

Kaharoa Kokako Trust

Ten Year Plan

2007 – 2017

“The Kaharoa Kokako Trust project is ambitious and successful, and not only seeks to continue the existing programme but also to expand this effort. I, on behalf of the North Island Recovery Group, applaud the Trust for their vision and their determination to ensure that this work continues.”

Phil Bradfield
Kokako Recovery Group Leader 2007

This is a ‘living document’ produced by the Kaharoa Kokako Trust in collaboration with the Department of Conservation. This document contains an outline of the Kaharoa Forest restoration programme, maps out objectives, and includes schedules of actions towards attaining these ambitions.

The plan is open to debate and amendment, and will be reviewed annually in June. Electronic copy and return suggestions for the annual review of this document is facilitated by the Secretary of the Kaharoa Kokako Trust, Margaret Horner – margaret.horner@scionresearch.com

The functional relationships, responsibilities and common objectives of the Kaharoa Kokako Trust and the Department of Conservation are outlined in their existing Memorandum of Understanding (Dated 21/07/2009) **Ref: MOU Appendix 1**

10 Year Plan/version 31 August 11

Kaharoa Kokako Trust

- Amplifying New Zealand's original song -

Mission

To ensure long-term protection and survival of kokako at Kaharoa through effective ecosystem management and community leadership.

This mission will be achieved by working with the community and the Department of Conservation to maintain both a vibrant population of kokako and a revitalised ecosystem in the Kaharoa Forest in perpetuity.

Method

- To protect kokako by reducing and managing the pest animal numbers to low levels.
- To enable the natural ecosystem to flourish and thereby improve indigenous biodiversity values such as forest structure and composition.
- To source sufficient funding and support to protect kokako in the Kaharoa Conservation Area, and to implement successful restoration work.
- To engage the local community to proactively manage the Kaharoa Conservation Area, with the support of the Department of Conservation (DOC) and funding providers.

Primary Objectives – kokako survival

- To maintain maximum kokako population in the Kaharoa Conservation Area.
- To provide information and support for neighbouring landowners to facilitate spread of kokako population.
- To provide kokako for translocation to other areas.

Secondary Objectives – biodiversity enhancement

- To assist identification of endangered plants and improve their chance of survival.
- To assist removal or reduction of noxious weed species.
- Provide volunteer labour to support the reintroduction of other bird species by DOC.
- To support regional biodiversity objectives, including inland corridor.

Guiding Principles

- **Leadership** – marshalling community-based resources.
- **Integrity** – fulfilling the goals set.
- **Accountability** – ensuring all our activities are purposeful and effective.
- **Voluntary service** – enabling people to make a meaningful contribution.
- **Effective communication** – maintaining good relationships with all stakeholders.
- **Sustainability** - ensuring our activities can be sustained in perpetuity.

www.kokako.org.nz

Purpose

The protection of kokako at Kaharoa plays an important role in national kokako recovery. This core population in the Kaharoa Conservation Area is viewed as a source of birds for rebuilding kokako numbers in the Bay of Plenty and elsewhere in New Zealand.

By protecting the core population at Kaharoa, the Trust is allowing for:

- (A) Supply of kokako for translocation outside the Kaharoa area.
- (B) The development of wildlife corridors through natural dispersal of kokako into neighbouring forest areas.

To ensure both A & B are achieved, a major commitment of the Trust must be to secure short- and long-term funding for ongoing pest management (i.e. sponsorship and Nest Egg), and to supply manpower through effective volunteer management.

A. Supplying kokako for translocation

The primary purpose of the Trust is to ensure that kokako numbers are maintained in the Kaharoa Conservation Area. This will enable kokako to be available for translocation to other protected areas under the guidance of the Kokako Recovery Group.

B. Encouraging dispersal

The natural dispersal of kokako outside the Kaharoa Conservation Area is a positive indicator of breeding success. The Trust will encourage protection of the dispersing birds with the long-term view of helping to develop wildlife corridors.

Pest management on neighbouring land remains the responsibility of the respective land owners. Ideally they would coordinate their pest control to align with the Trust's.

When communicating with neighbours, the KKT undertakes to:

- Provide advice on pest management.
- Potentially assist with funding to establish bait station network (decided on a case-by-case basis).
- Liaise on an annual basis to keep them informed of pest management operations for the upcoming year.

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Background -The Kaharoa Conservation Area

The total area of the reserve is 705 ha. This area includes the following distinct blocks managed by the Kaharoa Kokako Trust:

- **Aislabie's Block (including Ruato)** – 351 ha
- **Onaia West** – 171 ha
- **Onaia East** – 183 ha

For a map of the area, see Appendix 2.

Legal description - Section 1, ML5579 Block XIV Maketu S.D. Section 1 Blk 11 Rotoiti SD. Section 4 blk 11 Rotoiti SD . (Conservation unit name and number - BOP CMS U15041)

Location & Land Ownership

The Kaharoa Conservation Area is about 30 km by road, north-east of Rotorua City. The main access is gained off the end of Kapukapu Road via Kaharoa Road, which runs north-east off the Tauranga Direct Road about 5 km from the intersection with the Hamurana Road.

Ranging from 100 to 300 metres above sea level, the Kaharoa Conservation Area has a northerly aspect and is divided by a reasonably large gorge. In pre-European times it was known to have been occupied by Ngati Rangiwewehi, a Te Arawa tribe, and many old pa sites testify to the occupation.

In 1896, the Crown purchased the forest. Felling of native trees for timber and firewood, farming, gold mining and recreational use all had an impact on the forest. In 1984 the 300 ha 'Aislabie Block' was re-purchased by the Crown primarily to protect the kokako population. This move was initiated and strongly supported by the Royal Forest and Bird Protection Society of New Zealand through their Rotorua branch. Ref: Map Appendix 2

Geology

The Kaharoa Forest (Kaharoa Conservation Area) & Onaia Ecological Area are representative of the geology, landforms, soils, and regenerating forests of the Kaharoa Plateau. Collectively they exist as a series of undulations with 'precipitous toe-slopes into gorges on either side'. The geological base is Mamaku Ignimbrite overlaid with volcanic ash and tephra soils (formed from the numerous volcanic episodes over the last 10,000 years).

Fauna

A full list of current bird, animal and invertebrate species is included as Appendix 3. As no definitive reference is available this has largely been compiled from local experience and knowledge. Since pest animal control was begun, observations indicate that bird species other than kokako are also benefiting, with a noticeable increase in the numbers of bush robin, for example. In future, it may be possible to re-introduce bird species which are assumed to be locally extinct, such as riflemen or kakariki. Such introductions could alter the current methodology and efforts in pest control, so the implications on funding and volunteer resources must be carefully considered.

Flora

The area contains a complex of rewarewa (*Knightsia excelsa*) dominated forest, with a mosaic of regenerating kamahi-tawa-tanekaha-podocarp-makomako scrub and forest. It is considered to have high-to-exceptional botanical values, with a healthy population of the significant plant para

Kingfern (*Marattia salicina*), which is on the national threatened species list as chronically threatened (*in serious decline*). Vascular plants of Kaharoa Conservation Area are listed in Appendix 4.

History of Kokako Management

Between 1989 and 1997, Aislabie's Block at Kaharoa was part of a "Research by Management" (RbM) experiment carried out by Manaaki Whenua (Landcare Research) and the Department of Conservation¹.

Between 1990 and 1993, three aerial poisoning operations were used to control possums and rats. In addition, possum trapping and goat management were also undertaken. During that time kokako breeding success increased to 85%² and the number of kokako pairs increased from 7 to 18.

Pest control was then stopped and the monitoring continued from 1993 to 1997 to assess the full impact of pests on breeding success. The first year after pest control ceased at Kaharoa, 27% of kokako pairs successfully breed chicks. In the second year this dropped to 13%. During the following two years, no kokako successfully fledged any chicks.

The RbM experiment showed that pest control targeting possums and rats can achieve major benefits for kokako, dramatically increasing kokako breeding success and their long-term survival prospects. Information gained from that experiment has been invaluable in refining techniques for pest control and managing threatened species on the New Zealand mainland.

Formation of the Kaharoa Kokako Trust

The "Kaharoa Kokako Trust" was formed in 1997 when Kaharoa residents, Peter Davey and his partner Rachael Vellinga learned that the Department of Conservation had no immediate fund allocation to recommence pest control within Kaharoa Forest following the research experiment. A group of interested people formed the Trust and put together a proposal for volunteers to carry out pest control in Kaharoa Forest. This proposal was gratefully accepted by the Department of Conservation.

DOC carried the initial cost of the programme, while the Trust was able to supply the labour (normally a major cost in any pest control programme). The Trust has been successful in attracting sponsorship to maintain pest control, with Bay of Plenty Regional Council generously providing technical support and funding through their Environmental Enhancement Fund.

It remains the Trust's mission to ensure long-term protection and survival of kokako at Kaharoa. This commitment to involvement with DOC represents a leading example in developing and supporting direct conservation efforts and local community ownership of a conservation project.

Results to date

Prior to the first pest control work undertaken by the Kaharoa Kokako Trust in 1997, a "census" of adult kokako was carried out by Carmel Richardson. She located 12 pairs and two single kokako.

¹ A full description of this research is given in Innes *et.al* 1999 "Successful recovery of North Island Kokako *Callaeas cineria wilsoni* population by adaptive management". Biological Conservation 87 (1999) 201-214.

² This is taken as the percentage of kokako pairs that successfully raise at least one chick to fledging. Kokako often raise two and sometime three chicks.

During the latter end of the breeding season, Carmel observed that of the 12 pairs, 25% (ie. 3 birds) had “fledged” young. One pair raised two chicks, and another two pairs raised one each – thereby increasing the population by four birds. These were the first birds to have bred successfully in the area for at least two years.

Another adult census was carried out in 2006. The census shows that the threatened kokako population in Kaharoa Forest has expanded over the past eight years from 12 breeding pairs to over 30 within the same area.

The 2006 census extended beyond the Kaharoa Forest to cover the whole Conservation Area managed by the Kaharoa Kokako Trust. This survey identified 60 breeding pairs, with a large number of juvenile birds yet to establish territories.

In 2008 a walk-through survey was conducted on properties adjacent to the Conservation Area. A total of six territorial pairs were found on neighbouring properties: two on the Northern side of the Mangorewa Gorge; one in the Pinnacles Forest, and; three in the DoC reserve that extends South from the Onaia West.

“This highly successful programme has enhanced kokako numbers within the Kaharoa Conservation Area for the past decade. In 1997, when pest control began there were eight pairs of kokako; there are now 58 pairs. This turn around in kokako numbers is nothing short of fantastic; making it one of the largest kokako populations in the North Island.”

Phil Bradfield
Kokako Recovery Group Leader

Awards

In recognition of its success, the Kaharoa Kokako Trust has received the following awards:

- 1998 – Spirit of Rotorua Award in Association with Trustpower - Plant, Earth and Heritage Category winner.
- 2000 – Environment Bay of Plenty Environmental Award
- 2001 - Winner of Trustpower Spirit of Rotorua Heritage & Environment Award.
- 2005 - Department of Conservation (Bay of Plenty) Outstanding Contribution to Conservation Award.
- 2005 - Trustpower Spirit of Rotorua Award - commendation in Heritage & Environment.
- 2006 – Overall winner of Environment Bay of Plenty Conservation Award.
- 2008 – North Island Kokako Recovery Group acknowledgement to the Trust’s significant contribution to the Kokako Recovery Programme.
- 2010 – Supreme Green Ribbon Award – Ministry for the Environment

In 2006, Peter and Rachael Davey were given a Rotorua District Council Community Award by the Mayor of Rotorua in recognition of their outstanding initiative in forming the Trust.

In 2007, Anne Managh received the same award to honour her contribution to the Kaharoa Community, including her valuable role as secretary of the Kaharoa Kokako Trust.

Community and Recreation

The Kaharoa Kokako Trust's activities have enabled a strong sense of community spirit and pride through encouraging people to pull together to save the kokako. The community response to this project to date has been exceptional with active volunteers from Kaharoa, Hamurana, Mamaku, Ngongotaha, Rotorua and the greater Bay of Plenty community. Their participation has resulted in increasing awareness of the kokako, the forest, and of conservation issues.

Teachers and pupils of Kaharoa School, whose emblem is the kokako, use the Kaharoa Forest as an educational resource to promote conservation awareness in their curriculum.

Positive working relationships and mutual respect have been achieved, not only between landowners and individuals in the community, but also with the participating organisations and particularly the Department of Conservation and Bay of Plenty Regional Council.

Recreational opportunities include the signposted Kokako (or Hollows) Track, which is regularly used by visitors to access the picturesque Onaia Stream. This track goes through two kokako territories so provides good opportunities to see or hear the birds.

The Trust recognises the potential for ecotourism in the area and intends to be involved in such ventures as deemed appropriate.

Pest Animals - Direct Threats

The principal pest animals that directly threaten (i.e. are predators to live Kokako) the long-term survival of the Kokako are rats, possums, stoats and cats ranked in descending order of importance.

Rats prey on eggs and fledglings and are the primary cause of total breeding failure resulting in decline of the kokako population. Possums are known to disrupt nests during their passage through the location and also to prey on eggs and fledglings.

Historically the Trust has not directly targeted mustelids believing that it is a high population of rats that sustains mustelid and cat numbers and that the focus on controlling rats therefore limits the potential of these other predators. Trap lines to target mustelids were introduced into the program in 2005 to a limited extent and their use continues as a tool to monitor population trends of mammalian pests other than ship rats or possums.

Pest Animals – Indirect Threats

Some animal pests indirectly affect kokako survival by degrading the forest ecology (i.e. food supply) and habitat. Possums are the main culprits with the potential to degrade the key canopy components (chiefly: kamahi, northern rata and kohekohe) and generally degrade the native flora habitat with their selective feeding behaviour. Rats also affect forest health and regeneration capability by feeding behaviour particularly by the removal of seeds and seedlings.

Goats are present in some places and degrade the forest understorey by reducing the proportion of palatable vegetation species present. Pigs and deer are not present in sufficient numbers to be considered a limiting factor to kokako. DOC has an ongoing goat control programme which includes Kaharoa.

Pest Animal Status

Possum numbers have been maintained at a generally low level, and are currently moderately low after management operations (See Fig. 1)

Rodent activity within the managed blocks has shown to be effectively reduced by management actions (see Fig. 1) although has been quick to rebound to high levels (e.g. 2004 – 76.6%). It is considered that when successful management operations did occur over the last 15 years, Kokako chick fledgling rates were improved significantly.

For detailed information about pest management results, see operational report for current year.

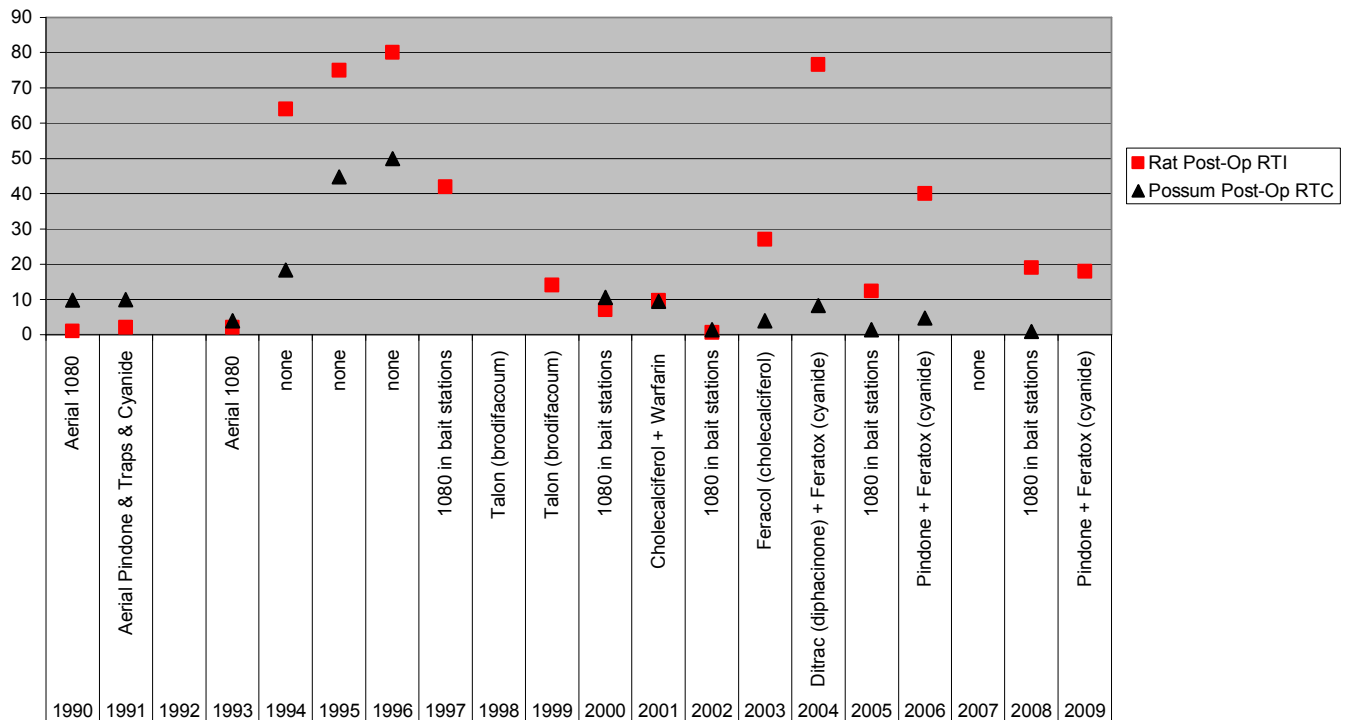


Figure 1: Kaharoa Conservation Area – pest poisoning results

Pest Plants

A range of pest plants are present in the Kaharoa Forest area. These weeds can inhibit the growth of native species and slow down the natural regeneration of clearings. They also represent a nuisance along the edges of tracks, where constant maintenance is required to retain access.

Blackberry (*Rubus fruticosus*), is the main plant pest incursion. It is found along roads and tracks and is controlled by regular spraying. Gorse (*Ulex europeas*) is found only along the farm boundaries and occasionally on access tracks. Control is carried out manually, and only where it inhibits ease of access. Buddleia (*Buddleja davidii*), Pampas (*Cortaderia selloana*) and Himalayan Honeysuckle (*Leycesteria formosa*) are intolerant of shade and are prevalent on open track edges. These species have vigorous growth rates and are difficult to control manually.

A full list of pest plants are included as Appendix 4.

“The Kaharoa Kokako Trust has provided a model for other groups to follow by working with DoC, the Regional Council and others to focus on a common objective. The future of kokako depends on such cooperation around New Zealand, and this Trust is one of the best working examples.”

John Innes
Landcare Research

Ten Year Operational Plan

This Ten Year Operational Plan outlines the actions required to ensure that the mission and goal of the Trust are met. This Plan is divided into three main sections:

- **Trust administration and funding** – Ensures that the Trust is well administered to ensure sufficient funding and resources are available to implement the Plan.
- **Kokako management** – Focuses on maintaining a steady population of kokako at Kaharoa, while enabling translocations and dispersal to other areas.
- **Communication and publicity** - Builds and maintains relationships with key contributors to ensure wide community involvement.

This plan is compiled within the context of the following SWOT analysis for the Kaharoa Kokako Trust:

STRENGTHS	WEAKNESSES
<p>Kokako an iconic NZ bird. Unique environment. Passionate, dedicated individuals. Diverse skills of Trust members Strong community awareness Good communication with key stakeholders (eg Kokako Recovery Group). DOC/BOP Regional Council support. Local school/community support. Good roading, bush track access Proven track record of success. 10 year plan in place. Annual action plan in place. Trust Deed and Constitution in place Good working relationship with DoC. Improved relationship with Ngati Rangiwewehi. Project is relatively attractive to sponsors</p>	<p>Success requires perpetual inputs Difficult access to some tracks and bait stations, particularly Onaia East. Weak bait station network leading to sub-optimal pest management in some areas. Distance from Rotorua. Labour-intensive work requirements. Kokako are shy birds – not readily seen.</p>
OPPORTUNITIES	THREATS
<p>Revisit Trust structure and implement sub-committees that recognise different roles of Governance and Management within the Trust. Strengthen volunteer support.</p> <p>Improve bait station network. Extend community input. Provide education. Have more fun / social activity at work events.</p>	<p>Funding – ongoing sources. Statutory limitations on toxin use / application Compliance costs. Poor communications. Lack of succession planning. Burnout of key people and volunteers. Decreasing ability for DoC to provide support/high staff turnover. Removal of “endangered” status of kokako. Increasing bureaucratic requirements of volunteer groups.</p>

Trust Administration and Funding

The Kaharoa kokako project is recognised as a highly successful community project that is used as a model for other groups around the country.

The foundation of its success is the relationship between the Kaharoa Kokako Trust and the Department of Conservation's Bay of Plenty Conservancy and Rotorua Lakes Area Office.

This working relationship, which has been formalised through the Memorandum of Understanding, (Appendix 1) provides stability for the project's success, and enables joint efforts towards shared goals.

This plan will enable the mission statement for the Kaharoa Kokako Trust to be met by providing the necessary administration and funding. Trust members are responsible for the ongoing management of this infrastructure. **Emphasis must be placed on the need for setting objectives that are attainable for a volunteer workforce in perpetuity.**

Kokako Nest Egg

The Kaharoa Kokako Trust has established an investment fund known as the "Kokako Nest Egg" with the ultimate aim of accumulating \$150,000. Once the target is reached, the interest from this fund may be used to cover our basic administration and pest control costs. This approach will provide a degree of financial self-sufficiency in the future, although additional funds will still need to be sought for other projects. It is understood that **only the interest yielded from the fund will be used** for operational costs, and that the **core investment will remain untouched**, unless deemed absolutely necessary by the Trust. If KKT is ever disbanded, funds will be reallocated to an appropriate organisation (associated with kokako protection) at the discretion of the Trust.

Trust Administration and Funding Actions:

1. Operational plan completed by 1 February annually to meet DOC planning requirements.
2. Trust meets a minimum of six times per year.
3. Secure ongoing funding.
4. Build capability through the development and involvement of volunteers.
5. Build resources and skill of Trust members.
6. Maintain the functionality and vitality of Trust by regularly reviewing Trust membership.
7. Build and maintain relationships with key contributors to ensure wide community involvement (see Communication and Publicity plan).
8. Maintain database of information for lobbying/funding purposes (eg. Volunteer hours spent, volunteer demographics etc)
9. Maintain financial records.
10. Maintain maps of operational areas.
11. Develop ecotourism opportunities as appropriate.

Trust Administration and Funding – Goals

- **Every year the Trust will complete all the actions listed in the Annual Action Plan.**
- **Sufficient funding will be secured annually for ongoing pulsed pest management.**
- **By June 30 2017 a “Kokako Nest Egg Fund” of \$150 000 will be accumulated in Trust to provide a self-sustained fund source for ongoing pest control. (To date on track with over \$39 000 secured – 30 June 2011.)**
- **By 30 June 2017 the Trust will continue to be fully operational, with improved community support (measurable by volunteer numbers).**

Kokako Management

The purpose of this plan is to facilitate restoration of the Kaharoa forest structure and indigenous ecosystem processes, by the intensive management to low levels of animal pest species and the reduction of plant pests. Pest management activities are guided by the objectives of the National Kokako Recovery Group.

Background to animal pest control needs

Adult kokako can live up to 20 years and survival rates after fledging are generally good, therefore the total number of kokako will remain relatively stable during periods of no pest management.

On average if the number of young kokako raised is equal to, or better than the number of adults dying, the long-term survival of the population will be maintained.

To periodically 'switch off' the pest control is deemed 'pulse management'. Breeding success declines as soon as the pest control is switched off, but the total numbers of adult kokako remain fairly stable. To switch off control allows a reduction of toxin levels in the area.

Pest control has major benefits for many other native birds, insects and the forest in general.

In 1999 the Rotorua Botanical Society established some permanent vegetation plots in Aislabie's block. These plots are designed to monitor the impact of possums on the forest and will be re-measured periodically to monitor trends in the forest health.

Translocations & Introductions

The Kaharoa Kokako Trust supports translocations as a means of ensuring the survival of kokako, not only in the Kaharoa area, but also nationwide. This objective is seen as a way of providing incentive for ongoing support of the Trust. Kokako translocations can be effected to areas established as priority by the Kokako Recovery Group and agreed by DOC and Kaharoa Kokako Trust members

The Trust recognises that pest control activities undertaken to support kokako survival also improve the quality of habitat for other species. This plan aims to identify species, bird and fauna, that could be re-introduced/introduced, to the Kaharoa Forest & Onaia Ecological Area, to provide opportunity for greater interest and education for all involved. Examples of possible introduction species are kakariki, blue duck, hochstetter frog, rifleman, saddleback and weka.

While the Kaharoa Kokako Trust will retain its primary focus on kokako, volunteer labour will be provided to support re-introduction of other species by DOC. (Kaharoa Kokako Trust funding can also be provided when deemed appropriate.)

Kokako Management Actions:

1. Maintain toxin application history.
2. Develop a toxin management plan for knockdown, and sustained pest animal management over an operational core of at least 705ha.
3. Maintain access ways, track networks & markings, bait stations, and stoat traps.
4. Facilitate monitoring activities as necessary to measure success, maintain sponsorship support, and inform pest management decisions.

5. Conduct ungulate & pest plant management on an – *as and when required* basis utilising DOC staff and or contractors.
6. Facilitate and support monitoring and pest control on neighbouring properties as appropriate.
7. Maintain kokako population at a level sufficient to enable on-going translocation.
8. Identify and understand protocol and guidelines required for all translocations. (See DOC, Kokako Recovery Group and others)
9. Consider practicalities and management of translocations, including availability of ‘stock’, funding and monitoring requirements.
10. Identify strategic relationships required to facilitate translocations.
11. Encourage research activities by Universities or other appropriate organisations.
12. Explore feasibility of pest-proof fencing if deemed desirable for any reason. (eg. native frog protection)

Kokako Management – Goals

- **Every year the Trust will complete all the actions listed in the Annual Action Plan.**
- **By 30 June 2017 adult population numbers will be maintained at level of 2006 census.**
- **The pest control target for possums is 5% RTC and 10% for rats.**
- **By 30 June 2017 achieve measurable increases in other non-target species (eg kereru, North Island Robin, tomtit, white head).**
- **Make birds available to meet translocation targets as directed by the Kokako Recovery Group. (Achieved: 7 birds moved to Secretary Island 2009; 2 birds moved to Otanewainuku 2010; 2 birds moved to Pukaha 2010)**
- **Maintain a road maintenance plan in partnership with DOC for OMD to ensure the main track remains driveable all year round. (Metal laid in June 2011)**

Communication and publicity

A major role of the Kaharoa Kokako Trust is to ensure community buy-in to the project and engender wide-spread support.

The purpose of this plan is to inform stakeholders and the wider public about the activities of KKT, to provide them with opportunities for involvement, and make them aware of mutually beneficial outcomes within the Kaharoa Forest & Onaia Ecological Area.

Communication and Publicity – Key messages:

- Kokako populations can only be protected through sustained pest control.
- The community can play a vital role in sustained pest control operations.
- Every individual can make a difference in enhancing the environment.
- By improving the environment for kokako, we're improving the environment in general.

Communication and Publicity Actions:

1. Maintain a resource of motivated volunteers
2. Produce KKT Newsletter (work towards three per year)
3. Write media releases on key achievements
4. Develop and maintain website
5. Provide publicity material (eg. brochures, tee shirts, caps)
6. Provide information kits for volunteers (including guidelines for track maintenance)
7. Provide information kit to enable neighbours to undertake pest control on their property
8. Make nominations for awards
9. Maintain a photo library
10. Produce science publications on key findings
11. Organisation Open Day events for stakeholders
12. Contribute to educational activities at Kaharoa Primary School
13. Improve community acceptance of toxin use.
14. Provide information trail for public access.

Communication and Publicity – Goals

- **Every year the Trust will complete all the actions listed in the Annual Action Plan.**
- **By 30 November 2007 the Trust will have an active website. (Achieved 2007: www.kokako.org.nz)**
- **By 30 November 2008 a full range of promotional and publicity material will be available. (Achieved 2007)**
- **Three newsletters will be distributed annually.**
- **By 30 November 2013 provide appropriate signage and panels for public education purposes.**
- **By 30 November 2015 at least three neighbouring properties will be actively engaged in pest management. (Achieved 2009: V. Cotter, R. Linton, W. Fleming)**

Appendix 1

MEMORANDUM OF UNDERSTANDING BETWEEN THE DEPARTMENT OF CONSERVATION AND THE KAHAROA KOKAKO TRUST

This Arrangement was entered in to on the 21st day of July 2009.

PARTIES

- 1 **THE DIRECTOR GENERAL OF CONSERVATION** acting by and through the Rotorua Lakes Area Manager, Department of Conservation, Bay of Plenty Conservancy (“the Department” or DOC)
- 2 **THE KAHAROA KOKAKO TRUST** a duly incorporated charitable trust under the Charitable Trusts Act 1957 having its registered office at Kaharoa, Rotorua (“the Trust” or KKT)

BACKGROUND

- A**
- (i) The Department’s mission is: “To conserve New Zealand’s natural and historic heritage for all to enjoy now and in the future” An overarching purpose of the Department is “to increase the value of conservation to New Zealanders”
 - (ii) The Department administers the Onaia Ecological Area and the Kaharoa Conservation Area (“the Land”) in the Rotorua Lakes Area of the Bay of Plenty Conservancy. The Land is home to kokako as well as other conservation assets.
 - (iii) The Draft Conservation Management Strategy 2008-2018 (p105) has a number of objectives and policies within the Te Arawa/Rotorua Lakes indigenous forests section relevant to this agreement. These are objectives 1,2,3 and policy 2,3 & 4
- B** The object of the Trust is to ensure the long term protection and survival of kokako within the land and contribute to the protection and survival of kokako populations of New Zealand by:
- (i) Assisting the Department of Conservation in its mandate to protect natural and historic resources, and in particular the kokako.
 - (ii) Encouraging and assisting property owners adjacent to the Land to manage native forest on their properties in a manner that will assist the long term protection and survival of kokako.

- C** The Object of the relationship is twofold:
- (i)** To work in partnership and contribute to the National Recovery goal “ To improve the status of North Island kokako from endangered, by restoring the national population to ca 1000 pairs by the year 2020 in sustainable communities throughout the North Island.
 - (ii)** That the successful partnership between DOC & KKT is recognised by the restoration and enhancement of the Land, benefiting the ecological corridor between Mamaku to Manawahe to enhance the value of conservation to Rotorua residents and visitors.
- D** In pursuance of the Trust’s objects, the Trust carries out work on the Land, primarily using volunteers but also engaging contractors when necessary. Both the Trust and the Department wish to acknowledge and formalise these actions.
- E** The Trust is empowered to enter in to this arrangement pursuant to Rule 5(o) of its Constitution.
- F** The Department is empowered to enter in to this arrangement under section 53(2)(i) of the Conservation Act 1987.

THE PARTIES AGREE ON THE FOLLOWING TERMS TO ENSURE THE ONGOING ACHIEVEMENT OF THE PARTIES MUTUAL OBJECTIVES FOR THE LAND

TERMS

1. Relationship

- 1.1** The arrangement between the parties set out in this Memorandum shall be for a term of 10 years, expiring on the 30th day of June 2017 unless it is earlier terminated in accordance with clause 11 below.
- 1.2** Upon the expiry of this arrangement, the parties will review the arrangement and decide whether or not they wish to continue on the same or other terms.
- 1.3** The parties will continue to work collaboratively in accordance with their respective mandates in relation to protecting the kokako on the Land.

2 Funding and Work programme

The Trust actively seeks funding for the annual work programme. DOC will contribute to and support this process whenever possible. It is acknowledged that DOC has promised \$25,000 funding in the 2012 year being their contribution toward KKT pest control costs for the ensuing five (5) years.

2.1 Department's contribution

(i) The Department will contribute to the Trust's work by way of technical advice, provision of signage or equipment (and possibly poison), outcome vegetation monitoring and post operational target monitoring.

(ii) The technical advice provided to the Trust by the Department will include:

- Specialist information required for the preparation of assessments of Environmental Effects (AEE's)
- Advice on best practice operational control methods.
- Advice on the preparation of health and safety plans.
- Specialist assistance with GIS and mapping.

(iii) Assistance in training or the provision of tools for trustees and members of the Trust to enable the Trust to operate more independently and efficiently.

2.2 KKT's contribution

(i) The Trust will provide the Department with a draft annual work programme in respect of the proposed work on the Land by 28 February in each year for discussion which sets out the following:

- details of the work and budget proposed for the year 1 July to 30 June
- identifying who will undertake the work
- propose how the work is to be funded
- start and completion dates for the work
- health and safety plan for the work

(ii) The draft work programme may also include the following:

- The laying of toxins, shooting and trapping pests.
- The preparation of the AEE and consents for the laying of toxins

- Clearing native vegetation for access
- Handling native birds
- Monitoring
- Removal of noxious weed species
- Other tasks as mutually agreed

2.3 By the 31 March in each year the Department will advise the Trust in writing, their approval of the agreed work plan. The Trust will not commence any work on the Land until the Department has confirmed approval of the work programme.

2.4 By the 31 May each year the Department will provide the Trust with its likely contribution to the work proposed.

3. Health and Safety Plan

3.1 The Trust in conjunction with the Department will prepare a health and safety plan for the work it carries out on the Land, which is to be submitted to the Department with the work programme in 28 February of each year.

3.2 It is the responsibility of the Trust to ensure that the plan is prepared and complied with.

4. Review of work programme

The parties will meet a minimum of twice a year to discuss the work plan and other matters of relevance. The operational report describing results of the previous years pest control work will be available for review by the Trust prior to wider circulation

5. Translocations

When negotiations are undertaken with any other party regarding the translocation of birds from Kaharoa, a representative of the Trust will be included in discussions from the outset. Translocation plans are to be linked to the annual work (pest control) programme.

6. Iwi consultation

It is acknowledged that the Trust consulted with Ngati Rangiwewehi when it was formed, and that Ngati Rangiwewehi supported the objects of the Trust. The Department and KKT will continue to consult with relevant Iwi.

7. Liaison person

The liaison person for the Department will be the Rotorua Lakes Office Manager or her appointee.

8. Information Sharing/ Acknowledgements/ Public Statements

8.1 The parties will share information held by the other that is relevant to their respective objectives for the Land. Any new information relevant to either party to be copied to the other prior to wider circulation.

8.2 It is agreed that the following acknowledgement be included in all written reports, including internal Department communications, where possible, when reporting on any matters that relate to kokako management within the land:

The Kaharoa Kokako Trust, a Charitable Trust established by a group of volunteers in 1998, are dedicated to protecting kokako and their forest environment, in and around the Kaharoa Conservation Area; working in partnership with the Department of Conservation. The website for more information on the activities of this successful volunteer group is: www.kokako.org.nz. The Trust's address is PO Box 78, Ngongotaha, 3041.

9. Insurance

The Trust must take out and keep in force during the term of this Memorandum a policy of public liability insurance against loss and damage or injury arising out of the Trusts actions on the land and covering:

- (i) general indemnity for a sum not exceeding \$1,000,000 and;

(ii) Forest and Rural Fires Act 1977 extension for a sum not less than \$250,000

10. Disputes

Any disputes and differences between the parties relating to the interpretation or performance of this arrangement will be resolved in the first instance by reference to the Rotorua Lakes Area Manager of the Department and the Chairman of the Trust. If this does not resolve the matter, then it should be referred to a forum (such as a formal mediation) as is agreed between the parties.

11. Termination

Should either party breach the terms of this arrangement then the other party may immediately terminate the arrangement by notice in writing to the Trust.

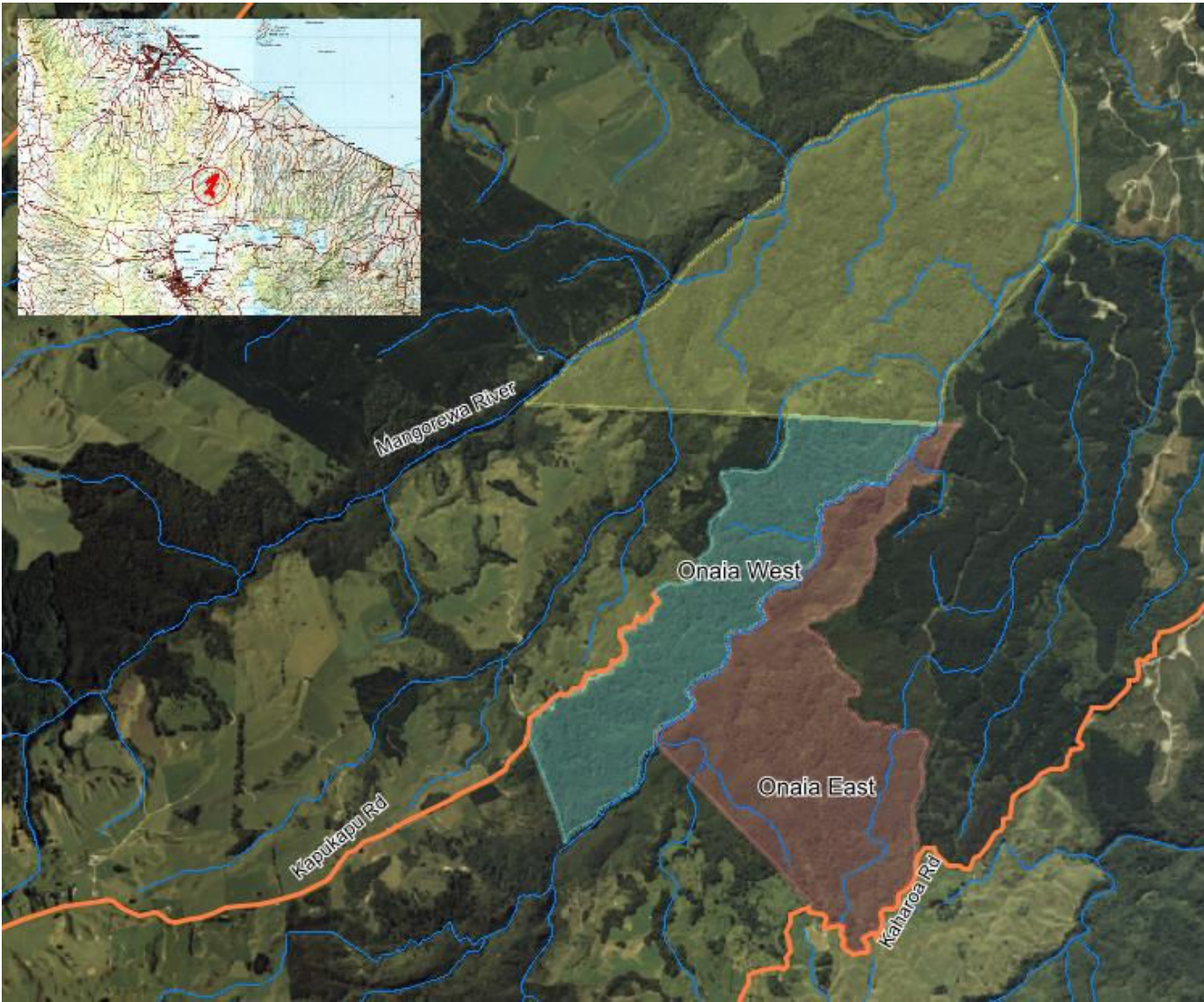
Signed on behalf of the Department of Conservation by
the Rotorua Lakes Area Manager or her appointee, in the presence of:

The common seal of the
Kaharoa Kokako Trust
was affixed hereto in the
presence of:

.....
Trustee

.....
Trustee

Appendix 2 - Map of Kaharoa Conservation Area



Appendix 3 - Fauna of the Kaharoa Conservation Area

BIRDS		Current Status
<i>Acanthisitta chloris granti</i>	rifleman	Locally extinct
* <i>Acridotheres tristis</i>	myna	Present
		Present in adjacent farmland
* <i>Alauda arvensis</i>	skylark	Present
<i>Anthornis melanura</i>	bellbird	Present
<i>Anthus novaeseelandiae</i>	pipit	Present
<i>Apteryx australis mantelli</i>	kiwi-North Island brown	Present
<i>Ardea novaehollandiae</i>	white faced heron	Present
<i>Callaeas cinerea wilsoni</i>	kokako	Present
* <i>Carduelis carduelis</i>	goldfinch	Present
* <i>Carduelis chloris</i>	greenfinch	Present
		Present in adjacent farmland
<i>Cacatua galerita</i>	Sulphur-crested cockatoo	Present
* <i>Callipepla californica brunnescens</i>	California quail	Present
* <i>Chloris chloris</i>	greenfinch	Present
<i>Circus approximans</i>	Australasian harrier	Present
		Present in adjacent farmland
* <i>Columba livia</i>	rock pigeon	Single occurrence eliminated
		Presumed locally extinct
* <i>Corvus frugilegus</i>	rook	Present
<i>Cyanoramphus novaezelandiae</i>	kakariki	Present
* <i>Emberiza citrinella</i>	yellowhammer	Present
<i>Eudynamys taitensis</i>	long-tailed cuckoo	Present
<i>Falco novaeseelandiae</i>	New Zealand falcon	Present
* <i>Fringilla coelebs</i>	chaffinch	Present
<i>Gallirallus australis greyi</i>	North Island weka	Locally extinct
<i>Gerygone igata</i>	grey warbler	Present
* <i>Gymnorhina tibicen</i>	Australian magpie	Present
<i>Halcyon sancta vegans</i>	kingfisher	Present
<i>Hemiphaga novaeseelandiae</i>	kereru (NZ pigeon)	Present
* <i>Hirundo tahitica neoxena</i>	welcome swallow	Present
<i>Hymenolaimus malacorhynchos</i>	whio (blue duck)	Present
<i>Mohoua albicilla</i>	whitehead	Present
<i>Nestor meridionalis septentrionalis</i>	kaka	Present
<i>Ninox novaeseelandiae</i>	morepork	Present
<i>Notiomystis cincta</i>	stitchbird	Locally extinct
* <i>Passer domesticus</i>	house sparrow	Present
<i>Petroica australis longipes</i>	North Island robin	Present

<i>Petroica macrocephala toitoi</i>	tomtit	Present
* <i>Phasianus colchicus</i>	pheasant	Present
<i>Philesturnus carunculatus rufusater</i>	saddleback	Locally extinct
* <i>Platycercus eximius</i>	eastern rosella	Present
		Present in adjacent farmland
<i>Porphyrio porphyrio melanotus</i>	pukeko	Present
<i>Prosthemadera novaeseelandiae</i>	tui	Present
* <i>Prunella modularis</i>	hedge sparrow	Present
<i>Rhipidura fuliginosa placabilis</i>	fantail	Present
* <i>Sturnus vulgaris</i>	starling	Present
<i>Tadorna variegata</i>	paradise shelduck	Present
* <i>Turdus merula</i>	blackbird	Present
* <i>Turdus philomelos</i>	thrush	Present
		Present in adjacent farmland
<i>Vanellus miles novaehollandiae</i>	spur-winged plover	Present
<i>Xenicus longipes stokesii</i>	bush wren	Locally extinct
<i>Zosterops lateralis lateralis</i>	silver-eye	Present

AMPHIBIANS

<i>Leiopelma hochstetteri</i>	Hochstetters frog	?
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MAMMALS

<i>Chalinolobus tuberculatus</i>	long-tailed bat	Present
<i>Mystacina robusta</i>	short-tailed bat	Present
* <i>Capra hircus</i>	goat	Present
* <i>Cervus elaphus</i>	red deer	Present
<i>Dama dama</i>	fallow deer	Present
* <i>Felis catus</i>	cat	Present
* <i>Mustela ermine</i>	stoat	Present
* <i>Mustela furo</i>	ferret	Present
* <i>Mustela nivalis</i>	weasel	Present
* <i>Rattus rattus</i>	ship rat	Present
* <i>Rattus norvegicus</i>	Norway rat	Present
* <i>Sus scrofa</i>	pig	Present
* <i>Trichosurus vulpecula</i>	possum	Present
* <i>Oryctolagus cuniculus</i>	rabbit	Present
		Present in adjacent farmland
* <i>Lepus europaeus</i>	hare	Present
* <i>Erinaceus europaeus occidentalis</i>	hedgehog	Present

REPTILES

<i>Hoplodactylus</i> spp.	forest gecko	Present
<i>Oligosoma</i> spp.	skink	?
<i>Cyclodina</i> spp.	skink	?

FISH

?

?

?

* = introduced

INVERTEBRATES

Order	Genus	Common Name	
Aracnidae	<i>Acari</i> sp.	Eupodid mite	
	<i>Allotrochosin</i> sp.	Bush wolf spider	
	<i>Anystis</i> sp.	Predatory whirl gig mite	
	<i>Cambridgea</i> sp.	Sheetweb spider	
	<i>Cyclotenidae</i> sp.	Scuttling spider	
	<i>Dolomedes</i> sp.	Nursery web spider	
	<i>Episinus</i> sp.	Square-ended cobweb spider	
	<i>Eriophora</i> sp.	Garden orbweb spider	
	<i>Gnaphosidae</i> sp.	Hunting stealthy spider	
	<i>Haplisis</i> sp.	Underwood sheetweb spider	
	<i>Hexathele</i> sp.	Banded tunnelweb spider	
	<i>Leucauge</i> sp.	Horizontal orbweb spider	
	<i>Lycosa</i> sp.	Free living wolf spider	
	<i>Phalangium</i> sp.	European harvestman	
	<i>Periegopidae</i> sp.	Six-eyed spider	
	<i>Salticidae</i> sp.	Jumping spider	
	<i>Sidymella</i> sp.	Square ended crab spider	
	<i>Stiphidion</i> sp.	Sombrero spider	
	<i>Supunna</i> sp.	Fleet footed spider	
	<i>Tetragnatha</i> sp.	Stream orbweb spider	
	<i>Triaenonychidae</i> sp.	Short-legged harvestman	
	<i>Uliodon</i> sp.	Large brown vagrant spider	
	Blattodea	<i>Celatoblatta</i> sp.	Native bush cockroach
		<i>Celeriblattera major</i>	
		<i>Parellipsidium latipennis</i>	Native bush cockroach
	Chilopoda	<i>Cryptops</i> sp.	Common centipede
<i>Cryptops</i> sp.		Large blue laggard centipede	
Coleoptera	<i>Acrossidius</i> sp.	Tasmanium grass grub	
	<i>Amarygmus</i> sp.	Australian darking beetle	
	<i>Anobium punctatum</i>	House borer	
	<i>Caribidae</i> sp.	Unidentified Carabidae	
	<i>Elaterid</i> sp.		
	<i>Halmus</i> sp.	Steel-blue lady bug	
	<i>Necrobia</i> sp.	Burying beetle	
	<i>Odontria</i> sp.	Yellow spotted chafer	
	<i>Onothophagus</i> sp.	Australian dung beetle	
	<i>Stethespis longicornis</i>	Mumu chafer beetle	
	<i>Saphobius</i> sp.	Native dung beetle	
	<i>Scolopterus</i> sp.	Four spined weevil	
	<i>Tenebrionidae</i> sp.	Darking beetle	
	<i>Arachnocampa</i> sp.	Spring tail	
	Collembola		
<i>Bothrophora</i> sp.		NZ glow worm	
<i>Chironomus</i> sp.		Large bristle fly	
<i>Leptotarsus</i> sp.		Midge	
<i>Sapromyza</i> sp.		Crane fly	
Diptera			
		Brown striped litter fly	

Diptera continued	<i>Styloconops</i> sp.	Midge
	<i>Sylvicola</i> sp.	Outhouse fly
Ephemeroptera		Aquatic mayfly nymph
Gastropoda		Various snails & slugs
		Leaf-veined slug
Hemiptera	<i>Amphipsalta</i> sp.	Cicada (Exuvlae)
	<i>Cixiid</i> sp.	Cixid plant hopper
	<i>Lygaeid</i> sp.	Seed bug
	<i>Philaenus</i> sp.	Spittle bug
	<i>Nezera</i> sp.	Green vegetable bug
	<i>Scolypopa</i> sp.	Passion vine hopper
	<i>Sigara</i> sp.	Water boatman
	<i>Trialeurodes</i> sp.	Greenhouse white fly
Hymenoptera	<i>Bombus</i> sp.	Bumble bee
	<i>Technomyrex</i> sp.	Ant
	<i>Sphictostethus nitidus</i>	Golden hunting wasp
Isopoda		Slater woodlice
Lepidoptera	<i>Austamathes</i> sp.	Small-eued owlet
	<i>Austrocidaria</i> sp.	Dark comprosma carpet
		Case moth spp.
	<i>Deana</i> sp.	Clematis triangle
	<i>Declana</i> sp.	Forest semi looper
	<i>Declana</i> sp.	Spotted manuka moth
	<i>Ecclitica</i> sp.	Ponga ugly nest maker
	<i>Elvia</i> sp.	Lawyer pug
	<i>Feredayia</i> sp.	Green mahoe moth
	<i>Morova</i> sp.	Pohuehue gall moth
	<i>Orthoclydon</i> sp.	Flax looper
	<i>Pasiphilia</i> sp.	Emerald pug
	<i>Proteuxoa</i> sp.	Comma-mark cutworm
	<i>Pterophorus</i> sp.	Plume moth
	<i>Scorparia</i> sp.	Shining scorparia
	<i>Vanessa</i> sp.	Admiral butterfly
Onychophora	<i>Peripatus</i> sp.	Peripatus
Oniscomorpha	<i>Sphaerotheriidae</i> sp.	Pill millipede
Orbatidae		Orabatid mite
Orthoptera	<i>Gymnoplectron</i> sp.	Cave weta
	<i>Hemiandrus</i> sp.	Ground weta
	<i>Hemideiana</i> sp.	Tree weta
		Common native millipede
Spirobolida	<i>Spirobolellus</i> sp.	spp.
Tricoptera		Caddis fly

This invertebrate list was supplied by Melody Jansen from a Winter 2009 survey as part fulfillment of a course on Environmental Management at the Bay of Plenty Polytechnic

Appendix 4 – Vascular Plants of Kaharoa Conservation Area

List from Shaw (1985) based on records collected by D. Bowen, P. Broekhuizen, B. Calder, B.D. Clarkson, C.E. Ecroyd, D.R. King, W.B. Shaw (ROTORUA BOTANICAL SOCIETY NEWSLETTER NUMBER 24 DEC 1991). Also from Rotorua Botanical Society Field Trips in 1998, 2000, and 2003. This list structured by John Hobbs Nov. 2006.

FERN ALLIES

<i>Hyperzia varia</i>	hanging clubmoss
<i>Lycopodium deuterodensum</i>	puakarimu
<i>Lycopodium volubile</i>	waewaekoukou
<i>Tmesipteris elongata</i>	fork fern JH 29/12/05

FERNS

<i>Adiantum cunninghamii</i>	common maidenhair
<i>Adiantum fulvum</i>	maidenhair
<i>Asplenium bulbiferum</i> subsp. <i>bulbiferum</i>	hen and chicken fern
<i>Asplenium bulbiferum</i> x <i>A. flaccidum</i> subsp. <i>flaccidum</i>	
<i>Asplenium flaccidum</i> subsp. <i>flaccidum</i>	hanging spleenwort
<i>Asplenium gracillimum</i>	spleenwort
<i>Asplenium hookerianum</i>	Hooker's spleenwort
<i>Asplenium oblongifolium</i>	shinning spleenwort
<i>Asplenium polyodon</i>	sickle spleenwort
<i>Azolla pinnata</i>	ferny azolla
<i>Blechnum chambersii</i>	nini
<i>Blechnum colensoi</i>	peretao
<i>Blechnum discolor</i>	crown fern
<i>Blechnum filiforme</i>	thread fern
<i>Blechnum fluviatile</i>	kiwakiwa
<i>Blechnum membranaceum</i>	
<i>Blechnum novae-zelandiae</i>	kiokio
<i>Botrychium bifforme</i>	fine leaved parsley fern
<i>Ctenopteris heterophylla</i>	
<i>Cyathea cunninghamii</i>	gully tree fern
<i>Cyathea dealbata</i>	silver fern
<i>Cyathea medullaris</i>	mamaku
<i>Cyathea smithii</i>	soft tree fern
<i>Dicksonia squarrosa</i>	wheki
<i>Diplazium australe</i>	southern ladyfern
<i>Doodia media</i> subsp. <i>australis</i>	rasp fern
<i>Grammitis billardierei</i>	common finger fern
<i>Grammitis pseudociliata</i>	
<i>Histiopteris incisa</i>	water fern
[#] <i>Hymenophyllum atrovirens</i>	filmy fern
<i>Hymenophyllum demissum</i>	irirangi
<i>Hymenophyllum dilatatum</i>	filmy fern
<i>Hymenophyllum ferrugineum</i>	rusty filmy fern

<i>Hymenophyllum flabellatum</i>	filmy fern
<i>Hymenophyllum lyallii</i>	filmy fern
<i>Hymenophyllum multifidum</i>	filmy fern
<i>Hymenophyllum rarum</i>	filmy fern
<i>Hymenophyllum revolutum</i>	filmy fern
<i>Hymenophyllum sanguinolentum</i>	piripiri
<i>Hymenophyllum scabrum</i>	filmy fern
<i>Hypolepis ambigua</i>	pig fern
<i>Hypolepis lactea</i>	
<i>Lastreopsis glabella</i>	smooth shieldfern
<i>Lastreopsis hispida</i>	rough shieldfern
<i>Lastreopsis microsora</i> (subsp. <i>pentangularis</i>)	shieldfern
<i>Leptolepia novae-zelandiae</i>	hare's foot fern
<i>Leptopteris hymenophylloides</i>	heruheru
<i>Leptopteris hymenophylloides</i> X <i>L. superba</i>	
<i>Lindsaea trichomanoides</i>	common lindsaea
[#] <i>Lindsaea viridis</i>	tufted lindsaea
<i>Loxogramme dictyopteris</i>	lance fern
<i>Lygodium articulatum</i>	mangemange
[#] <i>Marattia salicina</i>	king fern
<i>Paesia scaberula</i>	lace fern
<i>Pellaea rotundifolia</i>	tarawera
<i>Microsorium pustulatum</i>	hound's tongue fern
<i>Phymatosorus scandens</i>	fragrant fern
<i>Pneumatopteris pennigera</i>	gulley fern
<i>Polystichum richardii</i>	common shield fern
<i>Polystichum silvaticum</i>	shieldfern
<i>Pteridium esculentum</i>	bracken
<i>Pteris macilenta</i>	sweet fern
<i>Pteris tremula</i>	shaking brake
<i>Pyrrosia eleagnifolia</i>	leather-leaf fern
<i>Rumohra adiantiformis</i>	leathery shieldfern
<i>Schizaea dichotoma</i>	fan fern
<i>Sticherus cunninghamii</i>	umbrella fern
<i>Trichomanes elongatum</i>	bristle fern
<i>Trichomanes strictum</i>	erect bristle fern
<i>Trichomanes venosum</i>	veined filmy fern
<i>Trichomanes reniforme</i>	kidney fern

GYMNOSPERMS

<i>Dacrydium cupressinum</i>	rimu
<i>Dacrycarpus dacrydioides</i>	kahikatea
<i>Phyllocladus toatoa</i>	toatoa
<i>Phyllocladus trichomanoides</i>	tanekaha
* <i>Pinus radiata</i>	radiata pine
<i>Podocarpus hallii</i>	Hall's totara
<i>Podocarpus totara</i>	totara
<i>Prumnopitys ferruginea</i>	miro
<i>Prumnopitys taxifolia</i>	matai

DICOTYLEDONOUS TREES & SHRUBS

<i>Alectryon excelsus</i>	titoki
<i>Alseuosmia macrophylla</i>	karapapa
<i>Aristotelia serrata</i>	wineberry
<i>Beilschmiedia tawa</i>	tawa
* <i>Berberis glaucocarpa</i>	barberry
<i>Brachyglottis repanda</i> var. <i>repanda</i>	rangiora
* <i>Buddleja davidii</i>	buddleia
* <i>Buddleja globosa</i>	buddleia
<i>Carpodetus serratus</i>	putaputaweta
* <i>Chamaecytisus palmensis</i>	tagaste/tree lucerne
<i>Coprosma lucida</i>	glossy karamu
<i>Coprosma propinqua</i> subsp. <i>propinqua</i> X <i>C. robusta</i>	red-fruited coprosma
<i>Coprosma rhamnoides</i>	karamu
<i>Coprosma robusta</i>	tutu
<i>Coriaria arborea</i>	corokio
<i>Corokia buddleioides</i>	karaka
<i>Corynocarpus laevigatus</i>	mingimingi
<i>Cyathodes juniperina</i>	totorowhiti
<i>Dracophyllum strictum</i>	kohekohe
<i>Dysoxylum spectabile</i>	hinau
<i>Elaeocarpus dentatus</i>	erica
* <i>Erica lusitanica</i>	konini
<i>Fuchsia excorticata</i>	snowberry
<i>Gaultheria antipoda</i>	snowberry
<i>Gaultheria paniculata</i>	hangehange
<i>Geniostoma rupestre</i> var. <i>ligustrifolium</i>	puka
<i>Griselinia lucida</i>	koromiko
<i>Hebe stricta</i> var. <i>stricta</i>	pigeonwood
<i>Hedycarya arborea</i>	tawari
<i>Ixerba brexioides</i>	rewarewa
<i>Knightia excelsa</i>	kanuka
<i>Kunzea ericoides</i> var. <i>ericoides</i>	pukatea
<i>Laurelia novae-zelandiae</i>	manuka
<i>Leptospermum scoparium</i>	mingimingi
<i>Leucopogon fasciculatus</i>	Himalayan honeysuckle
* <i>Leycesteria formosa</i>	mangeao
<i>Litsea calicaris</i>	kawakawa
<i>Macropiper excelsum</i>	mahoe
<i>Melicytus ramiflorus</i> subsp. <i>ramiflorus</i>	rata
<i>Metrosideros robusta</i>	maire taiki
# <i>Mida salicifolia</i>	mapou
<i>Myrsine australis</i>	maire
<i>Nestegis cunninghamii</i>	maire
<i>Nestegis lanceolata</i>	heketara
<i>Olearia rani</i>	kohuhu
<i>Pittosporum tenuifolium</i> subsp. <i>colensoi</i>	kohuhu
<i>Pittosporum tenuifolium</i> subsp. <i>tenuifolium</i>	silver poplar
* <i>Populus alba</i> var. <i>nivea</i>	five-finger
<i>Pseudopanax arboreus</i>	

Pseudopanax crassifolius
Quintinia serrata
 **Salix* sp.
 **Salix cinerea*
Schefflera digitata
Solanum aviculare
Weinmannia racemosa
 **Ulex europaeus*

lancewood
 tawheowheo
 willow
 grey willow
 pate
 poroporo
 kamahi
 gorse

DICOTYLEDONOUS LIANES

Clematis paniculata
Clematis forsteri
 **Jasminum polyanthum*
Metrosideros diffusa
Metrosideros fulgens
Metrosideros perforata
Muehlenbeckia australis
Parsonsia capsularis
Parsonsia heterophylla
Rubus cissoides
 **Rubus phoenicolasius*
 **Rubus fruticosus* agg.

clematis
 clematis
 jasmine
 white rata vine
 rata vine
 rata vine
 pohuehue
 N.Z. jasmine
 N.Z. jasmine
 lawyer
 Japanese wineberry
 blackberry

DICOTYLEDONOUS HERBS

Acaena anserinifolia
Acaena novae-zelandiae
 **Anagallis arvensis*
Callitriche stagnalis
Cardamine debilis aggr.
 **Carduus tenuiflorus*
 **Centaureum erythraea*
 **Cirsium arvense*
 **Cirsium vulgare*
 **Conyza floribunda*
 **Digitalis purpurea*
Drosera peltata subsp. *auriculata*
Epilobium pedunculare
Epilobium rotundifolium
 **Erigeron karvinskianus*
Galium propinquum
Geranium solandri
 **Gamochaeta coactata* (*G. spicatum*)
Haloragis erecta subsp. *erecta*
Hydrocotyle dissecta
Hydrocotyle heteromeria
Hydrocotyle novae-zelandiae aggr.
 **Hypochoeris radicata*
 **Linum bienne*
 **Lotus pedunculatus*
 **Ludwigia palustris*

piripiri
 piripiri
 scarlet pimpernel
 starwort
 bitter cress
 winged thistle
 centaury
 Californian thistle
 Scotch thistle
 fleabane
 foxglove
 sundew
 creeping willow-herb
 round-leaved willow-herb
 Mexican daisy
 marsh bed straw
 purple cudweed
 shrubby haloragis
 pennywort
 waxweed
 hydrocotyle
 catsear
 pale flax
 lotus
 water parslane

<i>Myriophyllum</i> sp.	milfoil
<i>Nertera depressa</i>	
<i>Peperomia urvilleana</i>	
* <i>Phytolacca octandra</i>	inkweed
* <i>Plantago lanceolata</i>	ribwort
* <i>Plantago major</i>	broad-leaved plantain
* <i>Polygonum</i> sp.	
<i>Pratia angulata</i>	pratia
* <i>Prunella vulgaris</i>	selfheal
* <i>Ranunculus flammula</i>	spearwort
* <i>Ranunculus repens</i>	creeping buttercup
<i>Ranunculus amphitrichus</i> (<i>R. rivularis</i>)	buttercup
# <i>Rorippa divaricata</i>	NZ cress
* <i>Rumex obtusifolius</i>	broad-leaved dock
* <i>Sagina procumbens</i>	mossy pearlwort
* <i>Scrophularia auriculata</i>	water figwort
* <i>Senecio bipinnatisectus</i>	Australian fireweed
* <i>Senecio jacobaea</i>	ragwort
* <i>Solanum nigrum</i>	black nightshade
* <i>Sonchus asper</i>	prickly sow thistle
<i>Stellaria parviflora</i>	native chickweed
* <i>Tradescantia fluminensis</i>	wandering jew
<i>Urtica incisa</i>	stinging nettle
* <i>Verbena bonariensis</i>	purple-top
* <i>Verbascum thapsus</i>	wooly mullein
* <i>Veronica serpyllifolia</i>	turf speedwell

MONOCOTYLEDONOUS TREES SHRUBS & LIANES

<i>Cordyline australis</i>	cabbage tree
<i>Cordyline banksii</i>	forest cabbage tree
<i>Cordyline pumilo</i>	ti rauriki
<i>Freycinetia baueriana</i> subsp. <i>banksii</i>	keikei
<i>Rhopalostylis sapida</i>	nikau
<i>Ripogonum scandens</i>	supplejack

ORCHIDS

<i>Acianthus sinclairii</i>	pixie cap
<i>Bulbophyllum pygmaeum</i>	bulb-leaved orchid
<i>Caladenia carnea</i>	
<i>Chiloglottis cornuta</i>	green bird orchid
<i>Corybas oblongus</i>	spider orchid
<i>Corybas orbicularis</i>	
<i>Drymoanthus adversus</i>	green fleshy orchid
<i>Earina autumnalis</i>	raupeka
<i>Earina mucronata</i>	peka-a-waka
<i>Microtis unifolia</i>	common onion orchid
<i>Orthoceras novae-zeelandiae</i>	mamaika
<i>Pterostylis alobula</i>	greenhood
<i>Pterostylis banksii</i>	greenhood
<i>Pterostylis graminea</i>	greenhood

Pterostylis trullifolia
Thelymitra carnea
Thelymitra longifolia
Thelymitra pauciflora
Winika cunninghamii

greenhood
tiny sun orchid
common sun orchid
slender sun orchid
winika

GRASSES

* *Agrostis capillaris*
* *Anthoxanthum odoratum*
Cortaderia fulvida
* *Cortaderia selloana*
* *Dactylis glomerata*
Dichelachne crinata
Ehrharta diplax
* *Holcus lanatus*
* *Lolium perenne*
* *Miscanthus nepalensis*
Oplismenus imbecillis
* *Paspalum dilatatum*
Rytidosperma gracile
Rytidosperma unarede

browntop
sweet vernal
toetoe
pampas
cocksfoot
plume grass

Yorkshire fog
Italian ryegrass
Himalayan fairy grass
creeping beardgrass
paspalum
danthonia
danthonia

SEDGES

Baumea rubiginosa
Carex dissita
Carex secta
Carex geminata agg.
* *Carex lurida*
* *Carex ovalis*
Eleocharis acuta
Eleocharis sphacelata
Gahnia lacera
Gahnia pauciflora
Gahnia setifolia
Machaerina sinclairii
Morelotia affinis
Schoenus maschalinus
Schoenus tendo
* *Isolepis sepulcralis* (*Scirpus chlorostachyus*)
Uncinia banksii
Uncinia clavata
Uncinia uncinata

flat-leaved sedge
swamp sedge
rautahi

oval sedge
sharp spike-sedge
tall spike-sedge
gahnia
gahnia
gahnia

dwarf bog-rush

hooked sedge
hooked sedge
hooked sedge

RUSHES

* *Juncus articulatus*
Juncus edgariae
* *Juncus tenuis*
Luzula picta var. *picta*

jointed rush
leafless rush
track rush
wood rush

Other Monocotyledonous Herbs

<i>Astelia solandri</i>	tree-flax
<i>Astelia trinervia</i>	kauri grass
<i>Collospermum hastatum</i>	
<i>Collospermum microspermum</i>	
<i>Dianella nigra</i>	blue berry
<i>Lemna minor</i>	duckweed
<i>Libertia grandiflora</i>	turutu
<i>Potamogeton</i> sp. (<i>P. cheesemanii</i>)	pondweed
<i>Typha orientalis</i>	raupo

* introduced

Threatened Vascular Plant Species (Paul Cashmore) (Threat rankings from de Lange, P.J., Norton, D.A., Heenan, P.B., Courtney, S.P., Molloy, B.P.J., Ogle, C.C., Rance, B.D., Johnson, P.N., Hitchmough, R. 2004. Threatened and uncommon plants of New Zealand. *New Zealand Journal of Botany* 42: 45–76.)

Acutely Threatened-Nationally Endangered

- *Rorippa divaricata* (NZ Cress) –one plant has been found in Kaharoa but has since died as this is a short-lived biennial. Likely to reappear in future in suitable habitat eg clearings but shortlived.

Chronically Threatened-Serious Decline

- *Marattia salicina* – (King fern) – present in Onaia Gorge in areas inaccessible to goats.

Chronically Threatened-Gradual Decline

- *Mida salicifolia* (Willow-Leaved Maire)-scattered plants likely to be locally present throughout much of Kaharoa/Onaia eg Kokako track. Threatened by possum browsing.

- *Raukawa edgerleyi* (Raukawa) – very likely to be locally present in Kaharoa but epiphytic. Plants threatened by browsing mainly from goats and deer.

At Risk-Sparse

- *Hymenophyllum atrovirens* (filmy fern)-locally common on the sides of the Onaia Stream in flood zone

- *Lindsaea viridis* (fern) – locally common on margins of the Onaia Stream.

Regionally Threatened

- *Ileostylus micranthus* – (mistletoe) – a plant occurs on edge of Onaia Ecological Area and on nearby properties and other plants may be present in the reserve.

Appendix 5 – Trust members past and present

Founders:

Peter Davey and partner Rachael Vellinga

Trust 1998-2005

Peter Davey (Chair)
Anne Managh (Secretary)
Rachael Dixon-Davey
John Paterson
Dale Williams
Hazel Speed
Carmel Richardson
David Moore
John Coleman (joined 2001)

Trust 2005-2007

Peter Davey (Chair)
Anne Managh (Secretary)
Rachael Dixon-Davey
John Paterson
Carmel Richardson
John Coleman
Graeme Young
Margaret Richardson
Graham Jackson

Trust 2008

Graeme Young (Chair)
Anne Managh (Secretary)
John Paterson
Carmel Richardson
John Coleman
Margaret Richardson
Stephen Hall
Guy Irwin

Trust 2009

Anne Managh (Chair)
Margaret Horner (Secretary)
Graeme Young
John Paterson
Carmel Richardson
John Coleman
Peter Williams
Guy Irwin
Tom Davies

Trust 2010

Anne Managh (Chair)
Margaret Horner (Secretary)
Peter Williams (Treasurer)
Graeme Young
John Paterson
Carmel Richardson
John Coleman
Guy Irwin
Tom Davies
Angela Hogan