

TOWARD A PEST FREE KAWAU

Summary of Feasibility for the Removal of Animal Pests



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2 (Draft)	25/11/2022	Richard Griffiths & Julie Alach	Feedback from Auckland Council and IEAG
3 (Draft)	12/06/2023	Richard Griffiths & Julie Alach	External feedback
4 (Final)	16/08/2023	Richard Griffiths & Julie Alach	External feedback

Purpose statement

The purpose of this report is to provide information regarding feasibility of eradicating mammalian pests from Kawau Island. The release of this report marks an interim step in an ongoing assessment of feasibility which will have further review points prior to a decision to proceed to eradication.

Community conversations

As evidenced by the formation of the Pōhutukawa Trust in 1992, the idea of Kawau being free of rats, stoats, possums and wallabies has been around for a long time. However, only in the past decade has the eradication of species such as rats on inhabited islands been proven possible. Amidst a growing number of precedents worldwide and increasing local support for the removal of invasive species, the concept was included as a proposed objective in Auckland Council's Regional Pest Management Plan 2020 – 2030 (RPMP). The idea received significant positive feedback, resulting in its incorporation into the approved RPMP.

In recognition of the ambitious nature of the project and the high level of buy in required from the community, Auckland Council commissioned Island Conservation, to assess the project's feasibility. Kawau is predominantly privately owned and the feasibility of removing rats, stoats, possums and wallabies from Kawau is contingent on support for the idea from the community. Access for example is required to private land and stakeholders must be willing to support ongoing biosecurity measures. To determine the project's social acceptability, Island Conservation discussed the project with landowners and directly affected stakeholders and asked for feedback. Conversations aimed to communicate the benefits offered by the project but also provide a clear understanding of the potential risks and impacts as well as convey an accurate picture of what would be involved should an eradication proceed.

What could be gained from the removal of rats, stoats, possums and wallabies from Kawau?

Removing rats, stoats, possums and wallabies from Kawau would lead to significant gains for biodiversity, contribute to the recovery of several threatened species and ecosystems, improve living conditions for residents and landowners, create employment and training opportunities and enhance the experience of visitors, potentially leading to new tourism opportunities. Strategically, the project is also of critical importance to New Zealand's predator free vision, paving the way to other inhabited islands within the Hauraki Gulf and elsewhere. The proposed project also presents a number of risks and costs. Potential impacts to the island's weka and pāteke (brown teal) populations would require mitigation and the removal of wallabies from the island is a contentious issue that could erode community cohesion. Nevertheless, relative to the project's benefits, most risks and costs associated with the project are limited in scope, short-lived, and with continued efforts and further input from the community, mitigations could be developed.

Whilst there has been some recovery following local pest control efforts, native species populations are still limited by predation, competition, and modified habitats. In the absence of rats, wallabies, possums and stoats, the abundance and diversity of native wildlife would increase. Kiwi, grey faced petrel, kākā and Pacific gecko are all expected beneficiaries, while other species such as bellbird and kākāriki, already occasional visitors to the island,

would establish and become widespread. Rates of pollination, seed dispersal and decomposition would improve along with seedling survival and recruitment leading to improved forest regeneration and reduced rates of erosion. Many native plant species currently missing from Kawau's forest understory are fire-resistant and as they regenerate, the island will slowly revert to a coastal broadleaf forest which is naturally less flammable, and humidity and soil moisture levels will improve, further reducing the risk of ignition. Biodiversity recovery and the re-establishment of ecosystem processes are expected to result in a more resilient ecosystem that can better withstand future climate change impacts.

A pest free Kawau could also stimulate Kawau's visitor economy which is, in part, reliant on both local and international tourism. Opportunities for overnight accommodation in a pest free location where native wildlife can be experienced including the chance of seeing kiwi, weka, kaka and other iconic bird species not too far off the beaten track, are currently rare in New Zealand. However, this experience would be readily attainable on Kawau with current levels of infrastructure. Temporary and long-term employment opportunities associated with biosecurity and protecting the island from reinvasion would be created along with the demand for on-island accommodation during project implementation.

Is it acceptable to the community?

Key concerns reflected by the community during engagement centred on the proposed methods, namely the use of toxins, the risk this might pose to domestic animals and native species, the risk of reinvasion and property access. Additionally, the removal of wallabies was seen by some as the loss of a piece of New Zealand's colonial history along with changing the character of the island. A number of residents queried what impacts the project might have on weeds and to this end a weed impact assessment is currently underway. There was also some apprehension that commercial operators would be unreasonably impacted and subject to biosecurity restrictions and charges. However, no biosecurity charges would be imposed on the Kawau community, and commercial operators spoken to were either already pest-free warranted or working towards becoming warranted.

Kawau O Tumaro (Kawau Island) is located within the eastern boundaries of Ngāti Manuhiri who are mana whenua of this rohe Ngāti Manuhiri Settlement Trust are mandated to represent Ngāti Manuhiri and its environs and as a project partner have committed to preparing a cultural impact assessment for the project as well as employing a kaitiaki to assist with planning and delivery, including cultural monitoring. If delivery is given approval to proceed, kaumatua will undertake a formal blessing immediately prior to work commencing in the field.

The importance of community to the success of the proposed removal of the target pests on Kawau cannot be understated. To proceed with the project, it must be demonstrated that the vast majority of landowners are supportive of the project's anticipated impacts and risks and are committed to sustaining the project's outcomes. Nevertheless, aspiring to 100% community support for the project is unrealistic as unanimous agreement within any community is a low probability. At the time of writing, contact with 347 of 365 Kawau landowners confirmed strong support for the project with 93% of landowners supporting rat, possum and stoat eradication and 82% in favour of the removal of wallabies. A small number of those spoken to (~42) were opposed to the removal of wallabies and a similar number had concerns about the use of rodent bait or property access. A handful of landowners remain unsure about the removal of wallabies.

The proposed removal of wallabies is contentious within the community, and the landowners opposed to their removal have strongly held views. The loss of wallabies from Kawau will emotionally impact some individuals and island visitors who view wallabies as an important part of the island's historic heritage and an element of Governor Grey's legacy that should be retained. A subset of landowners also see wallabies as contributing to Kawau's uniqueness because they are not present on any other Hauraki Gulf island. Possums, also introduced by Governor Grey, are not viewed in the same light.

Further engagement with stakeholders will be necessary for the project to succeed but the high level of community support documented is encouraging for project feasibility. Although the project poses a risk of creating community division, it also offers the opportunity to bolster community cohesion and spirit. Existing community initiatives on Kawau tackling amongst other things Argentine ants, rats and weeds, have already demonstrated this. If the eradication were to move forward, efforts to support the eradication, prevent reinvasion, educate visitors, re-establish native species on the island and manage habitats would require residents to, in effect, become the island's guardians and many Kawau islanders already see themselves in this role. This common cause could serve to unite the Kawau community and bring it closer together.

Wallabies

Of the four wallaby species that remain on Kawau, only the parma and brush-tailed rock wallabies are considered vulnerable in their native Australian home range. Swamp and dama wallaby are both listed as Least Concern (IUCN) and are considered secure. Advice from Australian agencies is that the genetics of Kawau rock wallabies are already well represented within Australia from previous reintroductions and that resources would be better spent supporting and preserving the diversity still present within wild Australian populations. The parma wallaby is currently undergoing a conservation reassessment in Australia, but Kawau is not considered an important site for recovery efforts. Maintaining small captive populations of parma and rock wallabies from Kawau elsewhere in New Zealand is currently being explored.

Proposed eradication strategy

Seven eradication core principles, outlined below, must be satisfied if an eradication operation is considered to be feasible.

1. The benefits of the project outweigh the costs.
2. The project is socially acceptable to the community involved.
3. All individuals of the target species can be put at risk by the eradication technique(s).
4. Target species populations can be removed at a rate exceeding their rate of increase at all densities.
5. The probability of target pests re-establishing is manageable to near zero.
6. The project meets all legal and statutory requirements.
7. The necessary resources to complete the project are available and can be deployed.

The removal of wallabies, possums, rats and stoats from Kawau will require a range of eradication tools and techniques. Although a comprehensive operational strategy has not yet been developed, if the project was to proceed, wallabies would need to be removed first using much of the same methods used today by the Pohutukawa Trust. The principal reason for this is the risk that wallabies pose to the success of a rat eradication. Wallabies could consume significant quantities of rodent bait creating gaps in bait distribution within which some rats might survive. Bait consumption by non-target consumers has led to eradication failure in other operations. Once wallabies have been removed, the focus would then shift to rats, possums and stoats. An operation targeting these species would take place over the winter period when rats are hungry and breeding less.

To remove rats from Kawau, the only method guaranteeing success is the placement of rodent bait into every rat territory on the island. Rat territories can be small, so it is very much a 'no stone left unturned' approach. Within residential areas, the preferred methodology would entail the creation of a 20m x 20m grid, where brodifacoum bait Pestoff 20R™ would later be spread by hand. Bait would also need to be placed in bait stations under houses and outbuildings and ideally within roof spaces as these are known refuges for rats. Because of the size of Kawau and the steep and inaccessible nature of some parts of the island, a helicopter would be required to apply rodent bait outside of residential areas. A buffer zone would be established between helicopter flight paths and any building or roof water catchment to exclude any possibility of bait entering water supplies and stream fed supplies would be disconnected.

Toxins

The use of toxins in the toolbox will be essential to the success of the project. Removing rats and possums from Kawau will necessitate the use of a rodenticide cereal bait containing the anticoagulant brodifacoum. Baits not consumed by rats or possums are broken down both by the presence of soil micro-organisms capable of degrading brodifacoum and consumption by invertebrates, which have a different physiology to mammals and are not affected by the active ingredient. Soil type, rainfall and temperature all influence degradation time and it is standard procedure to monitor bait breakdown during an operation. Based on monitoring at Tāwharanui Regional Park and on other islands in the Hauraki Gulf, cereal bait is expected to disappear relatively rapidly because of consumption by invertebrates and degradation by rainfall. The use of short-lived toxins such as cyanide may be needed to target wallabies but the use of these toxicants would be localized and outside of residential areas.

Encompassing the interval between bait applications, the risk of primary poisoning is expected to span a total period of up to 90 days. Brodifacoum is expected to persist for longer in animals that have been sub-lethally exposed to either primary or secondary poisoning. The practical insolubility of brodifacoum in water means that it poses little risk to waterways and is not absorbed by plants, but due to the perceived risk, residential water supplies will be avoided. Extensive freshwater testing at Sanctuary Mountain, Maungatautari after rat eradication detected no brodifacoum in any of the samples collected. The minimum detection limit for these samples was 0.00002 mg/L. It is worth noting that the use of brodifacoum is already widespread on Kawau, and these risks already exist to some extent on an on-going basis.

Risks to non-target species and domestic pets

The proposed methods do pose a risk to some non-target native species, as well as domestic pets and poultry. These risks have been managed successfully elsewhere with several effective mitigation methods proposed by members of the community. Pet owners would not have to remove their pets from the island, instead working with pet owners to keep their animals safe over an operational period would be a key element in individual property management agreements.

North Island weka are at risk from the proposed rat eradication and the loss of individuals can be expected. Mitigation for both weka and pāteke was successful on other islands such as Rakitu, Rotoroa, Mokoia and Kapiti during past rat eradications, and weka and pāteke thrive on all these islands today. Some weka would be kept in captivity over the operational period to preserve the genetic diversity within the population, and pāteke might be transferred to a site such as Tāwharanui for a short period. Kiwi differ in their foraging behaviour and the population is not anticipated to be at risk. The present ongoing use of toxins on Kawau already poses a risk to these populations. If the project were to be successful, there would be no need for continued toxin use, removing the risk to non-target species long-term.

Risk of reinvasion and biosecurity

Ensuring that the probability of rats and other pests re-establishing can be kept near zero is a key consideration and one that will ultimately determine the project's sustainability. Ongoing surveillance for the presence or absence of mice, rats and stoats will be critical to maintaining the pest free status of Kawau. During conversations with community members, scepticism was expressed over whether rats could be prevented from returning to Kawau given the number of visitors and the amount of materials regularly brought to the island. However, there is cause for optimism with islands such as Tiritiri Matangi, Rangitoto/Motutapu and Rakino, which have remained rat-free for more than 10, 20 and 30 years, respectively. Rangitoto and Motutapu receive upwards of 100,000 visitors a year and Motutapu has a working farm, campground, and Education Camp. Rakino has 21 permanent residents, 190 properties and the resident population increases significantly in the summer months.

Preventing rodents and stoats from re-establishing on Kawau will require dedicated resourcing and constant vigilance, with rats the species most likely to return due to their ability to stowaway, while stoats are capable of swimming the distance between the mainland and Kawau. Although the closest stretch of coastline to the north presents less risk because of the predator free Tāwharanui Regional Park, stoats could make their way back to the island via multiple different routes and as such, monitoring for invasions and being able to respond quickly to any incursions will be required.

Auckland Council plans to build capacity so that checks of high-risk cargo can be undertaken and suppliers of landscaping and construction materials would be encouraged to adopt measures to reduce the risk of ants, plague skinks and rodents getting into cargo destined for Kawau. In addition to the eyes and ears of the community, a network of surveillance tools and traps would need to be deployed and maintained indefinitely, to detect pest incursions.

Property access

The biggest risk to putting all individual rats at risk is the potential lack of access to private property. Access to private property will be required to complete the proposed project which would create short term impositions on landowners. Access arrangements that minimise any negative impacts will need to be worked through with landowners on a property-by-property basis. Based on feedback received to date, just 18 of 347 landowners are opposed to the access required to complete rat eradication with a further 20 unsure. A dedicated team will be required to work closely with the community to complete individual property management agreements with every landowner, detailing specifics such as access arrangements, food waste management, and mitigation options for pets and small children.

Is it achievable?

The eradication of rats, stoats, possums and wallabies on Kawau is considered technically feasible based on precedents established elsewhere. Rats have been removed from more than 650 islands worldwide including both inhabited islands and islands larger and more complex than Kawau. Possums and stoats have been removed from a number of islands and mainland fenced sanctuaries up to 3,875 ha in size. Precedent also exists for wallaby eradication with brush-tailed rock wallabies removed from Rangitoto and Motutapu in the 1990's.

The aerial application of 1080 to target wallabies was ruled out based on community feedback and ground-based methods were prescribed to target rats within residential areas to avoid contaminating water supplies, but these constraints are considered surmountable. However, the project's success, particularly for rats, is contingent on the application of rodent bait across all properties on the island. Even the smallest property on Kawau could provide a refuge for rats and lead to eradication failure. Further work with landowners currently unsure about proposed methods or opposed to the project is required to meet this condition.

Preventing rats and stoats re-establishing on Kawau will require dedicated resourcing and undoubtedly be a challenge. However, landowners appear willing to take the extra care that will be required and precedents within the Hauraki Gulf and elsewhere suggest the project's outcomes can be sustained. As evidenced through its work elsewhere in the Hauraki Gulf, Auckland Council has the legal mandate, resources and necessary skills and expertise to support the implementation and maintenance of biosecurity for Kawau.

Capacity to support the project's implementation in terms of personnel, pest detection dogs, accommodation, and other resources, appears to be available and the provisional operational strategy is consistent with legal requirements suggesting the project can meet its statutory obligations. Additional funding sources towards the project have been identified but are yet to be secured. The overall cost of the project, estimated to be ~\$6.5M for the eradication with ongoing costs of ~\$375,000 per annum to prevent reinvasion and reestablishment, is considered attainable.

Conclusions and next steps

In conclusion, while the Kawau project is undoubtedly ambitious and contingent on a number of dependencies, the project is considered technical feasible. Initial engagement with the community has highlighted significant support for the project, but for the project to proceed, further work with landowners currently unsure or opposed to the concept is needed. A small number of landowners (~18) could not be contacted, declined to discuss the project, or did not respond to calls. Efforts to reach these landowners continues. If a decision is made to proceed, Auckland Council will also need to commit dedicated biosecurity resources to prevent pest population re-establishment and respond to stoat or rodent incursions. The eradication of pests on Kawau should not proceed until the probability of pests reinvading the island has been reduced to near zero and the community is committed to the prospect of becoming New Zealand's largest pest free inhabited island.