	**PM and Technical co-ordinator**	**1 July 2011**	**All the above needs to be done!!!**	
Review baiting efforts and repeat coverage anywhere necessary	PM and Technical co-ordinator		Immediately after conclusion of first baiting	
Start Second Bait spread	PM and Technical co-ordinator	8 July 2011 or as soon as possible after		
Dispose of toxic rubbish in approved fashion	PM and Technical co-ordinator	At conclusion of baiting		
Remove all other project material from island (e.g. marking tape, other rubbish)	PM and Technical co-ordinator	At conclusion of each field trip		
Implementation Stage: Post-Eradication				
Weekly on-site bait breakdown inspections	Technical co-ordinator	Until bait has disappeared		
Release of ground doves	**PM and Technical co-ordinator**	**As determined safe, following 2nd bait application**		
Operational Review	**PM, NPC**	**At end of Implementation Stage**		
Sustaining the Project Stage				
Biosecurity – Surveillance and incursion response implemented (See Biosecurity Plan)	**PM**	**By end of Implementation Stage**		
Post-eradication	**NPC with**	**July 2012**	**Dates dependent**	

rat monitoring (See Monitoring and Evaluation Plan)	**possible technical co-ordinator**	**onwards**	**on if eradication occurs in 2011**	
Project Report	PM	September 2012	Date depends on post-eradication monitoring dates	
Project Indicator reports	PM	Annually		

12. REFERENCES

Paua, F. & Hawke, B. 2010. Outline of plan and requirements to capture and hold ground doves from Far Island during rat eradication project. Unpublished report, Dept of National Parks and Conservation (Republic of Pacifica) and Auckland Zoo, New Zealand.

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