PIROA-BRYNDERWYNS

LANDCARE

FIVE YEAR PLAN – 2018-2023

AUGUST 2018

Cover image: Catherine Hawley, Marunui Conservation

Contents

Vision:

Kiwi are seen and heard throughout Piroa (Brynderwyn Hills)

1. BACKGROUND

Piroa-Brynderwyns Landcare is a collective of more than a dozen community-led conservation projects that are working together to restore biodiversity in the Brynderwyn Hills range and environs. Piroa is the traditional name for the Brynderwyns as recognised by local iwi Patuharakeke and Te Uri o Hau and is used in this plan. The project area is defined in Figure 1.

Figure 1 Piroa-Brynderwyns Landcare area

The 5-year plan builds on active conservation work carried out in the area by communities, iwi/hapu, land managers, agencies and organisations over the last decade. It consolidates the considerable investment of resources provided to date by a lengthy list of supporting organisations and entities including the NZ Landcare Trust, QEII Trust, Northland Regional Council (NRC), Department of Conservation (DOC), Marunui Conservation Ltd., Bream Bay Coastal Care, Fairy Tern Charitable Trust, Mangawhai Tracks Charitable Trust, Kiwis for Kiwi, Hancock Forest Management (NZ) Ltd (HFM) and more recently Kiwi Coast. The security of funding through the NRC Long Term Plan should provide confidence to communities that there is strong support for their ongoing work on the ground.

"The Brynderwyn Hills range is a prominent, natural physical feature for the southern Whangarei and northern Kaipara districts. It extends for some 15 km, from just west of State Highway 1 to the Bream Tail headland on the east coast by Mangawhai. This area, hereafter referred to as Brynderwyns-Bream Tail, exhibits significant biological diversity encompassing extensive regenerating hill forest and shrubland habitats, many high-quality streams and a variety of coastal habitats, including saltmarshes. A correspondingly diverse fauna and flora is present, with a number of significant plants and threatened or rare fauna." (Pierce, 2010).

The project area is characterised by steep hill country covered with a mosaic of native and exotic forest, surrounded by pastoral farms and lifestyle blocks, running out onto river flats with a ribbon of settlements stretching along the coast. The Waipu estuary on the eastern boundary is recognised as a significant ecological marine area in the Northland Regional plan, its high ranking due in part to a group of threatened shorebirds, including the migratory Fairy Tern. Those parts of the Brynderwyns covered by regenerating bush, which are largely continuous along the southern flanks, are identified as an Outstanding Natural Landscape in the Northland Regional Plan. While the coastal edge is the focus for recreational activity, the forested hinterland also offers contrasting recreational opportunities. Many Northlanders experience the Brynderwyns as the southern gateway to the north. The view from the summit gives them a sense of homecoming while providing a popular look-out point for visitors.

Proximity of the entire project area to the Hen and Chicken Islands (Taranga and Marotere) increases the importance of biodiversity gains along this coastal and hilly threshold.

Tangata Whenua

Brynderwyns-Bream Tail has long been an important area for tangata whenua and discussion with representatives of those iwi holding mana whenua over the area confirmed this. Te Uri o Hau, Ngatiwai and its hapu Patuharakeke all have traditional links with the area, with their rohe encompassing various parts of the range. The diversity of habitats, from open sea coast to estuaries, streams and forests, would have provided varied and dependable food resources. Some land was also cleared for gardens. Today the spiritual and cultural values remain as strong for tangata whenua as in ancestral times.

The Te Uri o Hau Settlement Trust, the Ngatiwai Trust Board Management Unit and the Patuharakeke Te Iwi Trust Board have each expressed their kaitiaki role and relationship with the environment and their support in principle of efforts to protect and enhance indigenous biodiversity within their rohe in Brynderwyns-Bream Tail. (Pierce, 2010)

Who's Involved?

Piroa-Brynderwyns Landcare brings together active local pest control projects including:

- Bream Tail Farms CPCA
- Marunui Conservation
- Cullen Rd trappers
- Massey Rd trappers
- Hancock Forest Management (NZ) Ltd (HFM)
- Oi Kaitiaki
- Jude Rd Forest Care
- Ruru Kaitiaki
- Kapawiti Kaitiaki
- Langs Beach Estate
- The Sanctuary CPCA
- Waipu Kiwis

The combined project area of these groups is just over 18,000ha. Each of the coloured areas in Figure 2 below represents a community group working actively in the project area.

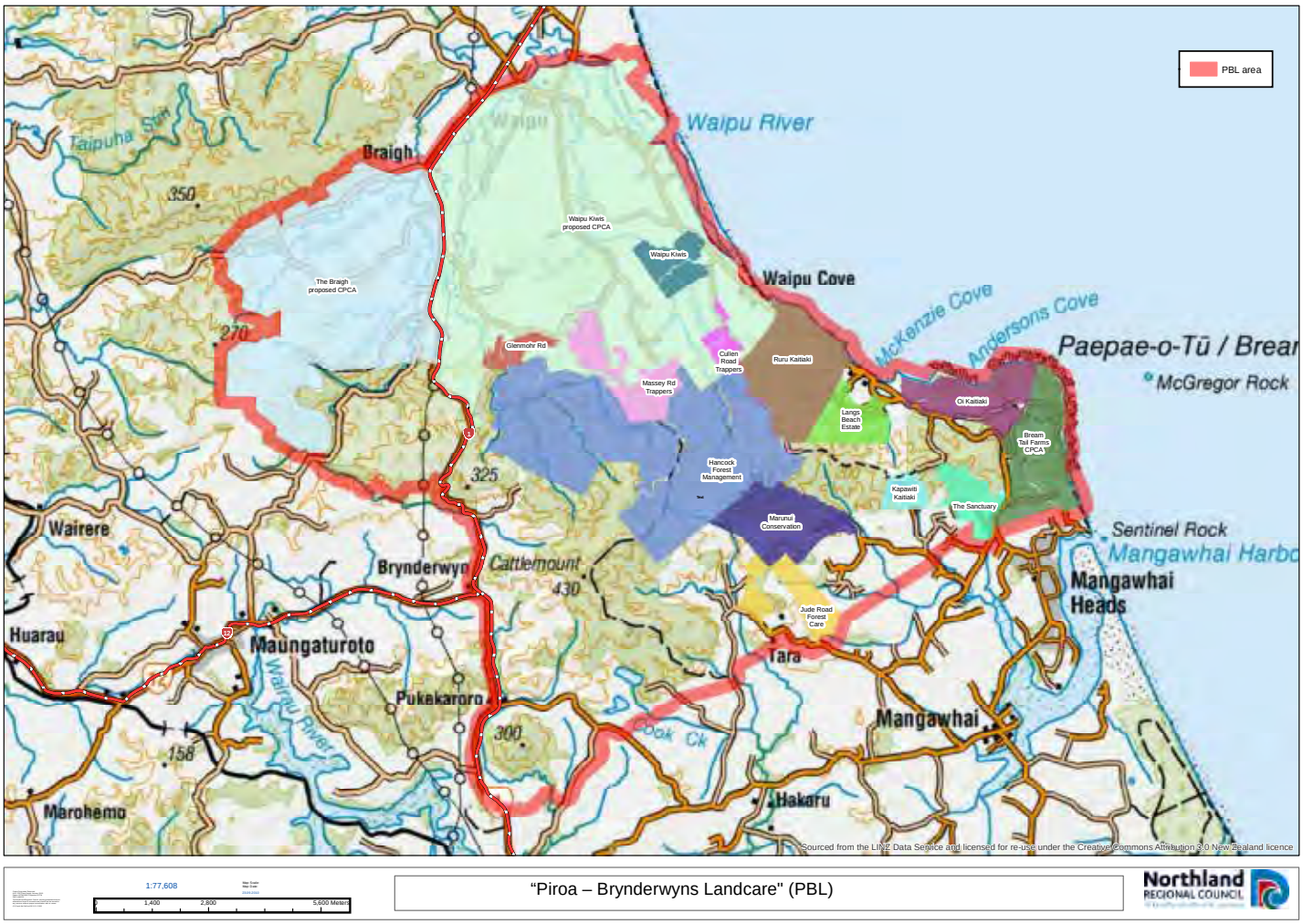


Figure 2 Distribution of Community Groups involved in Piroa-Brynderwyns Landcare

With support/interest from:

- Bream Bay Coastal Care
- Department of Conservation (DOC)
- Fairy Tern Charitable Trust
- Friends of the Brynderwyns Society Inc
- Iwi – Te Uri o Hau, Ngatiwai, Patuharakeke
- Kaipara District Council
- Kiwi Coast
- Northland Regional Council (NRC)
- Weed Action Whangarei Heads
- Whangarei District Council

To begin with, Piroa-Brynderwyns Landcare will focus on a portion of this area of just over 9,000 ha for trapping and weed control.

Land Tenure

Hill country in the project area is a mixture of privately owned bush lots, many of them large, public reserves and land managed for production forestry, most of it by HFM. Figure 3, The Brynderwyn Hills Forest Habitats, shows the extent of native forest/shrubland cover, the location of reserves and QEII covenants.

There are 75 QEII Trust covenants in the project area which together protect 920ha of private land. Almost half of these covenants are found within Langs View Estate, a recent subdivision behind Langs Beach.

Public land consists of DOC reserves which account for 1,052ha within or close to this project area. A list of these reserves is included in Appendix 1. The largest of these DOC reserves are:

- Brynderwyn Hills Scenic Reserve 236ha
- Pukekaroro Scenic Reserve 132.5ha
- Bream Tail Scenic Reserve 72ha
- Brynderwyns (purchase) Scenic Reserve 67ha
- Robert Hastie Memorial Scenic Reserve 28.3ha

The Mangawhai Tracks Charitable Trust has an MoU with DOC to form recreational tracks in the Brynderwyns Hills Scenic Reserve. The Trust traps predators along those tracks on a voluntary basis.

Brynderwyn Hills Scenic Reserve

Increasingly, private landowners in the area are forming groups to undertake pest control or biodiversity projects. This enables collaboration, coordination of efforts and encourages further local landowners to participate in biodiversity stewardship. While each group is autonomous, Piroa-Brynderwyns Landcare provides an opportunity for collaboration towards shared goals by these groups as well as the government agencies, commercial forest companies, iwi, hapu, and organisations operating in the area. Working together, the significant biodiversity values of the project area can be maintained and enhanced.

Building the skills, capacity and resources available to these landowners through the conduit of their local groups are the key mechanisms for realising this plan's goals.

2. BIODIVERSITY VALUES

Hochstetter's frog

Auckland Museum, 1993

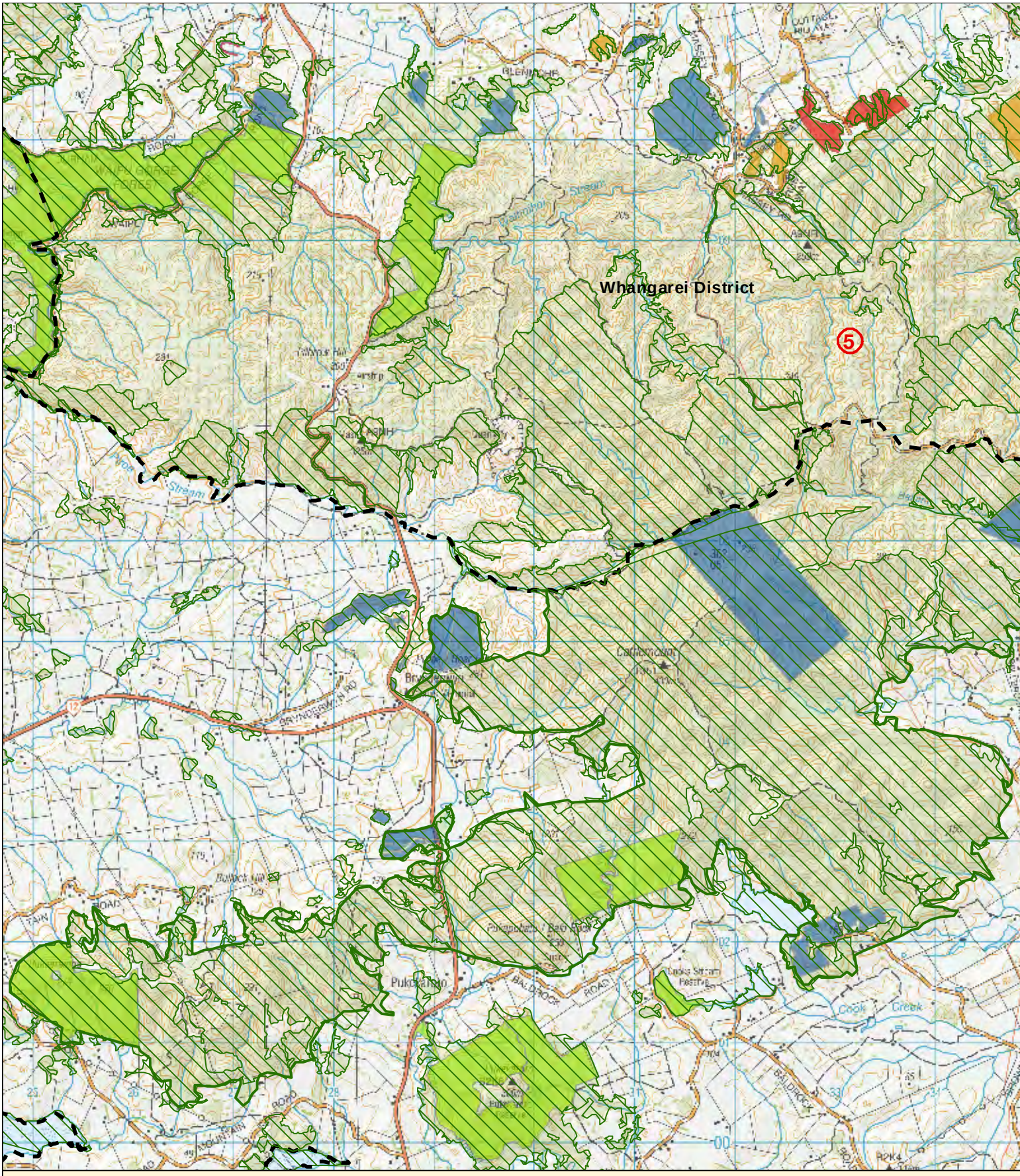
The area has high biodiversity values that include extensive indigenous forest and shrubland on hill country, coastal headlands, dunes, saltmarsh and many small clear-water streams. All these habitats support a wide range of flora and fauna, including many threatened or significant species of plants, snails, fish, frogs, lizards, bats and birds. (Pierce, 2010).

"The area supports a large number of significant flora species. The Brynderwyn Hills section covers such a wide geographic area with significant habitat variation internally, that it is one of the more important Northland forest remnants. Its large size means that in the event of extreme conditions, (eg drought, fire or storm damage) there will be areas where plant and animal assemblages are likely to survive or find temporary refuge. Additionally, the large area provides opportunities for adaptation that, in the longer term, may be needed in response to climate change. Meanwhile, the smaller Bream Tail sector exhibits clear affinities with the Hen and Chickens group, containing many plant species associations that are rare on the mainland". (Pierce, 2010).

Eight at risk species and fifteen regionally significant plant species are present including carmine rata, kawaka, Hebe macrocarpa var. macrocarpa, tree fuchsia, northern rata, hard beech and tawapou. Plant species recorded to date at Marunui (245) and on Bream Tail headland are extensive.

The Piroa-Brynderwyns area also provides a food source and habitat for a range of threatened and regionally significant animal species:

- NZ's northernmost population of native frog - the Hochstetter's frog which is present along well-buffered streams
- Northland brown kiwi (translocated)
- Australasian bittern and pied stilt, visiting some wetlands
- North Island kaka, visiting from Hen and Chicken Islands, along with red-crowned kakariki and bellbird
- Recovering populations of NZ pigeon and North Island tomtit
- Blue penguin and grey-faced petrel along the Bream Tail coastline
- North Island fernbirds in saltmarsh and shrubland
- Grey duck, little shag, black shag and NZ dabchick
- NZ dotterel and pied oystercatcher on the beaches
- Long-tailed cuckoo
- Auckland green gecko
- Kauri snail
- Longfin eels, banded kokopu and other representative freshwater fish species in the streams (Pierce, 2010).



LEGEND

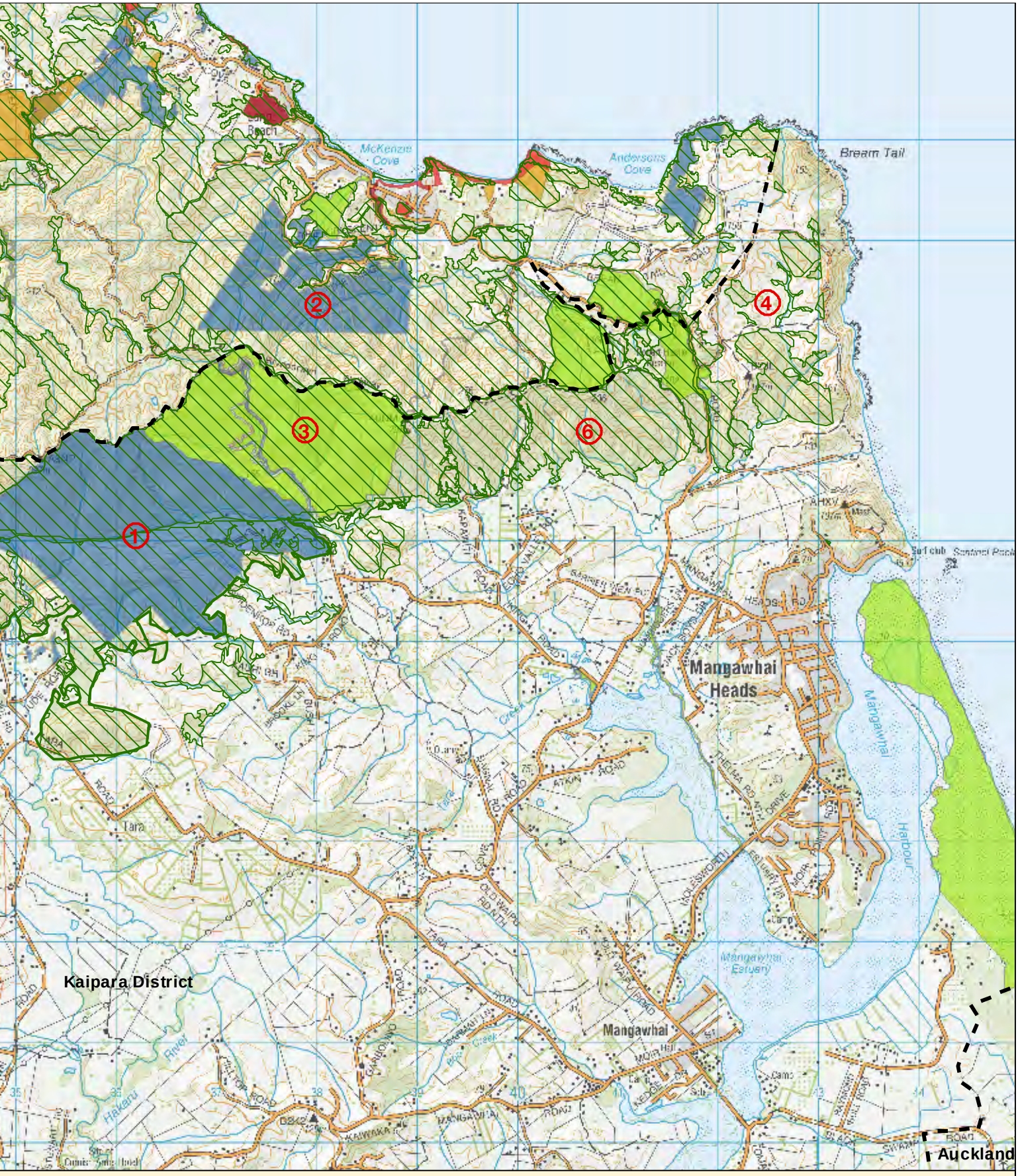
Topographical map features

- Native forest / shrubland
- Exotic coniferous forest
- Shelter belt
- Trees
- Orchard or vineyard
- Mangroves
- Stream
- Open fresh water
- Saltmarsh

Overlay features

- Whangarei / Kaipara District boundary
- PNAP in Waipu, Otamatea and Rodney EDs
- Public Conservation Land
- Whangarei District Reserve
- Whangarei District Conservation Covenant
- QEII Covenant
- Indigenous forest / shrubland

Source: Department of Conservation - Public Conservation Land, PNAP
QEII National Trust - QEII Covenants
Whangarei District Council - Reserves and Covenants



1. Marunui Conservation
2. Langs Beach Estate
3. Brynderwyn Hills Scenic Reserve
4. Bream Tail Farm CPCA
5. Hancock Forest Management (NZ) Ltd
6. The Sanctuary CPCA

BRYNDERWYN HILLS FOREST HABITATS

0 0.5 1 2 3 Kilometres

Scale: 1:50,000

N

LINZ Topo50 sheets AY30 and AY31. July 2018

Figure 3

3. ANIMAL AND PLANT PESTS

Animal pests

Threats to biodiversity are attributable to both direct and indirect human impacts. Historically, habitat loss through the clearance of forests and draining of wetlands and saltmarsh to create pastoral farmland in the late 19th and early 20th centuries, and the introduction of pest animals and plants, had a dramatic effect on biodiversity. While much of the Brynderwyns' forest has regenerated over the last 60 years and now provides a significant habitat, pest animals, weeds and pathogens continue to threaten its viability.

Currently animal pests of most concern are mustelids, feral cats, possums, rats, pigs and uncontrolled dogs.

Appendix 2 sets out the pests to target and how.

- The mustelids (ferrets, stoats and weasels) are serious predators. Ferrets are capable of killing adult kiwi and are more numerous here than trapped areas further north, eg. Whangarei Heads Kiwi Sanctuary (Todd Hamilton, pers comment). In unmanaged areas DOC estimates that stoats kill 95% of kiwi chicks before they reach breeding age. Weasels are very mobile and target smaller birds, particularly in the nest.
- Feral cats are top predators in the bush, secretive, rarely seen and difficult to catch. They prey on ground nesting birds, including kiwi chicks, but can also climb.
- Possums have an impact on entire forest ecosystems by eating the flowers and fruit of certain species, such as taraire, miro and kohekohe. This has repercussions for the kukupa and other seed dispersers. They also predate nesting birds.
- Rodent populations, i.e.. rats and mice fluctuate in response to food availability. The ship rat is a consummate climber, common in bush and targets birds' nests. The larger Norwegian rat is associated with farm buildings and residential areas. Rodents feed on fruit and seeds, invertebrates, lizards and Hochstetter's frog.
- Pigs are very numerous and mobile throughout this area and have been a source of sport for hunters using dogs for decades. Anecdotal reports suggest hunters are contributing to numbers by releasing piglets bred for the purpose. Pigs churn up the ground in search of worms, invertebrates, kauri snails and Hochstetter's frog. In the process they destroy seedlings, spread weeds and potentially kauri dieback disease.
- Uncontrolled dogs have been identified by DOC as the biggest threat to adult kiwi in Northland, reducing the average age to just 14 years.

Pest Plants

Invasive weeds can cause adverse effects on environmental, economic, social and cultural values. Without management they can quickly become a problem requiring a major investment to contain or eradicate. The Northland Regional Pest and Marine Pathway Management Plan 2017-2027, contains at least one progressive containment plant, pultenaea, which has become naturalised at Marunui. Many of the common weeds found in the project area are listed in the Sustained Control plant category and are subject to sale and distribution bans or certain other controls (pp.46-57 of the Plan).

Environmentally damaging weeds are numerous within the project area. They include:

- shade tolerant understorey species such as wandering willy, garden nasturtiums, kahili ginger and climbing asparagus that prevent native seedlings from germinating;
- climbers such as moth plant and banana passionfruit, that reach up into the forest canopy smothering new growth, flowers and fruit;
- trees and shrubs, such as privet and woolly nightshade, with vigorous growth and soil poisoning characteristics that displace or inhibit native plants.

There are also weeds that flourish in more open habitats such as coastal cliffs and eroded sites where the wind blown seeds of pampas grass and other species proliferate.

While a number of properties have protective covenants with local councils requiring weed control, it is not known whether any monitoring takes place. Properties with QEII covenants are periodically inspected by representatives and are more likely to fulfil any such requirements.

Kauri dieback

The pathogen *Phytophthora agathidicida,* causing kauri dieback disease, was first identified in New Zealand in 2008. It is now well established through some of Northland's kauri forests and is also present in parts of the Brynderwyns. The pathogen is soil and water borne, infects kauri of all ages through the roots and causes death. As there is currently no known cure, the only way to save kauri trees and forests is to contain the disease and stop it spreading. Humans are not the only vector for the disease with feral goats, pigs and stock also moving soil and damaging the root systems of kauri trees leading to loss of health and/or spread of disease.

The Brynderwyn Hills Walkway between Cullen Rd, Massey Rd and SH1 has recently been closed by the Department of Conservation. In other parts of the area hygiene protocols will be developed to limit the spread of this disease by professional and volunteer trappers and weeders.

Kauri in need of protection from dieback

4 WORK TO DATE

Piroa-Brynderwyns Landcare does not begin anew, but rather seeks to build upon the last decade's momentum in community kaitiakitanga/stewardship and biodiversity restoration and the efforts of Marunui Conservation for over 25 years. Through working together, community groups involved will become more efficient and effective. Instead of each project battling to reduce plant and animal pests in the face of constant reinvasion, a combined approach enables pest reduction at a landscape scale.

With support from NZ Landcare Trust, NRC, Kiwis for Kiwi, Kiwi Coast, HFM, QEII Trust, WDC and DOC, community-led conservation projects in the area have been supported and resourced to carry out biodiversity restoration, including:

- Integrated animal pest control to reduce rats, possums, feral cats, feral pigs, feral goats, weasels, stoats and ferrets
- Fencing off native forest areas from stock
- Habitat restoration through plant pest control, wetland restoration and native tree planting
- Community engagement, education and advocacy to encourage good dog control to protect threatened native species such as NZ dotterel and kiwi.

The momentum is reflected in data collected by Kiwi Coast across Northland since 2013, revealing an increased trap catch in successive years as the number of projects and groups contributing data grows (Tyson, 2017). An estimate of total pest animals caught in 2017 was 229,372.

Animal pest control initiatives

Initiatives at Marunui and on the Bream Tail headland, Bream Tail farm and within Hancock's forest have achieved some success with animal pest management. The overall reduction in numbers of pest species at Marunui, with the exception of pigs, has resulted in an increase in birdlife and a general improvement in forest health. Significantly, the number of stoats caught in 2009 (twenty five) was reduced to seven in 2017; and ferrets from eight in 2013 to one in 2017.

A ring of mustelid traps on private land surrounding Marunui was established in 2014 following the reintroduction of kiwi. Funded by DOC, HFM and the Biodiversity Condition Fund, it increased the protected area from 423ha to approximately 1250ha. This 'Ring of Steel', which is serviced by contracted trappers, has been very effective in removing predators before they can enter Marunui. At the same time it affords protection to kiwi venturing beyond Marunui's boundaries.

Annual trapper training workshops run by Marunui Conservation at Mangawhai have been well attended, indicating a high level of interest from the wider community. Such workshops could well be held in Waipu on an alternating basis.

Current predator traps 2018

In recent years, Northland Regional Council has funded additional predator traps through its Biodiversity fund. This has seen the trap network in the project area grow from around 350 traps to around 500 by May 2018, resulting in a significant network of mustelid traps already in place - well over 2,000ha.

Figure 4 shows where these traps are currently deployed and where additional traps are needed to fill in gaps. They are being managed by a mix of unpaid community volunteers, paid community-based professionals and HFM contractors, and trained staff from DOC (Waipu Sandspit wardens).

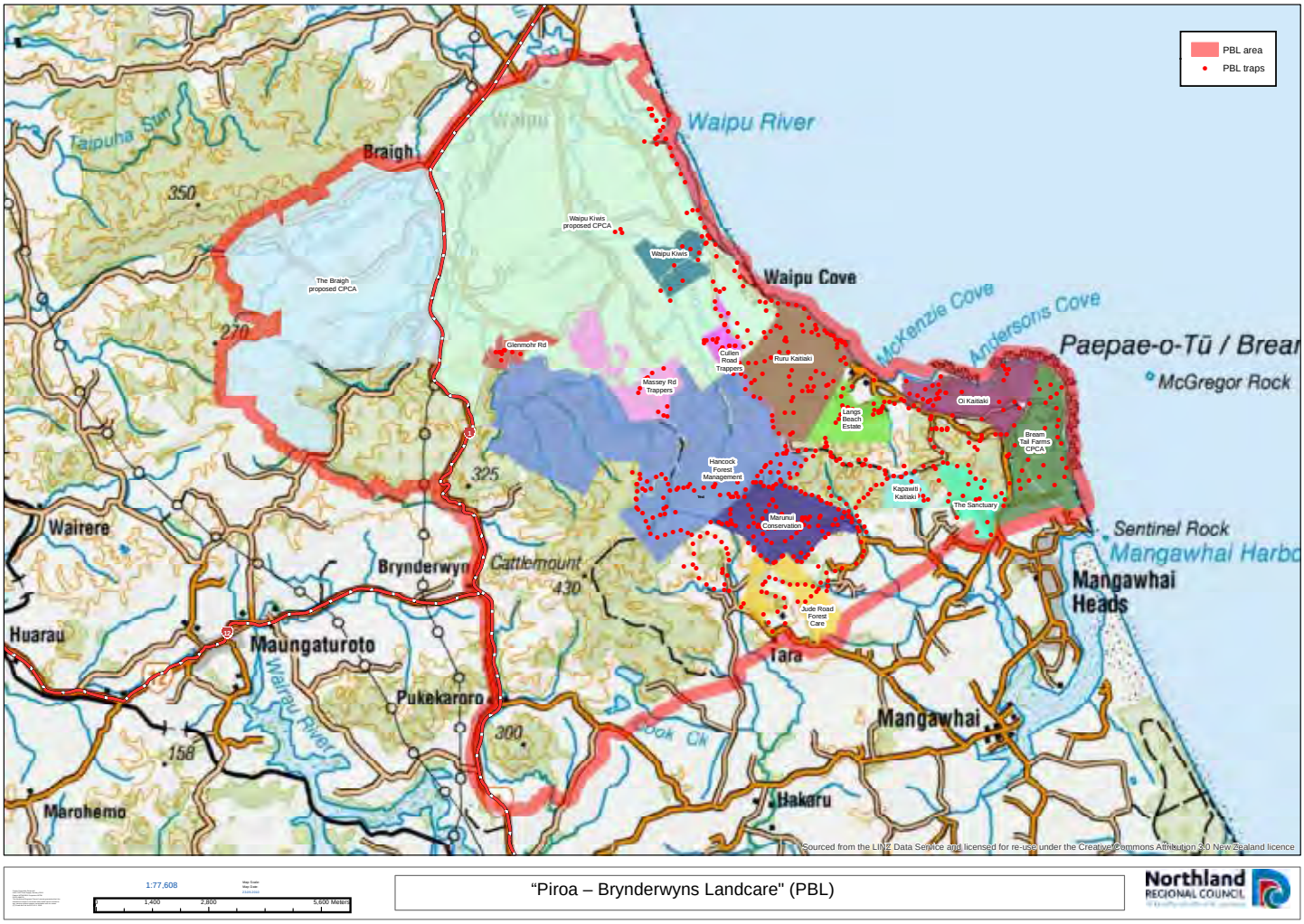


Figure 4 Distribution of current mustelid trapping network across Piroa-Brynderwyns Landcare

Several local groups, newly formed, share the task of trapping including Kapawiti Kaitiaki, Waipu Kiwis, and Ruru Kaitiaki. The combined results for 2017 show the high numbers of possums, rats, stoats and weasels removed from the area.

Work along Cove Road, the Waipu Estuary and on the Sandspit is important to the area's biodiversity in that it protects the threatened shorebirds and in the longer term will help protect kiwi who venture further north and east.

Trapping volunteers setting stoat traps, Waipu Coastal walkway

Weed initiatives

Funding for Piroa-Brynderwyns Landcare includes an amount for weed control and a coordinator, potentially modelled on the Whangarei Heads Weed Action Group. To date efforts to control weeds have not been coordinated and attempts to remove some pest plants have relied on individual or isolated actions. More recently an initiative by the Waipu Kiwis to set up a local Weed Action group has begun with a public meeting calling for people keen to clean up the area. Langs Beach Estate has recently approved a pest management plan which includes weed control. Marunui Conservation prioritises weed control based on its management plan. In addition, it has reduced an area of climbing asparagus on a neighbouring property and has tackled moth plant found in the same area. There is significant potential for community-wide action to reduce pest plants throughout the area.

Weed workshop in Waipu, led by Jo Barr from Weed Action Whangarei Heads

Dealing with dogs

Uncontrolled dogs have been identified by DOC as the biggest threat to adult kiwi in Northland. Kiwi avoidance training for dogs is a tool to help reduce the threat dogs pose to kiwi but experience shows it is more effective for farm and hunting dogs than for companion/pet dogs. For the latter, while training may help, the best way to prevent them harming kiwi is to keep them under strict control at all times and away from areas where kiwi live. Some district councils issue informative leaflets to dog owners during the licensing process (eg. Kaipara) and it is becoming common for subdivisions near high density kiwi areas, or in places with significant natural values, to have a 'no dogs or cats' condition imposed on the lots.

Marunui Conservation has organised several kiwi avoidance training sessions for dogs and DOC offers a number of sessions each year. Some groups have funded these themselves. To expand the area covered by avoidance training, Waipu could be used as an alternative venue. With a rapid rise in the number of residents, bach owners and visitors to the district, spreading the message about the need for good dog control to protect both kiwi and nesting shore birds is becoming increasingly important.

Kiwi avoidance trained farm dogs Zag and Gem

5 GOALS, OUTCOMES AND OBJECTIVES

Goals

1. Grow the kiwi population annually as measured by kiwi call counts
2. Involve local people and community groups as kaitiaki, build participation and awareness of the high biodiversity values of the project area, and gain community pride and respect
3. Build on the existing mustelid trap network to achieve and maintain a comprehensive network over the project area
4. Train more farm and hunting dogs to avoid kiwi and ensure they are appropriately controlled on public and private land
5. Manage the spread of identified environmentally damaging weed species to a level where they no longer threaten the natural values
6. Enable species such as North Island kaka, bellbird and kakariki currently restricted to offshore islands and occasional visitors to the mainland, to recolonise the area
7. Translocate other key species not currently present
8. Take effective actions to contain the spread of kauri dieback in all professional and volunteer work

Five year outcomes

By 2023 Piroa-Brynderwyns Landcare aims to:

1. Double the current kiwi population as measured by annual kiwi call counts
2. Increase local community involvement in trapping and training workshops as measured by volunteer numbers, sales of traps, trapping network and catch results on Trap.nz and training workshop attendance
3. Install a comprehensive mustelid trap network with an average trap density of 1 trap per 10 ha over more than half the project area
4. Run awareness raising campaigns to generate understanding that dogs can kill kiwi and other bird species as measured by change in number of dogs under control in public areas
5. Control invasive weeds through widespread community participation supported by a coordinator and resources as measured by biennial weed prevalence surveys
6. Observe bellbird, kaka or kakariki at least once a year in at least 5 of the 13 project areas
7. Increase native bird diversity and abundance yearly as measured by 5 min bird call counts

Objectives:

To achieve these goals and outcomes Piroa-Brynderwyns Landcare will:

- Prepare a 5-year Financial Plan to secure funds and resources to successfully implement the various elements of the project (Appendix 3)
- Work together as communities and land managers to maintain and enhance the native flora and fauna

- Continue to extend the present mustelid trap network to significantly reduce predators and allow kiwi to increase their population and to satisfy DOC's criteria for additional kiwi translocations
- Coordinate animal and plant pest operations for maximum efficiency and effectiveness
- Promote responsible dog ownership and fund kiwi avoidance training sessions for dogs
- Initiate a weed action group or groups with community involvement and resourcing for a paid coordinator and equipment
- Carry out monitoring to inform decision making and track progress towards goals
- Motivate and empower further landowners to actively participate in environmental stewardship/ kaitiakitanga by holding joint community events and skill building workshops
- Work with NRC and Kiwi Coast to maximise opportunities and outcomes within the Northland-wide pest control and kiwi recovery area.

Coastal pohutukawa forest from Anderson's Cove

6 ACTIONS

Coordination of the following actions will occur via the establishment of a Stakeholder Group, **Piroa-Brynderwyns Landcare Working Group**, with support from the NRC Biosecurity team and the Kiwi Coast Coordinator.

a) Ensure the groups can continue their existing work

The first priority is to ensure that existing groups have the resources needed to continue their operation, so that none of the hard-won ecological gains are lost.

What's required?

- Multi-year funding to give continuity and certainty
- Pay for professional trappers to continue to service the established trapping network.
- Provide pest control resources so that private landowners and others involved can continue to carry out their voluntary work – including traps, lures, toxins, bait stations, weed spray, and monitoring equipment.

b) Complete a comprehensive predator control trap network

The current mustelid trap network has been put in place to target mustelids that predate on a wide range of native fauna, including kiwi. Feral cats are also a focus. The first continuous threads of traplines across multiple projects are in place; the challenge is now to fill the remaining gaps.

What's required?

- Pay for traps + time to establish new traplines and where necessary pay professional trappers to service them.
- Map all traps and enter them into the Trap.NZ system to provide the data to NRC and Kiwi Coast
- Organise a continuous supply of baits such as salted rabbit or possum
- Increase volunteer trapper numbers through training and an active recruitment programme to provide a complementary trapping network to the professional trapping one.

c) Coordinate periodic toxin operations

Over time the number of predators caught can reduce as animals become trap shy. Supplementing trapping with coordinated toxin operations across the project area every 3 – 5 years (or as triggered by monitoring) will reduce predators and help eliminate those which are trap shy.

What's required?

Establish a bait station network with willing landowners across multiple projects to form the basis of the network. For projects that do not already have an established network, provide the following:

- Bait stations
- Pre-feed + toxin
- Monitoring equipment + assistance/training
- Admin/coordination

- Consult with landowners to determine which toxins are acceptable, noting that this may change over time as people build their understanding of the tools available and trusting relationships are developed with communities.
- Provide information about kauri dieback and hygiene techniques to prevent spread.

d) Organise plant pest control

Several weed species have the potential to compromise the natural values in this area. Some of the groups involved already carry out voluntary plant pest control and this needs to be resourced and encouraged for maximum benefit. A potential negative effect of animal pest control is an increase in plant pests. This can be caused by a reduction in browsing pressure and by an increase in the dispersal of plant pest seeds as bird numbers increase.

What's required?

- Form a weed action group or groups to specifically focus on, coordinate and support weed work
- Engage a coordinator to support the objectives and outcomes of plant pest control
- Provide herbicides and plant control equipment
- Target weeds that cause the most damage to natural areas in the project area
- Provide information about kauri dieback and hygiene techniques to prevent spread

Plant pests, private property, Waipu

e) Promote responsible dog control

Any dog can kill kiwi. Dogs are known to be a major threat to kiwi - adults and chicks. Dogs are regularly exercised on the local beaches, and forestry and bush tracks - including areas where dogs are not permitted. Keeping dogs away from nesting birds is a major concern.

What's required?

- Prepare a local awareness raising campaign to coincide with the summer season and school holidays
- Run 6-monthly kiwi avoidance training sessions for farm and hunting dogs, alternating between Waipu and Mangawhai
- In association with Kiwi Coast personnel & resources, organise targeted and well promoted kiwi release events to involve the local community and provide an opportunity for learning about kiwi and their care.

f) Build skills and community capacity

Maintaining motivation and a high skill level amongst locals carrying out animal and plant pest control can be achieved via workshops. Local field trips and trapper mentoring will also assist with building skills and knowledge to ensure optimum results are achieved.

What's required?

- Hold regular local workshops targeted at building pest control skills, monitoring techniques, etc
- Organise local project fieldtrips to help share knowledge and innovation
- Invite NRC Biosecurity Staff and/or Kiwi Coast for site visits and/or project trapping reviews
- Enrol professional paid trappers in the Kiwi Coast 'Trapper Mentoring' program to maintain skill levels and motivation
- Provide information about kauri dieback and hygiene techniques to prevent spread.

Kiwi Coast can help organise, promote and support these events.

Trapping workshop, Mangawhai

g) Communicate and engage with the wider community

Regular communications locally, regionally and nationally will build respect and encourage more landowners and volunteers to get involved or start their own local projects.

What's required?

- Create and regularly update our own websites and/or Facebook pages for trapping and weed action work
- Participate in local and regional events, eg. market days in Waipu and Mangawhai
- Contribute to the monthly Kiwi Coast newsletter to help share results, progress and stories across Northland
- Write articles for local and regional media, eg. Bream Bay News, Mangawhai Focus, Northern Advocate, and for the 'green' press
- Include your group and its activities on Nature Space
- Involve local schools in conservation activities, eg. through Kiwibank's Predator Free Schools programme and Northland's Enviroschools programme
- Prepare welcome packs for new residents in the district

h) Monitor outcomes and progress

What's required?

To allow for adaptive management and sound decision making, coordinated monitoring will be carried out in the form of:

- Trap catch records, trap mapping and trap reporting through the Trap.NZ or alternative mapping system
- Audit a sample of traplines annually to ensure trapping is effective and carried out to Best Practice standards
- Annual Kiwi Call Count Surveys – a minimum of one listening site will be established within each group's project area, using either Kiwi Listening Devices or trained human listeners
- Pest animal abundance monitoring (tracking tunnels, chew card, wax tags, etc) before and after major pest control operations
- Photo points of key species to mark recovery of foliage from possum browse (eg. pohutukawa, rata, puriri, pate)
- Three-yearly 5-minute bird counts or kaka, bellbird and kakariki counts in conjunction with Kiwi Coast and NorthTec Conservation Management students
- Before and after photos of weed control
- Before and after observations of dog control behaviour in public spaces

i) Track kiwi dispersal

Enabling kiwi to safely disperse from the core area of the Marunui - HFM - DOC land into the surrounding land is a key objective of Piroa-Brynderwyns Landcare. Tracking how kiwi distribution changes over time will be an important measure of success.

What's required?

- Identify current kiwi presence and absence via a Kiwi Distribution Survey in Year 1. This will be achieved using existing kiwi distribution data (annual Kiwi Call Count Survey results) and the use of Kiwi Listening Devices to investigate new sites
- Repeat the Kiwi Distribution Survey every 5 years, and in interim years record and map confirmed kiwi reports and observations

Setting stoat trap, Waipu Coastal Walkway

7 SUSTAINABILITY

Much of the animal and plant pest control work carried out by the groups involved is unpaid and voluntary. The majority of private landowners, once they have the skills and pest control products on hand, can continue to carry out pest control with great results as evidenced by trap catch data and biodiversity outcome monitoring results to date. The NRC and Kiwi Coast work together to provide skill building workshops for community-led projects each year in Northland to ensure pest control is being carried out to high standards and achieving the desired outcomes. In effect, empowering private landowners and communities to carry out their own pest control is the most sustainable model possible.

Landcare projects such as the Tutukaka Landcare Coalition and the Whangarei Heads Landcare Forum have achieved rapid increases in kiwi populations after employing professional mustelid trappers to complement the voluntary pest control work carried out by landowners. For example Kiwi Call Count Monitoring results show that kiwi at Whangarei Heads have increased from 80 to over 800 over 12 years. This bucks the national trend identified by the Kiwis for Kiwi Trust of a 2% decline in kiwi nationwide. While paid professional mustelid trapping brings an ongoing cost to projects, there are clear benefits to endangered species recovery.

In the interests of increasing sustainability Piroa-Brynderwyns Landcare will continue to motivate, inspire and empower landowners to become actively involved in biodiversity stewardship/ kaitiakitanga. The Landcare group will also work with Kiwi Coast and NRC to demonstrate the wise use of resources and to communicate the results being achieved.

Once the Working Group is established the actual allocation of funding across the main areas of expenditure will be confirmed. It is anticipated these will include:

- Professional trapping particularly in the difficult terrain
- Additional mustelid traps
- Toxin, baits/mechanism to support a bait supply for mustelid trap network
- Weed action requirements - coordinator, equipment and other resources
- Workshops and training
- Promotional materials, eg. dog control, weed action

8 SUMMARY

Piroa-Brynderwyns Landcare brings together landowners and land managers with the desire to collaborate with their local community in the vision of creating a safe haven for native biodiversity throughout the area. Here kiwi will flourish once more and disperse freely from the Marunui stronghold into the surrounding lands. And native birds like the North Island kaka, Red crowned kakariki and bellbird, currently only occasional visitors from the Hen & Chicken Islands, will repopulate the mainland.

The groups involved have a wide range of skills and experience in on-the-ground pest control methods and biodiversity restoration. Together, they already represent numerous private landowners and local volunteers actively involved in kaitiakitanga conservation stewardship. The results of each individual group's hard work to date are evident in the increasing forest health and growing birdsong in each project area.

The challenge ahead is to maintain these hard-won gains and take the next steps forward to create a cohesive network across Piroa-Brynderwyns to enable our local biodiversity to flourish and kiwi to successfully breed and their chicks to survive to adulthood. At the same time this would be contributing to the national goal of a predator-free Aotearoa by 2050.

REFERENCES:

Auckland Museum. 1993. Natural Animals of New Zealand, 3rd ed.

Northland Regional Pest and Marine Pathway Management Plan 2017-2027.

Northland Regional Council Long Term Plan 2018- 2028, June 1918.

Pierce, Ray. 2010. Brynderwyns – Bream Tail. Opportunities for Ecological Restoration. Unpublished report prepared by Eco Oceania Pty Ltd for Marunui Conservation Ltd and the Biodiversity Advice Fund.

APPENDIX 1: Reserves administered by DOC within or close to Piroa-Brynderwyns Landcare

Reserve	Size (ha)
Brynderwyn Hills Scenic Reserve	236.0
Bream Tail Scenic Reserve	72.0
Brynderwyns Scenic Reserve	67.3
Cooks Stream Scenic Reserve	8.5
Langs Beach Scenic Reserve	14.6
Pukekaroro Scenic Reserve	132.5
Robert Hastie Memorial Scenic Reserve	28.3
Te Uri o Hau Scenic Reserve (Bald Rock)	63.5
Waionehu Stream Margin Scenic Reserve	5.6
Waipu Gorge Forest Conservation Reserve	154.3
Waipu Gorge Scenic Reserve	84.2
Waipu Wildlife Refuge Reserve	185.4
Total	1,052.2

APPENDIX 2: Which mammalian pests to target and how

The table below summarises the impacts of different pests on specific biota in the Brynderwyns-Bream Tail area and key management methods.

Y = high impact and need to remove/manage these pests to very low levels;

y = low/lesser impact and management may not always be essential

y/Y = uncertain levels of impact

Pest:	Possum	Mustelid	Cat	Dog	Rat	H'hog	Pig
Biota to be protected	Likely impacts						
Kiwi	y	Y	Y	Y			Y
Bittern	y	Y	y/Y	Y			Y
Blue penguin	y/Y	Y	Y	Y	?		Y
Petrels	Y	Y	Y	Y	Y		Y
NZ pigeon	Y	Y	y/Y		Y		
Kaka	Y	Y	Y	y	y/Y		
Kakariki		Y	Y		Y		
Bellbird	y	y/Y	y/Y		Y		
Tomtit	y	y/Y	Y		Y		
Lizards		y/Y	y/Y		Y	Y	
Kauri snail	Y	y	Y		Y+ mice	y/Y	Y+
Fernbird		y			y/Y		
Bats	y/Y	y/Y			y/Y		
Frogs		y/Y			y/Y		Y+
Understorey	Y				Y		Y+
Flowering/ fruiting	Y				Y		
Threatened plants	Y/y				y/Y		Y+
Preferred control methods	Cyanide capsules, trapping	Traps: DOC200, DOC250, Fenn	Traps: Timms, cage	Shoot	Diphac-inone	Traps	Shoot

Note: H'hog = hedgehog;

In final (pig) column, Y+ indicates pigs and browsers in general have an impact, so includes goats, and livestock.

(Pierce, 2010)

APPENDIX 3: Financial plan

Funding of $200,000 has been approved by the Northland Regional Council for Piroa-Brynderwyns Landcare from a targeted rate for this area. Of this $32,000 has been allocated for Kauri Dieback projects in the area being managed by NRC, leaving $168,000 for pest control and weed action projects.

A draft budget for expenditure has been prepared and will be confirmed by the Working Group once this is established.

Income NRC targeted rate	$168,000
Expenditure	
Pest control	
Professional trapping	$65,000
Traps, toxin, baits, & trap audits (field & report)	$58,000
Trapping coordinator/admin	$10,000
Workshops- trapping & dog control, community engagement	$5,000
Weed control	
Weed action coordinator, tools, equipment, spray, other resources	$30,000
Total	$168,000