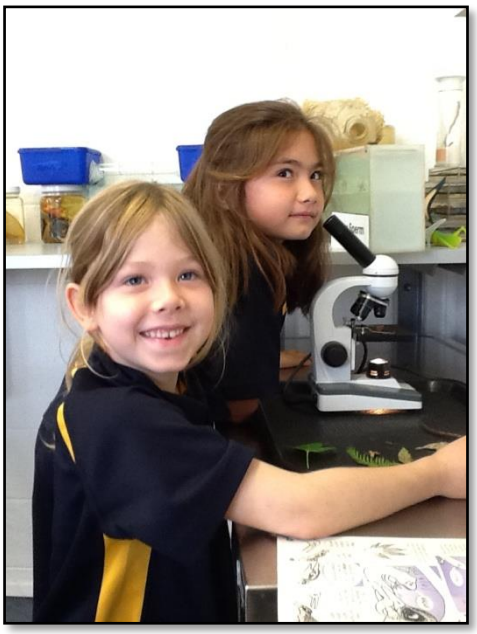
Te Matau a Māui project update: interim report August 2016

Native species thrive where we live, work and play



Students of St Joseph's school during a Cape to City bush education programme. *Photo: Robyn McCool*

This report provides project status information from 1 January to 30 June 2016

Prepared by the Te Matau a Māui Project Management Team

Contents

1. Executive summary

Te Matau a Māui has had another full six months. The Aotearoa Foundation ('Foundation') contract milestones are on course to being delivered by the end of 2016. The project budgets are on track and delivering well against the project milestones.

The members of the Governance group have now been together for a year and a half and are working well as a team. They continue to provide strong leadership and guidance. The project team has been very busy delivering Foundation milestones, which include the first phase of the Cape to City predator control roll-out. The team has also expanded to include two new members, who provide a Māori perspective that significantly enhances the delivery of milestones. The Cape to City Community Advisory Group has been formed, and held its first meeting in March.

The project team is discussing the project's increasing momentum around wider regional roll-out. This is an important part of the long-term picture, but is becoming increasingly difficult to balance against the team's core role of delivering Foundation milestones.

A new section (The projects from a Māori perspective) has been included in this report, and will remain in future reports. The Maungaharuru Tangitū Trust have provided material for part of this report.

Seventy-six percent of research and monitoring milestones have been completed. This is because the Landcare Research (LCR) contract with Hawke's Bay Regional Council (HBRC) is based on the financial year 1 July – 30 June financial year. This workstream is therefore ahead of others.

Many project activities have been completed, these include:

- The Biological Heritage National Science Challenge (BHNSC) has officially acknowledged Cape to City as a case study, regarding the role of the project in transformational biodiversity change (**Appendix 2**).
- LCR has committed to the same level of funding in the next contract (2016/2017).
- A paper submitted to Environmental Management Journal (based on the rural survey) suggests that managers of coordinated efforts to control invasive species could make efforts to address beliefs about social and ecological context.
- Poutiri Ao ō Tāne data has been analysed and compiled for publication. Results show that low-cost predator control in a pastoral landscape can reduce invasive predator populations, with apparent benefits for some native fauna.
- In the last six months, two very successful nature-time teacher training workshops have been run with all teachers in each school.
- Media attention remains strong (**Appendix 3**).
- The same pāteke pair that bred previously at Lake Opouahi has had three more ducklings. At least three made it to maturity.
- Kōrure (mottled) and titi (Cook's) petrel translocations were successful; all fledged except one titi. Media coverage of the kōrure release was strong.
- A miro miro (tomtit) was recorded at one of the Cape to City monitoring sites, the first record of a miro miro outside of Cape Sanctuary.
- Three whitebait spawning sites have been identified in the Cape to City footprint.

- HBRC is now a platinum supporter of ‘Trees for Bees’. This will increase potential habitat for biodiversity.
- Phase one of the wide-scale predator control is being rolled out over 6000 hectares.
- Rat tracking tunnel rates at Boundary Stream remain low, allowing discussion to continue about a kākāriki translocation, as well as extending the period between checking the traps.
- Wireless trials continue to produce useful information, and the team is refining the use in wide-scale predator control.

Two issues have occurred over the last six months: One is due to high rabbit numbers on two properties within the Cape to City footprint, and the other is with regard to changing the release site for the toutouwai (robins) and miro miro (tomtits) translocation. These are being managed and will not threaten the project (see workstream updates for more detail).

The next six months will include:

- At least two community events
- The translocation of toutouwai and miro miro
- Continued roll-out of predator control in Cape to City
- Planting and maintenance of at least 50,000 plants

2. Project management update

Project management disciplines developed in 2015 are continuing to work well in 2016. Better project integration and communication gives staff outside the project team greater awareness of project progress and messages. Other initiatives to aid project management are also underway:

- Role responsibilities have been more clearly defined to help team members (in particular new team members) understand who is accountable and responsible, who needs to be informed, and who delivers tasks.
- Progress has been made developing communication templates (Brochures, presentations, factsheets, letters) using common branding for Poutiri Ao ō Tāne and Cape to City, to highlight connectivity between both projects. These are now being used by the project team.
- A Cape to City map has been developed to highlight all research and monitoring sites. This is a multi-layered map and allows all team members a clear understanding of where others are working. It is also a great visual tool for communications.
- The milestones have been updated (**Appendix 4**) and the new wording is being used throughout this report.

One key issue the project team are discussing is the increasing momentum of the project around wider regional roll-out. This is an important part of the long-term picture, but is becoming increasingly difficult to balance against the teams' core role of delivering Aotearoa Foundation milestones.

2.1 Project structure update

The governance team recently agreed to expand the project team to include Māori representation. Two new members have since joined the project team. Each brings valuable skills and experience: Te Kaha Hawaikirangi brings a good grounding in DOC, HBRC and Māoridom; Hayley Lawrence, representing the Maungaharuru Tangitū Trust, has a background in science and communications.

2.2 Governance update

The Governance team met in March and will be meeting again in August. The significant decisions made at the March meeting were to:

- Replace the whio translocation milestone with a kiwi milestone (See **Appendix 5** for more detail)
- Expand the project team to include Māori representation
- Agree to carry forward Aotearoa Foundation funds into the 2016/17 financial year

2.3 Community Advisory Group update

Cape to City held its first Community Advisory Group meeting in March. Members represent hapū in the Cape to City footprint and community leaders. All members agreed to the Terms of Reference and are excited about the project. The Poutiri Ao ō Tāne Community Advisory Group has held three meetings since January. This group is now fully settled into its role. The last two meetings' main focus has been the future of Poutiri Ao ō Tāne: Reviewing the vision and deciding on the future direction of the project.

2.4 Project sustainability

Relationships with key stakeholders and potential funding avenues continue to strengthen, and we continue to maintain a register of extra money generated by the project.

- The BHNSC has formally acknowledged Cape to City as a case study (**Appendix 2**).
- Project team members informally meet with the NEXT foundation directly and indirectly through NEXT projects: Zero Invasive Predators (ZIP) and Te Maunga (Taranaki-based project). These meetings provide a platform for information to be shared, and integration around wide-scale predator-control research.
- There is also ongoing interest from central government in wide-scale predator control in primary productive land, and advice is often sought from the Te Matau a Māui project management team.
- Mapping and documenting the internal management of the project as a case study has continued with a second round of interviews of the project and governance team members. The data is currently being analysed to assess changes in attitudes and understanding about the project over the last year.
- The relationship with (Eastern Institute of Technology) (EIT) continues to strengthen. We are several steps closer to formally including nature-time teaching within the teacher training curriculum, with a potential inclusion in 2017.

2.5 Māori engagement

Māori engagement has also gained in momentum over the last six months, with two Māori members joining the project team, meetings with local Marae, and planning a hui (meeting/fieldtrip) in the second part of 2016 for all hapū in the project areas.

The projects from a Māori perspective

In this report we are including a report about the project from a hapū perspective. We will include our hapū partners' perspectives in all interim reports from now on. Maungaharuru Tangitū Trust has written a full retrospective report going back to the inception of Poutiri Ao ō Tāne, because their view has not been previously reported on. From now on their updates will fit within each reporting period. We are encouraging other hapū partners to also provide their perspective**.**

Hapū Engagement in Poutiri Ao ō Tāne

Ka tuwhera a Maungaharuru, ka kati a Tangitū,

Ka tuwhera a Tangitū, ka kati a Maungaharuru.

When the season of Maungaharuru opens, the season of Tangitū closes,

When the season of Tangitū opens, the season of Maungaharuru closes.

1 Hapū of Maungaharuru - Tangitū

The whakatauākī (tribal proverb) above describes the takiwā (traditional area) of our hapū (tribes) – from Maungaharuru in the west, to Tangitū (the sea) in the east. Our hapū include Ngāti Kurumōkihi (formerly known as Ngāi Tatara), Ngāti Marangatūhetaua (also known as Ngāti Tū), Ngāti Whakaari, Ngāi Tauira, Ngāi Te Ruruku ki Tangoio, and Ngāi Tahu. Our marae is located at Tangoio.

The whakatauākī above also describes the mahinga kai (places for gathering food) of our hapū. The ngahere (forest) on Maungaharuru was the source of food for our hapū in the winter. Tangitū was, and remains, the source of food in the summer.

The Poutiri Ao ō Tāne project is focused on the area from our sacred mountain *Maungaharuru* to our taonga (treasured) lake *Tūtira*. Our hapū have a whakatauākī about the lake being:

"ko te waiū o ō tātau tīpuna" – "the milk of our ancestors".

This whakatauākī is not just a reference to the abundance of kai (food) that could be sourced from the lake. It also refers to the lake providing spiritual sustenance. Accordingly, the physical and spiritual well-being of our hapū is closely linked to the well-being of Lake Tūtira.

2 Poutiri Ao ō Tāne

Our Hapū have been involved with Poutiri Ao ō Tāne since the beginning of the project. Our hapū Kaumātua (elder) Bevan Taylor named the Poutiri Ao ō Tāne project and designed the project logo. Poutiri Ao ō Tāne is about embracing the sacred knowledge of Tāne-nui-a-rangi. Tāne-nui-a-rangi is the god of the forest and all things within it including plants and animals. Tāne-nui-a-rangi and his forest provide a kahu (cloak) for Papa-tū-ā-nuku (his mother, earth mother). Poutiri Ao ō Tāne is about restoring the kahu of Papa-tū-ā-nuku together as a community. The logo represents Tāne's authority within the environment. The spiral in the middle is the beginning of the environment Tāne provided. As it spirals out it is the ever-changing environment, including the period of time when mankind caused destruction and today when we are trying to right the wrongs to return the environment to its natural state.

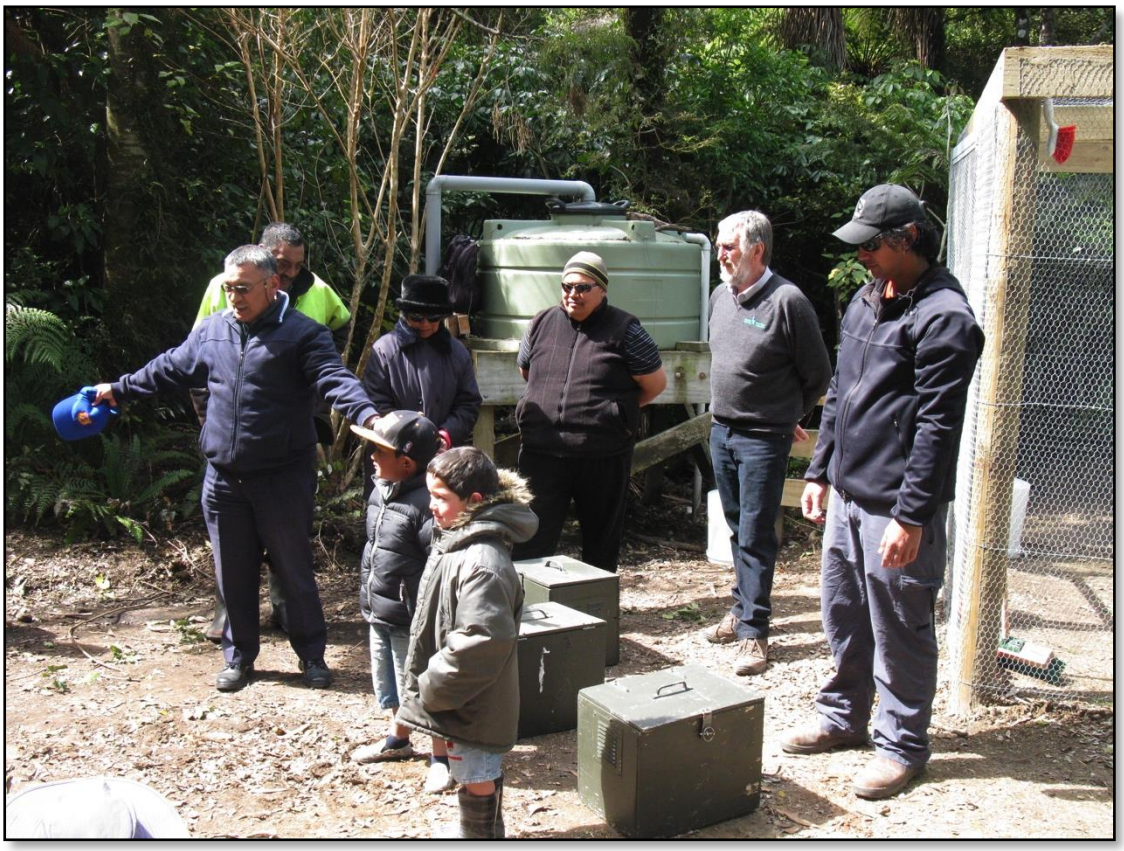
Rangitane Taurima and daughter Rehutai at a Poutiri Ao ō Tāne planting day in 2012

3 Bird Translocations

An important part of Poutiri Ao ō Tāne has been the translocations of birds back to the area. The importance of birdlife to Maungaharuru is enshrined in our oral tradition. Kōrero tuku iho (oral tradition) recounts the migration of the waka (boat) Tākitimu southwards, and a tohunga (high priest) of the waka, Tūpai, who cast the staff Papauma high into the air. Papauma took flight and landed on the maunga (mountain) at the summit of Tītī-a-Okura, at a place called Tauwhare Papauma. Papauma embodied the mauri (life-force) of birdlife. The maunga rumbled and roared on receiving this most sacred of taonga (treasures), and the maunga was proliferated with birdlife. Hence the name, Maungaharuru (the mountain that rumbled and roared). It is also said that the mountain roared every morning and evening as the many birds took flight and returned again to the maunga.

All natural resources have a mauri (life force). This mauri binds the spiritual world with the physical world and it is this mauri that connects the hapū with all natural resources. Mauri is therefore the basis of the spiritual relationship of the hapū with all natural resources.

We are pleased to acknowledge that the translocation of birds through Poutiri Ao ō Tāne has enhanced the mauri of the area. In 2012 the first species we welcomed back was kākā. On arrival, the kākā were carefully carried through the carved waharoa (gateway) at Boundary Stream by our kaumātua (male elder), kuia (female elder), and others from our hapū, while many from the community watched. Our kaumātua said karakia (prayers) in thanks for the manu (birds) and to bless them. Young tamariki (children) from our Kōhanga Reo (Māori pre-school) had the honour of releasing the kākā from their boxes into the aviaries. It was a very special, memorable day for our hapū and the community.

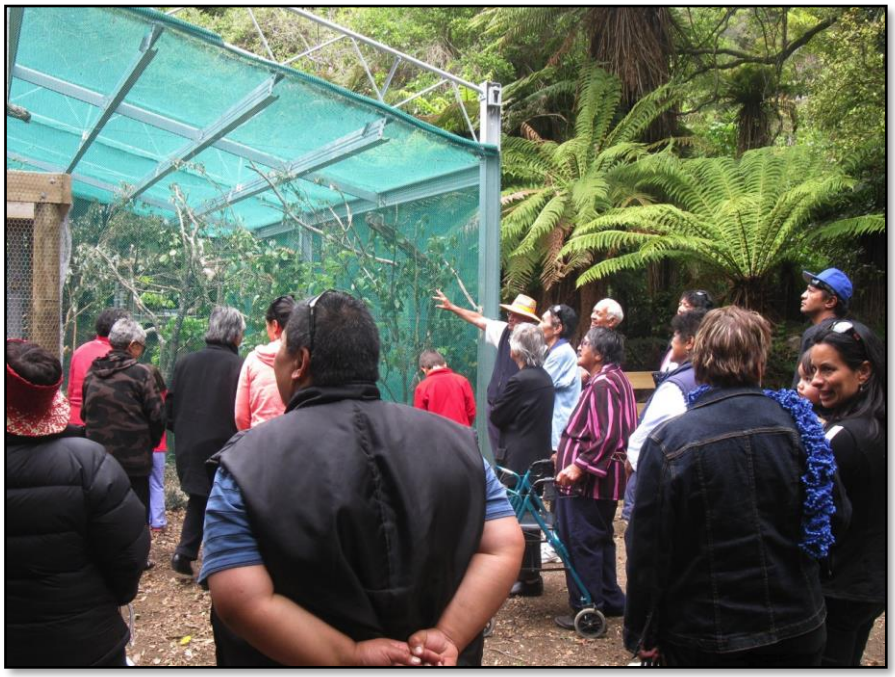


We have blessed the kākā at all subsequent translocations and releases from the aviaries. It has been a great educational experience for the tamariki from our Kōhanga Reo and the students from Hukarere Māori Girls College. Other schools have also been represented throughout the years. Some of our whānau (families) have had the pleasure of volunteering to feed the kākā. It was a very special

experience to be able to care for these entertaining birds and see them so close up. Also, to have the opportunity to stay at Boundary Stream over-night (one whānau even spent Christmas there).

Izaiah-Lee Paul (age 10) enjoyed feeding the kākā with his whānau (family)

The welcome for the kākāriki also in 2012 was a smaller affair because we had to go right in the bush. Different hapū were represented in releasing the birds.



Kaumātua Trevor Taurima is pictured talking about Poutiri Ao ō Tāne to our Hapū at the kākā aviary

Seabird translocations began in 2013 with tītī (Cooks Petrel) and kōrure (Mottled Petrel).

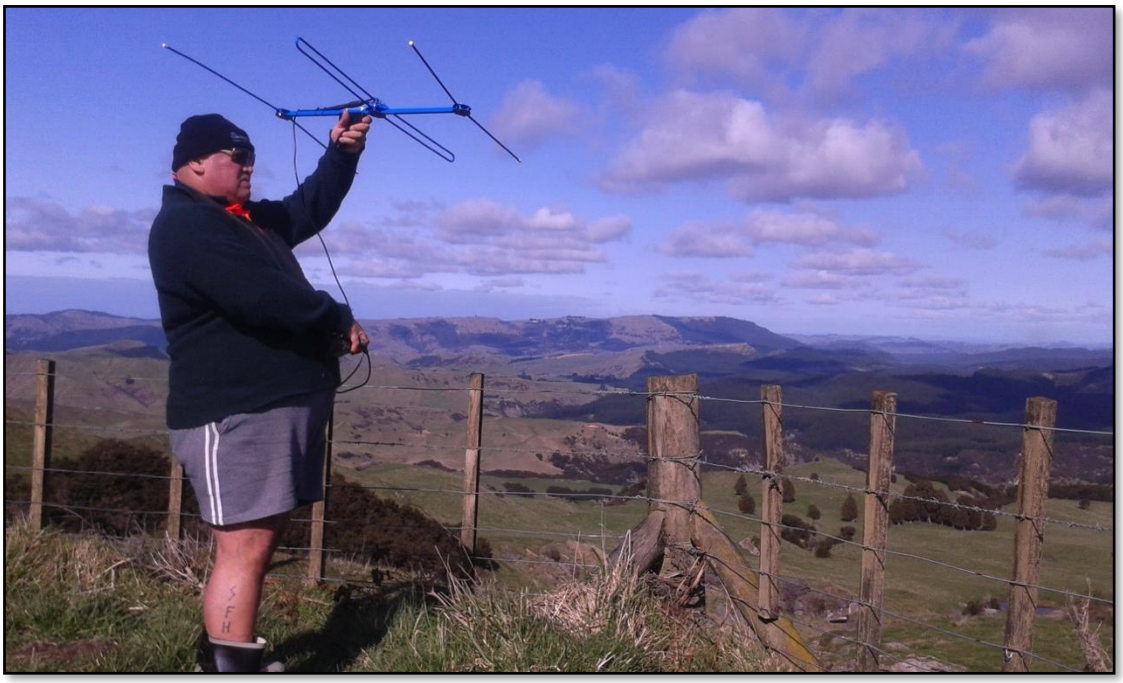
It was very exciting to see them arrive on the helicopter, especially for our Kōhanga Reo children! At each translocation the birds have been blessed by our kaumātua in accordance with our tikanga (protocols). Our hapū have enjoyed being able to interact with the birds by carrying them in their boxes, holding the birds while they are fed and carrying them to their burrows and monitoring them. Many of our hapū took the opportunity to name the birds something special to them and are hoping for the day when their named bird will safely return to Maungaharuru to breed. Some of our whānau (families) have also volunteered to help monitor the chicks.

"My whānau have a greater appreciation of the need for pest control and the benefits it brings," says Tania Hopmans. "Without the intensive trapping and predator proof fences to safeguard the chicks, we couldn't return these prized species to Maungaharuru. My tamariki understand that pest control, translocations and monitoring of chicks is hard work and takes a team of dedicated volunteers and agency staff. They know this because they have travelled from our home in Wellington to the maunga to help out, checked the traps and the perimeter of the predator fence, ferried chicks between their burrows and the feeding station, and encouraged the chicks in the cold, dark night to take flight. They know too, that the fruits of all this work will come at a later date. Still they have learnt much and have shared this knowledge with their cousins and friends."

In 2013, our kaumātua blessed the fence that is to keep the seabirds safe from introduced predators

Hana Burkitt carrying a tītī chick to its new home. Hana enjoyed volunteering to care for the tītī with her whānau (family)

The most recent translocation was the pāteke in 2015. We were involved in writing the translocation proposal and were pleased to welcome the pāteke to our sacred lake Opouahi. Some of our volunteers enjoyed monitoring and feeding the pāteke. Cliff Tarau explains *"working alongside DOC staff and other volunteers was great", "its been really good to connect with the whenua [land], replenish my wairua [spirit] and awhi [help] the pāteke on behalf of our Marae".*



Cliff Tarau monitoring pāteke at Opouahi

4 Communications

The Maungaharuru-Tangitū Trust (MTT) is the organisation representing our hapū. The Trust has promoted Poutiri Ao ō Tāne through all our communication channels. Information, updates and events have been discussed at Hui-ā-hapū (meetings with our people), on our website (www.tangoio.maori.nz), Facebook, via email and in our posted newsletters. In January 2013 we produced an 18-month calendar including our kōrero (stories) about birds and native fish from Maungaharuru, including the birds translocated and two pages all about Poutiri Ao ō Tāne. This maramataka (calendar) was posted to all our members and also provided free to all our stakeholders and partners including government departments. We received fabulous feedback and were pleased to see the calendar hanging in many homes and offices!

3. Workstream update: 1 January – 30 June 2016

This section outlines the progress on the activities and objectives outlined in Attachment 1 of the Aotearoa Foundation contract. An updated version of these is in **Appendix 4**. These have been separated into five workstreams: research and monitoring; community engagement; biodiversity and species; habitat restoration; and pest control. Table 1 provides a summary of progress on activity by each workstream.

Table 1. Progress on 2016 activities

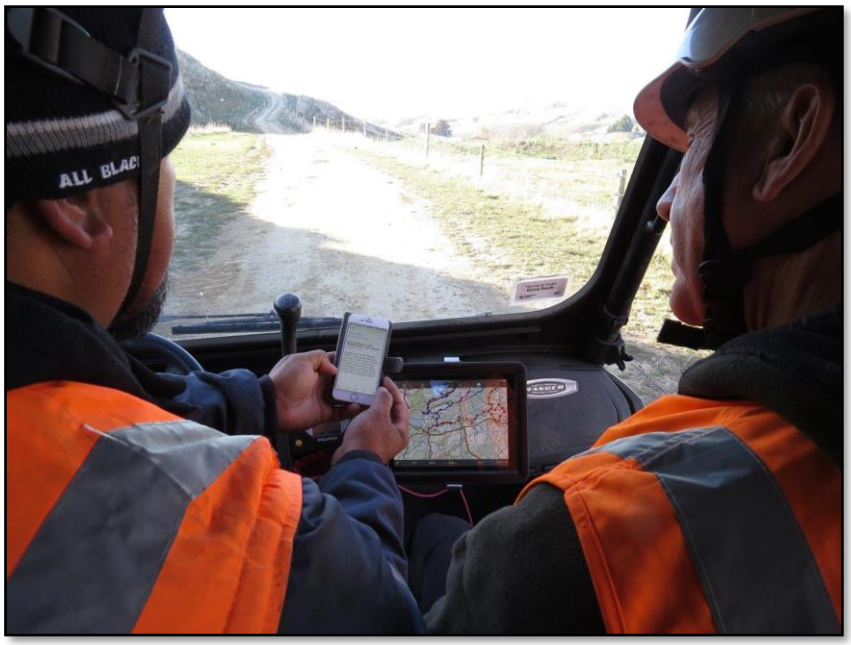
Workstream	Number of activities	% complete
Research and monitoring	8	76
Community engagement and education	5	48
Biodiversity and species	7	44
Habitat restoration	2	55
Pest control	7	64

Significant risks and opportunities are reported under each workstream. These have been kept the same as in the August 2015 interim report, so that progress can be measured against them. New risks and opportunities have been added as appropriate. The full list of risks and opportunities (as provided in the August 2015 interim report) can be viewed if required.

3.1 Research and monitoring

The research and monitoring workstream is led by Landcare Research (LCR). There are four strands to this research: pests, indigenous biodiversity, and social and economic research. This work is substantially delivered through milestones described in two contracts: one between LCR and HBRC, the other between HBRC and John McLennan (private consultant).

3.1.1 Progress towards outcomes



HBRC and LCR staff discussing wireless trapping trial. *Photos: Rod Dickson*

Highlights

- LCR has committed to the same level of funding in the next contract (2016/2017), due to be developed and signed in August 2016.
- The BHNSC and LCR are recruiting Dr Patrick Garvey to begin research and development of a synthetic form of ferret body odour, as a more effective and long-life lure for other predator species.
- An effective *Toxoplasmosis gondii* DNA extraction protocol was developed from the brain tissue of cats and mice (an intermediary host). Ewes were tested for *T. gondii* using a serological assay in six farms – three case farms within the Cape to City footprint that included trapping, and three outside the footprint that had no trapping. Cats and mice were trapped and tested for *T. gondii* using PCR in the case farms only. Across all farms *T. gondii* prevalence ranged from 22% to 80% in ewes. In the three case farms prevalence ranged from 26% to 83% in feral cats. The PCR was not successful for mice. Future work over the next several years includes:
  - Maintaining trapping in the case farms.
  - Confirming presence of *T. gondii* in cats.
  - Recording prevalence of *T. gondii* in ewes to determine if a trapping program is reducing *T. gondii* in ewes and *T. gondii*-associated abortions. Further development of PCR for mice could also be done.
- A paper submitted to Environmental Management (based on the rural survey) found that landowners think about the potential socioeconomic and ecological benefits of invasive species control, and express a strong desire to enhance native biodiversity. However, we also found that landowners consider the complexity of the local social and ecological context in which a program will unfold in three ways:
  1) The level of contribution by other landowners and urban residents who are benefiting from collective control efforts
  2) The potential for the program to upset the local "ecological balance", leading to increases in other pests
  3) The probability that the program will be successful given the likelihood of others participating and control tactics being effective

  We suggest that managers of coordinated invasive species control efforts may benefit from devoting time and resources towards addressing beliefs about social and ecological context, rather than solely providing financial subsidies and information about control tactics or the impacts of invasive species.
- The Cape to City project is not yet well known, even inside the project footprint (based on the community survey). This is not surprising because when the survey was done the project was less than a year old. Nevertheless, respondents inside the engagement footprint report seeing a greater variety of native birds and reptiles than respondents outside the engagement footprint. Respondents inside the engagement footprint have a greater orientation toward environmental protection. They are statistically more likely to donate to environmental causes, permanently protect private land, plant native trees in their gardens, and to engage in environmental teaching.

  Regardless of location, biodiversity protection and habitat restoration are seen as being important and desirable. Involvement in environmental activities – such as recycling, planting native trees in the garden, and pest control – is high. Participants are motivated primarily by their own and their children's interests, and protecting resources for the future. Lack of

information, interest and time are commonly-reported reasons for not being involved in certain environmental activities. The community view DOC and HBRC as holding the highest responsibility for biodiversity protection and habitat restoration, and – together with schools – they are also widely seen as trustworthy sources of information on these topics.

- Poutiri Ao ō Tāne data has been analysed and compiled for publication. The data show positive responses of some native biodiversity, with occupancy rates of native lizards increasing significantly in the treatment area, but not in the non-treatment area. Counts of cockroaches were higher in the treatment area, but other invertebrates were detected in similar numbers in the treatment and non-treatment areas. Results show that low-cost predator control in a pastoral landscape can reduce invasive predator populations, with apparent benefits for some native fauna.

  The plan is to extend predator control to the non-treatment site to see if biodiversity also responds here.

Table 2. Progress on research and monitoring milestones

Milestone	**2016 activity**	**Update**	**% complete**
Research outputs	A minimum of three research outputs, two of which are submitted to peer-reviewed journals**.**	At least three papers have, or will be, submitted to journals by end of August (see research and monitoring Output list in **Appendix 3**).	100
Methods of monitoring introduced mammalian predators before and after control	Compare precision of various methods to estimate predator abundance from camera trapping data (e.g. occupancy modelling, mark–recapture modelling).	Pre-control predator monitoring data using camera trapping is still being analysed, but in total there were 763 photos of cats, 187 of stoats, 92 of ferrets, 159 of mice, 800 of possums and 1,484 of hedgehogs. Once analysed, this data will be used to help compare the precision of different methods	90
Decision analysis models for predicting the most cost-effective trapping configurations for managing introduced predators over large areas	Refine predator population model to predict outcomes of different trap configurations and frequency of checking.	An online tool has been developed for managers to predict percentage kill of trapped predators using various trap configurations and trap check intervals. Wireless modelling will be completed following the roll-out of the Cape to City predator control (Phase 1)	90

Milestone	2016 activity	Update	% complete
Increase in skinks, geckos, and native invertebrates in the Cape to City area; continued increase in skinks, geckos, and native invertebrates in the Poutiri Ao ō Tāne area	Continue Poutiri Ao ō Tāne and Cape to City monitoring (Poutiri Ao ō Tāne monitoring times may be extended).	Poutiri Ao ō Tāne data have been analysed and written up for publication. Results show that low-cost predator control in a pastoral landscape can reduce invasive predator populations, with apparent benefits for some native fauna.	100
Analysis and reports on the integrated economic benefits of Te Matau a Māui	Produce a scoping report on integrated economic analysis (toxoplasmosis/green credentials/rabbit forage etc.).	Rabbit forage research has been completed and compiled. The integrated economic analysis is currently being discussed as an LCR contract milestone, to be completed by the end of 2016.	30
Decrease of toxoplasmosis-related lamb abortion rates as a result of research and reduction in cats, vaccinations will no longer be necessary, leading to significant economic benefit to the region and nation	Produce an annual review of the research programme.	Across all six farms *T. gondii* prevalence ranged from 22% to 80% in ewes. In the three case farms, prevalence ranged from 26% to 83% in feral cats. The PCR was not successful for mice	50
Use of restored habitat by native wildlife	Complete pre and post habitat meta-connectivity study for the project to determine benefits of habitat to key species.	An infographic and report has been produced clearly showing the management pathway, predator interactions and habitat requirements for eight bird species Invertebrate monitoring and eDNA trial data is currently being analysed	50
Student participation	Engage two tertiary students in the project per annum.	Four PhD students are still involved in the project.	100

Milestone	2016 activity	Update	% complete
Increasing the participation in pest management and ecological restoration by landowners and the community	No 2016 activity	Paper was submitted to Environmental Management based on results from the rural survey. A brief report was completed on the community survey results	N/A

Note: Research progress is also reported in other workstream updates.

3.1.2 Significant risks update

Original *Insufficient pest control intensity to achieve desirable biodiversity outcomes is a potential risk that will be mitigated by monitoring and adaptive management.*

Update This risk is still largely unquantifiable at Cape to City until after a couple of years of predator control and biodiversity monitoring. What is clear from early camera monitoring of Cape to City phase one of predator control, is that control will need to be intensive over a 10 to 12 month period and will in particular need to deal effectively with buffers on non treated areas.

3.1.3 Significant opportunities update

Original *Working closely with the Biological Heritage National Science Challenge (BHNSC).*

Update The BHNSC has officially **(Appendix 2)** acknowledged Cape to City as a BHNSC case study.

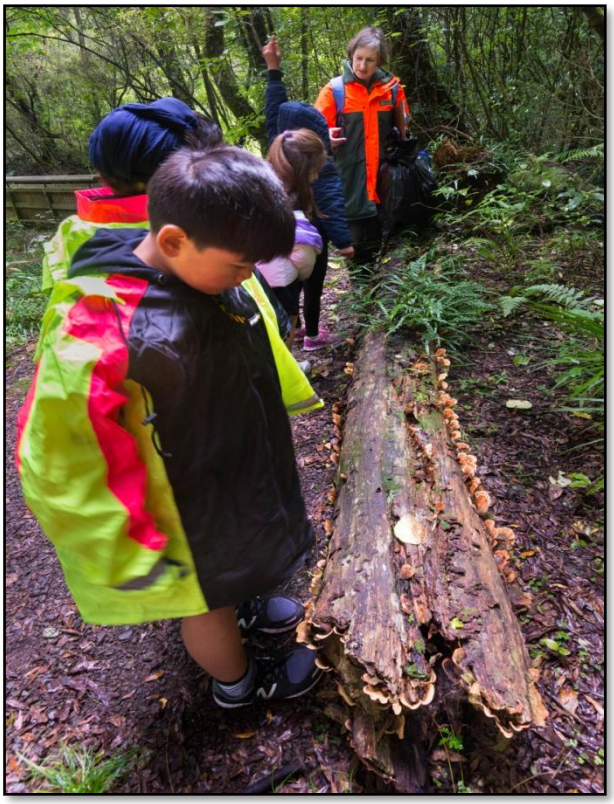
Original *LCR is currently considering aligning another of its core research portfolios (Enhancing biodiversity) to the Cape to City project. This is work in progress.*

Update Research from the Enhancing Biodiversity portfolio has been aligned with Cape to City and specific projects are part of the 2015/16 LCR contract, bringing the total LCR contribution to around $500,000. This level of funding will continue in the next contract covering the 2016/2017 financial year.

3.2 Community engagement

This workstream is led by DOC, but because it is intimately linked to all the other workstreams there is significant input from other project partners. This workstream has two strands: education (school and curriculum-based) and community engagement in general.

3.2.1 Progress towards outcomes



St Joseph's school students and Robyn McCool during a Cape to City bush education programme.
Photo: Lauren Buchholz

Highlights

- The education programmes and workshops continue to inspire children and adults from around Hawke's Bay. In the last six months two very successful full-staff nature-time teacher training workshops have been run, one school has completed a Cape to City education programme and a trial training session was held with Year 2 candidate teachers at EIT.
- Through taking part in a Cape to City teacher training workshop, a high-school teacher incorporated nature-time teaching principals into her programme. She designed a science programme around the gannet colony at Cape Kidnappers. The students were really excited about the project, and their work is showing great results.
- Media attention has continued to be strong (see **Appendix 3**).

Table 4. Progress on community engagement and education milestones

Milestone	2016 activity	Update	% complete
A marked increase in the number of volunteers participating in the programmes over the next 5 years	A measured increase in volunteer hours trending upward	The Volunteer Management System called Salesforce is now being used through both project websites. Volunteer hours at Poutiri Ao ō Tāne are high due to this year including all volunteer hours at Boundary Stream (previously only bird volunteering was included). It is now more accurate reflects volunteer efforts. There will be Cape to City volunteer opportunities in the second half of 2016. **Volunteer hours (to June 2016)** **2015** **2016** **Poutiri Ao ōTāne** 1062 2021 **Cape to City** 192 0	50
Increased involvement of schools in the various conservation initiatives	Engage a total of six schools in the Cape to City project.	Two full-staff nature-time teacher training workshops have been held with two schools. A trial session was held at EIT with Year 2 candidate teachers, to trial adding nature-time teaching into the training curriculum. Four new schools are participating in, or are booked into, Cape to City education programmes	50
Communications strategy	Implement communications strategy.	Four newspaper articles, one TV article, and a Cape to City Newsletter	50

Milestone	2016 activity	Update	% complete
Through the social engagement strategy and communication plan, the Hawke's Bay community will value the importance of biodiversity and act accordingly so that sustainability behaviours become part of the social norm	Approach other investors in a prioritised way.	We continue to build relationships with Comvita, philanthropic organisations and central government	50
	Review and implement community engagement strategy.	Two talks were presented to external audiences about the projects. Two Sir Peter Blake youth ambassadors joined Cape to City and Poutiri Ao ō Tāne for three weeks. The Sir Peter Blake Trust works with several partners each year to provide opportunities for people aged 18-25 to become environmental leaders. Two large community engagement events are planned for the second half of 2016	40
	No 2016 citizen science activity	Even though there was no milestone on this, LCR has completed a report looking at: • How citizen science can be designed to obtain data on species distribution • The value of different data sources in this context	N/A

3.2.2 Significant risks update

Original *If we do not engage iwi in a meaningful way we risk losing a key partner and jeopardising the success of the project. We therefore need to formalise engagement with iwi at a communication and participation level and make sure engagement is genuine and visible in all our communications. A Māori engagement strategy is being developed.*

Update A Māori engagement day is being planned for Cape to City at Waimarama Marae during Conservation Week in September 2016. Two Māori representatives have joined the project team.

Original *There is a lot of interest and excitement about the education programmes. This has created many opportunities for links and involvement outside the project milestones. The risk is that the project team starts working in areas outside the project's deliverables, and is unable to meet the contracted deliverables due to resource and time constraints. This risk is being mitigated by assessing all opportunities as a team.*

Update All staff involved in the community workstream are now very good at working within scope. All opportunities are discussed by the whole project team so opportunities can be prioritised.

New (January report) *Delivering the education milestones would be at risk if, for some reason, the project lost the education coordinator. This risk will be mitigated by setting up systems to make it easy for someone to take over in the coordinator's absence, and by teaching other team members some of the necessary skills.*

Update A part-time coordinator has been employed to support Robyn McCool

3.2.3 Significant opportunities update

Original *An initial presentation and meeting with EIT teacher training faculty staff and students has provided an opportunity to link the teacher training programme with Cape to City. This is a significant step towards the 2017 milestone 'Engage a minimum of six schools in the Cape to City project plus at least one tertiary institute initiative'.*

Update A trial was run with EIT with Year 2 candidates; incorporating this into their curriculum is being discussed. A further trial with Early Childhood trainee teachers will be held in August.

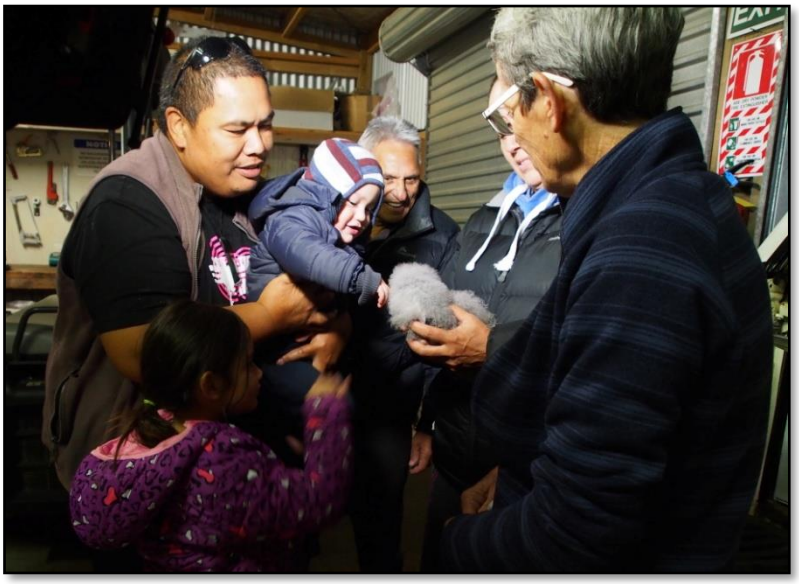
Original *The Community Conservation Partnerships Fund ($26 million over four years), administered by DOC, is a significant opportunity for community groups to receive funding and align themselves to. Proposals are being considered at present.*

Update Projects already funded are continuing. Applications are currently being sought for the next round of funding.

3.3 Biodiversity and species

This workstream is led by DOC, but has significant input by John McLennan and LCR. There are two main strands: species reintroductions and biodiversity monitoring.

3.3.1 Progress towards outcomes



Welcoming the kōrure (mottled petrel) chicks
Photo: Hayley Lawrence

Highlights

- Pāteke pair at Lake Opouahi have had three more ducklings. At least three of the new clutch made it to maturity.
- Forty five kōrure (mottled) and 106 titi (Cook's) petrel translocations were successful, and all fledged except one titi. Media coverage of the kōrure release was strong.
- A tomtit was recorded at one of the Cape to City monitoring sites, the first record of a tomtit outside of Cape Sanctuary. Robins were also detected again on the same property, having been found there earlier during the spring counts.

Table 4. Progress on biodiversity and species milestones

Milestone	2016 activity	Update	% complete
Reintroduction and re-establishment of mottled petrels	Continue with Cook's petrel and mottled petrel translocations. Measure survival rates and patterns of weight loss through to fledging.	Fourty five Kōrure (mottled) and 106 titi (Cook's) petrels were translocated in March-April. All fledged successfully except one titi.	100

Milestone	2016 activity	Update	% complete
Increase in the abundance of introduced and native birds that are already present in the area	Carry out bird monitoring, including questionnaire surveys, to determine bird abundance in rural and urban gardens.	Autumn bird monitoring at Cape to City completed – 743 counts in total for 2015/16 monitoring. A tomtit was recorded at one of the monitoring sites, the first record of a miro miro (tomtit) outside of Cape Sanctuary. Toutouwai were also detected again on the same property, having been found there earlier during the spring counts.	50
Reintroduction and establishment of several threatened bird species into the Cape to City area, some species will spread from Cape Sanctuary; others will be reintroduced and actively managed until self-sustaining	Monitor species currently overflowing from Cape Sanctuary (pāteke, red-crowned kākāriki, etc.). Translocate robins and tomtits to Mohi Bush to assist spread of native insectivores through Cape to City area	Toutouwai and miro miro translocation will be completed before August, as breeding season starts then. The release site has been changed from Mohi Bush scenic reserve to 100 Acre Bush, because the receiving iwi are not ready to receive the birds. 100 Acre Bush is a conservation area very close to Mohi Bush; it has rat control and a very similar habitat.	40
Successful re-establishment of North island brown kiwi onto the Maraetotara Plateau in the Cape to City footprint	Complete kiwi translocation proposal	John McLennan presented the kiwi translocation summary of the proposal to the Project Management team. John will now work on a full proposal and the team will seek other funding opportunities for this translocation	15

Milestone	2016 activity	Update	% complete
Successful re-establishment of whio/blue duck on the Maraetotara River (subject to risk analysis and resourcing). Successful colonisation of ponds and wetlands by pāteke in the Cape to City and Poutiri Ao ō Tāne areas	Scope a detailed technical analysis of risk around habitat and gradients, by looking at other NZ examples.	This is ongoing and will be completed in the second half of 2016.	15
Improvement in the numbers of long-tailed bats inhabiting Mohi Bush	Implement measures that will improve conditions for a population increase. Implement long-tailed bat monitoring programme.	Long-tailed bat monitoring has confirmed the presence of bats. Data are currently being analysed: if results indicate monitoring should take place, a monitoring plan will be implemented by the end of 2016.	40
Reintroduction and re-establishment of mottled petrels, Cook's petrels, kākā, kākāriki, and pāteke in the Poutiri Ao ō Tāne area	Transfer and successfully fledge petrels. Kākā and kākāriki populations have established and are self-sustaining.	Petrels fledged successfully. Kākāriki translocation is on hold until rat-tracking rates are kept low at Boundary Stream. This looks promising, but tracking rates have not fallen below 5%, which is the recommended level for kākāriki.	50

3.3.2 Significant risks update

Original *It is yet unknown what level of predator control is sufficient for survival of pāteke and whio, there is therefore a risk that control cannot be achieved to levels that support the survivability of these species. This will be managed through monitoring and adaptive management.*

Update This risk is still under review.

Original *If adequately-sized founder populations cannot be achieved due to limited numbers of source birds, the project is at risk of not reaching sustainable populations in the release area.*

Update This is a long-term risk and can be planned for.

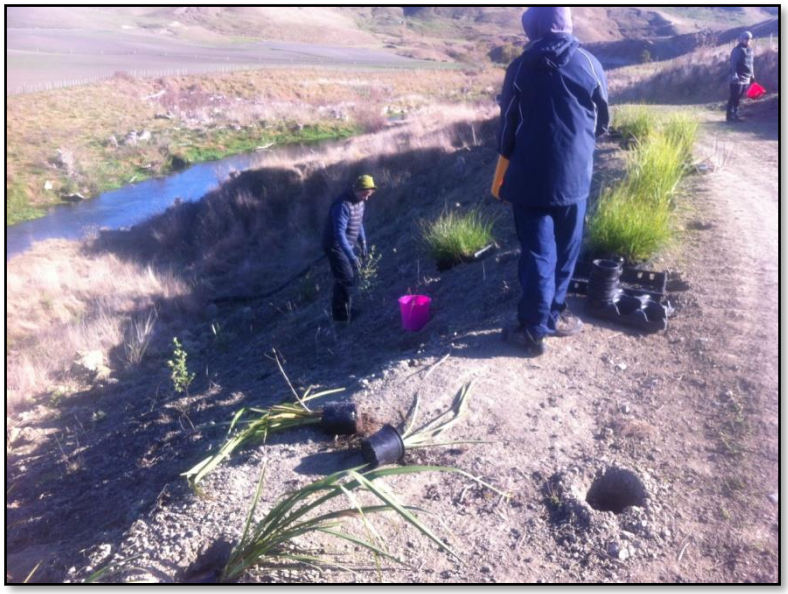
3.3.3 Significant opportunities update

Original	*Techniques developed for petrel translocations will enable further populations to be established elsewhere in New Zealand.*
Update	Rachael Sagar's PhD, which will inform this opportunity, is still to be completed.

3.4 Habitat restoration

This workstream is led by HBRC and is focused on restoring native habitat and water quality through planting.

3.4.1 Progress towards outcomes



Hohepa residents planting a site along the Maraetotara River. *Photo Hetty McLennan*

Highlights

- Three whitebait spawning sites have been identified in the Cape to City footprint. Whitebait is a culturally-significant species for Māori and Pakehā, and is a New Zealand delicacy. Spawning sites are difficult to find and are often in areas accessible to stock, which degrade and threaten spawning. Restoration of these areas is often as simple as fencing off the waterway.
- The partnership with a honey company (Comvita) is still being negotiated, which is likely to see trials starting in 2017 in the Cape to City footprint.
- HBRC has partnered with Million Metres Streams. This organisation raises money for riparian restoration through sponsorship.
- Bee-keeping has significantly increased in New Zealand, without an increase in bee food (pollen, nectar, etc). The best long-term solution is for landowners and beekeepers to take

control of the food supply for bees through strategically planting bee feed species to ensure healthy and thriving hives year round. This also creates habitat for native biodiversity.

The 'Trees for Bees' Project has been established to address this issue. HBRC has signed up as a Platinum co-funder to this project, which will see more native habitat created in Cape to City.

Table 5. Progress on habitat restoration milestones

Milestone	2016 activity	Update	% complete
Improved water quality in the Maraetotara River following stock exclusion and riparian re-vegetation	Confirm and implement water monitoring programme.	HBRC water quality monitoring has been integrated with national State of the Environment water monitoring.	50
Increase in native habitat in the Cape to City area	Ensure a minimum of 50,000 plants planted within project footprint by partners or community groups.	• Willow removal was completed. • Planting is underway along the Maraetotara River and will be complete by the end of winter • Planting day at the Clifton County Cricket Club is planned for July 2016 • Whitebait spawning sites identified	60
Enhancement of DOC's efforts on public land through landscape-scale ecological restoration on private land	No 2016 activity		N/A

3.4.2 Significant risks update

Original *Not delivering maintenance after planting is a risk that often turns into a reality due to lack of resources for weeding, watering and other maintenance. This is being managed with effective planning and resource allocation.*

Update Release spraying was completed on all 2015 plants.

Original *Lack of landowner cooperation is another risk and will be managed through landowner/council agreements and forming solid relationships with landowners and community groups*.

Update Landowners on the whole are cooperative. Esplanade strip agreements are being signed by landowners for this year's planting.

3.4.3 Significant opportunities update

Original *HBRC is working on a partnership with Million Metres Streams for Maraetotara River as part of the project. This organisation raises money for riparian restoration through sponsorship.*

Update A contract has been signed between HBRC and Million Metres Streams.

New (January Report) *There is an opportunity to establish mānuka for honey production on highly erodible land (class 6 and 7) within the footprint. Among other things, planting mānuka will provide important habitat and erosion control. This is a partnership between HBRC, Comvita, AGS (afforestation grant scheme) and landowners*

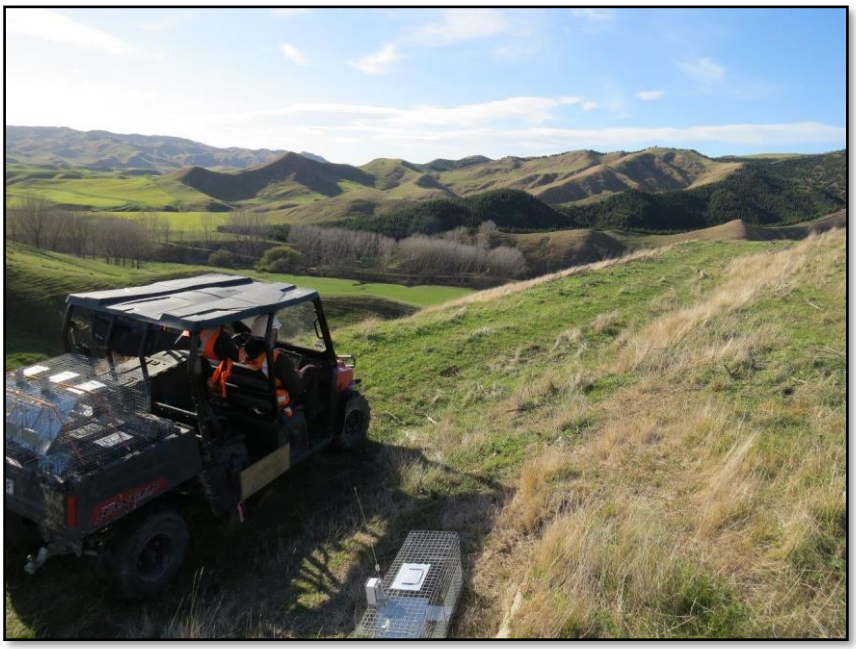
Update Contract between HBRC and Comvita is still being negotiated. We anticipated that the first trial will go ahead in 2017 on a Cape to City property.

Some of the 50,000 plants waiting to be planted. *Photo Hetty McLennan*

3.5 Pest control

Although led by HBRC, this workstream has substantial input from LCR. It covers wide-scale suppression of predators within Poutiri Ao ō Tāne and Cape to City.

3.5.1 Progress towards outcomes



Setting up cage traps as part of a wireless trapping trial. *Photo Rod Dickson*

Highlights

- Phase one of the wide-scale predator control is being rolled out over 6000 ha. Caught so far: 70 cats, fewer than 20 ferrets and 1 stoat.
- Rat tracking tunnel rate at Boundary stream was at 7%, caches (control site) was 10%. The previous three monitoring results have been low, so it looks likely that traps can now be checked every three months instead of every two.
- Wireless trials continue to produce useful information.

Table 9. Progress on pest control milestones

Milestone	2016 activity	Update	% complete
High level landowner participation in pest control in the Cape to City area 'In principle' agreement among participating landowners to continue predator control beyond timeframe of the programme	Obtain agreement in principle from 75% of land owners across sufficient land area to be likely to deliver wide scale predator control outcomes.	General landowner support remains high and all landowners in phase one are very supportive	100
A marked reduction in introduced predators in the Cape to City area	Establish 4,000 ha of predator control infrastructure.	Phase one of the wide-scale predator control is being rolled out over 6000 ha. Caught so far: 70 cats, fewer than 20 ferrets, and 1 stoat.	50
Use of wireless trap networks to optimise control	Install additional wireless trap networks within the Cape to City project footprint.	Wireless node trials were conducted on live capture cages as part of Phase One rollout, with mixed success.	50
Examination of the long-term effectiveness and reliability of self-resetting traps for rat control in Boundary Stream Mainland Island	Reduce checking frequency to four times per year and monitor rat density.	Rat tracking tunnel rate at Boundary stream was at 7%, Caches (control site) was 10%.	50
Sustained suppression of introduced predators at low densities in the Poutiri Ao ō Tāne pest control area	Continue contractor control at reduced control intensity.	A network check was completed in June, with additional specialist cat trapping in 'hot spots'.	50

Milestone	2016 activity	Update	% complete
Demonstration that effective ongoing predator control in the Cape to City area can be undertaken for less than ~$3 per ha	No 2016 activity	N/A	N/A
Demonstration that the cost of predator control can be met by transferring resources from possum control programmes, while still maintaining possums at low densities	Optimise large-scale delivery of chew cards for possums based on research by Landcare Research.	• Based on the available data, 14 days appears to be the optimal deployment duration for possum chew cards. • When targeting areas for future possum control, using chew cards in patches of possum habitat greater than 1 ha (with a 100 m buffer around it) should detect most possums while considerably reducing the total area to be surveyed and controlled.	100
Operational monitoring for predator control	Undertake monitoring.	Camera trapping data is still being analysed, but in total there were 763 photos of cats, 187 of stoats, 92 of ferrets, 159 of mice, 800 of possums and 1,484 of hedgehogs.	50

3.5.2 Significant risks update

Original *The perception that rabbits increase after predator control is a risk that will be mitigated with good communications and research. LCR has published a scientifically-credible review demonstrating that rabbit numbers are driven by bottom-up influences such as climate, disease, and pasture growth rather than by predators.*

Update There are two landowners who have high levels of rabbits. These landowners are concerned that removing predators will increase rabbits further. This may change the timing of our predator-control programme. We may need to do rabbit control before predator control. Additional monitoring (night count lines), rabbit control and further correspondence with landowners should mitigate this risk.

Original *To get biodiversity and economic gains (through reduction in toxoplasmosis) we need to control feral cats. This is an emotive subject in New Zealand and there is the risk that a farmer's or domestic cat gets caught, prompting negative media coverage. To manage this risk, we have a communications plan in place and traps will be placed where they are least likely to trap farm or domestic cats. Where the risk of catching*

farm or domestic cats is high (ie around urban areas) live-capture cage traps will be used.

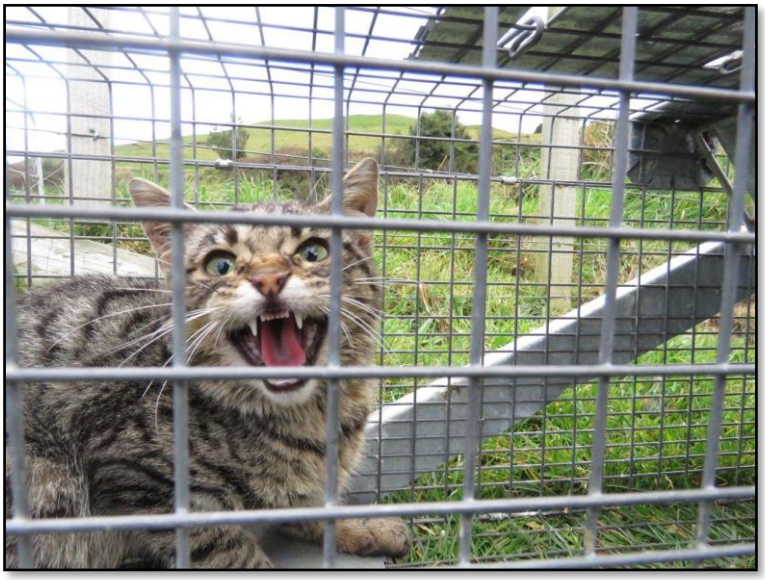
Update Buffer zones for kill-traps have been created around landowner dwellings. As part of the roll-out vets and the SPCA has been consulted, and landowners have been offered the chance to have their domestic cat photographed and/or micro-chipped. If landowners are particularly concerned, they can put their cat in a cattery.

3.5.3 Significant opportunities update

Original *Initial meetings have been held with Zero Invasive Predators (ZIP) and the Biological Heritage National Science Challenge (BHNSC) to align appropriate parts of each project, or learn from the work these groups are doing.*

Update

- Regular meetings are held with ZIP and these include sharing research findings and wireless trapping technology.
- The BHNSC and LCR are recruiting Dr Patrick Garvey to begin research and development of a synthetic form of ferret body odour as a more effective and long-life lure for other predator species.



Feral cat in cage trap. *Photo: Rod Dickson*

4. Work planned for 1 July – 31st December 2016

4.1 Research and monitoring

- Pest and biodiversity responses to pest control in Cape to City will be monitored
- Development of online tool for managers to predict the effects of various trap configurations during maintenance control
- Impacts of wireless trapping technology on landscape-scale pest control will be analysed
- Socio-ecological modelling
- Hold a Landcare Research LINK seminar in Wellington about Cape to City
- Continue planning to decide on a research programme for 2016/17

4.2 Community engagement and education

- Delivering programmes in three new schools.
- Trialling modules with candidate teachers from the EIT Teaching Primary and Early Childhood faculties, with the aim of integrating Cape to City contexts within the curricula of these courses from 2017.
- Recruiting schools for 2017 programmes and teacher workshops.
- Research proposal will be developed to gather data and evaluate progress towards project milestones through the Cape to City and Poutiri Ao ō Tāne education programmes in the short to medium-term. If accepted, the evaluation will examine:
    - Teacher practice and student engagement in schools
    - Feedback during our work with the EIT
- Planning and delivering Cape to City messages at the A & P show.
- Planning and delivering Māori hui at Waimarama Marae.
- Implement the new volunteer management system.
- Update the project websites.
- Produce a brochure providing an overview of projects.
- To provide regular progress updates to a wider audience, the project monthly reports will be uploaded onto the websites.

4.3 Biodiversity and species

- Toutouwai and miro miro translocation
- Full kiwi translocation plan completed
- Scoping research on whio translocation and risk analysis plan
- Continued Cape to City bird monitoring

4.4 Habitat restoration

- Complete planting over winter
- Clifton County Cricket Club planting day
- Release spray later in the year

4.5 Predator control

- Continued maintenance regime of the Poutiri Ao ō Tāne trapping network
- Specialist cat trapping in the Poutiri Ao ō Tāne area (August)
- Specialist cat control (night shooting) in the Cape to City area
- Initial control of an additional area in Cape to City – area size and timing to be confirmed
- Continued work with wireless technology trials
- Planning for 2017 control

5. Conclusion

Te Matau a Māui has had another full six months. The members of the Governance group have been together for a year and a half and are working well as a team. They continue to provide strong leadership and guidance. The project team has been very busy delivering the milestones, which includes the first phase of the Cape to City predator control roll-out. The team has also expanded to include two new members, who provide a Māori perspective that significantly enhances the delivery of milestones. The Cape to City Community Advisory Group has been formed, and held its first meeting in March.

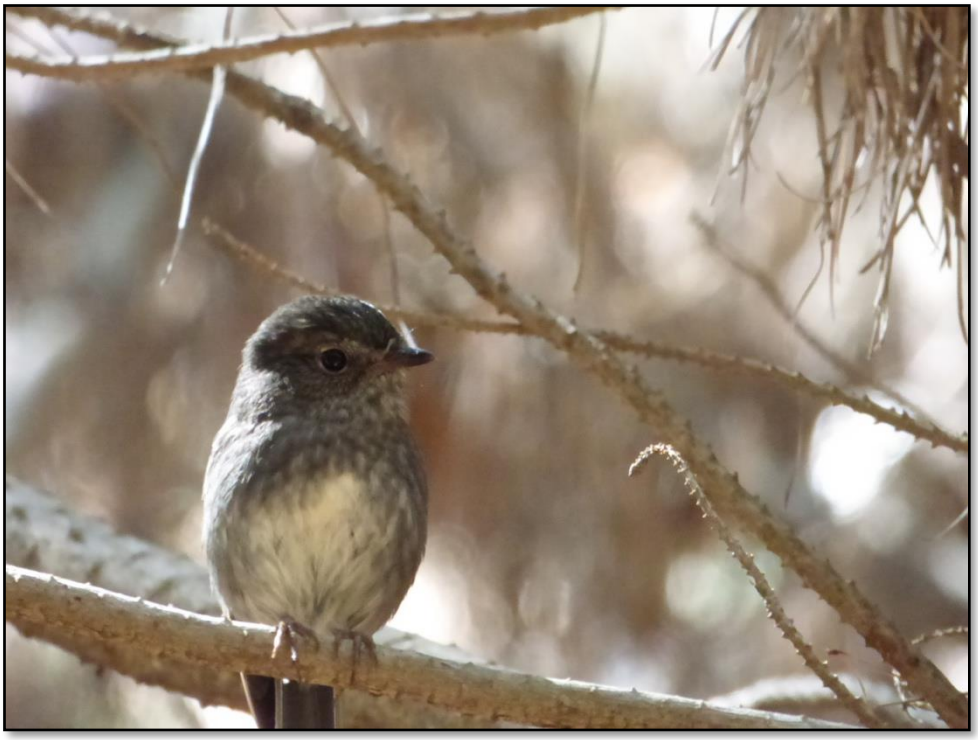
There have been many significant highlights:

- The BHNSC has officially acknowledged Cape to City as a case study, which will inform the national direction of biological heritage in future.
- LCR has committed to the same level of funding in the next contract (2016/17 financial year).
- A paper submitted to Environmental Management (based on the rural survey) suggests that managers of coordinated efforts to control invasive species should attempt to address beliefs about social and ecological context, rather than just providing financial subsidies and information about control tactics or the impacts of invasive species.
- Poutiri Ao ō Tāne data have been analysed and compiled for publication. Results show that low-cost predator control in a pastoral landscape can reduce invasive predator populations, with apparent benefits for some native fauna.
- In the last six months, two very successful nature-time teacher training workshops have been run with all teachers in each school.
- Media attention has continued to be strong (see **Appendix 3**).
- The pāteke pair at Lake Opouahi has had three more ducklings. At least three of this clutch made it to maturity.
- Kōrure (mottled) and titi (Cook's) petrel translocations were successful and all fledged except one titi. Media coverage of the kōrure release was strong.
- A miro miro (tomtit) was recorded at one of the Cape to City monitoring sites, the first record of a tomtit outside of Cape Sanctuary.
- Three whitebait spawning sites have been identified in the Cape to City footprint.
- HBRC is now a platinum supporter of 'Trees for Bees'. This will increase potential habitat for biodiversity.
- Phase one of the wide-scale predator control is being rolled out over 6000 hectares.

- Rat-tracking tunnel rates at Boundary Stream remain low, allowing discussion to continue about a kākāriki translocation, as well as extending the period between checking the traps.
- Wireless trials continue to produce useful information.

Two issues have occurred over the last six months: high rabbit numbers on two properties within the Cape to City footprint, and the change of release site for the toutouwai and miro miro translocation. These are being managed and will not threaten the project (see workstream updates for more detail).

The next six months will include at least three community events, the translocation of robins and tomtits, continued roll-out of predator control in Cape to City, and at least 50,000 plants planted and being maintained.



Toutouwai (North Island robin) at Cape Sanctuary. *Photo Rebecca Gibson*

Appendix 2: Letter from the Biological Heritage National Science Challenge

11 March 2016

Campbell Leckie
Land Services Manager and Team Leader, Cape to City Project
Hawkes Bay Regional Council

Dear Campbell

RE: Recognition of Cape to City as a Flagship Site and Case Study Partner for the NZ's Biological Heritage National Science Challenge

The New Zealand's Biological Heritage National Science Challenge is one of 11 Challenges that have been established to tackle top priority issues facing New Zealand over a 10-year time frame, in recognition of the central and strategic role that science and research must play in shaping New Zealand's future. The NZ's Biological Heritage National Science Challenge Objective is to protect and manage our native biodiversity, improve our biosecurity, and enhance our resilience to harmful organisms.

To achieve this Objective, a fundamental shift is required in the way we conduct science and research activities in New Zealand. In particular, while a high level of innovation and science excellence is required, there is a growing recognition that transformational environmental change can only be achieved in a much wider context, including partnership with Māori, and engagement with community and industry. This fundamental shift is central to the Challenge's Mission of reversing the decline of NZ's biological heritage.

We believe that the aspirational and transformational nature of the Cape to City project goals are strongly aligned with the Biological Heritage Challenge's Mission. To that end, we would like to propose that the Cape to City project be a 'flagship site' for the Challenge. Our view is that the Cape to City Project contains all the essential elements required for such a partnership: community and sector engagement, aspirations to tackle top priority biosecurity threats and enable native biota to flourish, activities spanning both conservation and the primary sector, a growing recognition of the role of Māori as kaitaki, the educational programme, and national profile – all in addition to the research workstream. In short, the approach taken by the Cape to City Project aligns strongly with the desired approach of the Challenge.

c/o Landcare Research New Zealand Limited | P.O. Box 69040 | Lincoln 7640 | New Zealand
Gerald Street | Lincoln 7608 | New Zealand | Tel: + 64 3 321 9999 | Fax: + 64 3 321 9998 | W: www.biologicalheritage.co.nz

Formal alignment between the NZ's Biological Heritage Challenge and the Cape to City Project could include:

- Partnering on proposals seeking extra operational and research funding to broaden and deepen the range of activities conducted in the Cape to City footprint.
- Partnering on proposals seeking extra operational and research funding to extend the Cape to City concept over a wider range of landscapes regionally and nationally, thus raising the national profile of both organisations.
- Co-branding of the Challenge and Cape to City project where appropriate (i.e. for mutual benefit of both parties). This could include links on the respective websites; for example, the Challenge is aiming for 5-6 high-profile 'flagship' opportunities around New Zealand, and each will have dedicated pages on the Challenge website. It could also include opportunities to showcase our activities in mainstream and social media.
- Seeking mutual opportunities to influence political thinking on the critical importance of New Zealand's environment to our identity, wellbeing, and economic growth.

Resourcing of such activities could thus be accommodated within existing budgets and core business of each organisation; we emphasise that we are not requesting financial resources from the Cape to City Project.

In terms of research activities, a key partner will be Landcare Research, and we envisage that it will be important to recognise their role as a research leader in the Hawkes Bay Region and in Cape to City in particular.

We would be open to further suggestions as to what partnership with the Cape to City project could entail.

We look forward to hearing from you.

Yours sincerely

Dr Andrea Byrom
Challenge Director

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Appendix 3. Project outputs so far

Workstream	Title	Status	Description	Interim report date
Community engagement and education	*Backyard Biodiversity* teachers resource for primary and intermediate school students (years 5–8)	Published	Teacher resource that is part of the Backyard Biodiversity education programme.	August 2015
	Cape to City on Nature Watch naturewatch.org.nz/projects/cape-to-city	Published	Cape to City has been set up as a project on the Nature Watch website.	August 2015
	Project pledges $6m for conservation	Published	*Hawke's Bay Today* 18 December 2014 article about Te Matau a Māui signing.	August 2015
	Redressing human impact	Published	*Hawke's Bay Today* 18 December 2014 Editorial about Te Matau a Māui signing.	August 2015
	Hawke's Bay TV presentation	Published	Campbell Leckie gave a presentation on Hawke's Bay TV in June 2015 about Cape to City.	August 2015
	Nature corridor	Published	Short article on Cape to City in May 2015 issue of Bay Buzz magazine.	August 2015
	Back to the way it was	Published	Article on Cape to City in the *Profit Magazine* May 2015 issue.	August 2015
	Cape to City on Facebook www.facebook.com/capetocity	Active	Cape to City Facebook page was set up.	August 2015
	Trustworthy Biodiversity measures www.landcareresearch.co.nz/science/plants-animals-fungi/animals/birds/biodiversity-measures/research-updates	Published	Highlights the results from the Building Trustworthy Biodiversity Measures focus groups.	August 2015

Workstream	Title	Status	Description	Interim report date
	Andy Lowe gave a speech at the Deer Industry Conference www.youtube.com/watch?v=tARCD82ACy8 (4 hr 14 min)	Published	Link to Andy Lowe's speech at the Deer Industry Conference in May 2015.	August 2015
	Sir Jerry visits Sanctuary	Published	*Hawke's Bay Today*, 11 June 2015, p 5. Governor-General visited Cape Sanctuary with Andy Lowe and Ruud Kleinpaste; a small part of the article is about Cape to City.	August 2015
	Hawke's Bay DOC update	Completed	Dave Carlton gave a talk to the Napier branch of Forest & Bird about DOC, but focused on Te Matau a Māui.	August 2015
	Pushing for a predator-free NZ	Published	*Hawke's Bay Today*, 4 July 2015, pp 12–13. Double page spread of articles about Cape to City.	February 2016
	Cape to City website	Active	http://capetocity.co.nz/	February 2016
	Radio article – Rod Dickson interviewed	Published	RNZ article on morning rural news, 5 November 2015, about Cape to City (forward to Minute 1.28). http://www.radionz.co.nz/audio/player/201777443	February 2016
	Te Matau a Māui: Māori Communications & Engagement Strategy (Draft)	Draft	Draft Māori Communications & Engagement Strategy	February 2016
	Pair bring skills to work in Cape to City project	Published	Article in Hawke's Bay Today, 6th January 2016, p4 about the Sir Peter Blake Ambassadors	August 2016
	Cape to City and Poutiri Ao ō Tāne: Education for our future	Published	An information brochure on the Te Matau a Māui Education programmes, to be distributed to parents and whanau, via schools engaged in the programmes	August 2016

Workstream	Title	Status	Description	Interim report date
	Project document templates	Completed	A set of templates: Powerpoint, letter,fact sheet and banners, designed by DOC Publishings team to give all project documents across Te Matau a Māui (Cape to City and Poutiri Ao ō Tāne) a common "branding look", that transcends those of individual projects and related agencies.	August 2016
	Backyard Biodiversity Teachers' Resource for Primary and intermediate school students (Years 5-8)	Published	DOC blog story about school programme done with Te Mata Primary school.	August 2016
	Bugman helps in nature push	Published	Hawke's Bay Today article 5th March, 2016, p9. About education programmes.	August 2016
	Poutiri Ao ō Tāne and Cape to City overview talk	Presentation	Melissa Brignall-Theyer gave an overview talk to lower North Island Bio-security Institute meeting - April 14th 2016	August 2016
	Cape to City Newsletter (winter 2016)	Published	Articles include: Info from the rural survey, education programmes, Mānuka, habitat restoration, cat trapping, toxoplasmosis and bringing nature back into peoples' lives	August 2016
Pest Control	Trapped pests will trigger text message	Published	*Hawke's Bay Today* article 30 April 2015 about the launch; article syndicated by the *Dominion Post* and *Farmers Weekly*.	August 2015
	Hi-Tech Traps Target Possums	Published	*Hawke's Bay Today*, 5 November 2015, p 17 article about Wireless predator traps – not possums (that was a mistake in the title).	February 2016
	Farmer War on Feral Cats	Published	*Hawke's Bay Today*, 19 November 2015, p 7. Article about the toxoplasmosis trial.	February 2016
	Cape to City: Next phase – predator control goes wireless	Published	Article in *Our Place* newsletter, November 2015 issue, p8 (HBRC publication).	February 2016

Workstream	Title	Status	Description	Interim report date
	Cat hunt after toxoplasmosis found	Published	*Hastings Mail*, 2 December 2015, p 15. Newspaper article about the toxoplasmosis trial.	February 2016
	Traps Target feral cats	Published	Hastings Mail, 13th April, 2016, p8 – Newspaper article about cat trapping in Cape to City	August 2016
	Catching more rats using run-through tunnel traps	Published	ZIP article about trapping at Poutiri Ao ō Tāne. http://zip.org.nz/findings/2016/2/catching-more-rats-run-through-vs-single-entry-traps	August 2016
Biodiversity and Species	Pāteke fly home after time away	Published	*Hastings Leader*, 27 May 2015, p 6. Article about the pāteke release.	August 2015
	Norbury, G; McLennan, J. (2015) Biodiversity and predator monitoring for Cape to City, Hawke's Bay Project. Report (LC2237) prepared for Hawke's Bay Regional Council	Completed	Biodiversity monitoring plan for Cape to City.	February 2016
	Mohi Bush rodent control operation 15/16	Completed	Report on the rat control and monitoring at Mohi Bush for the Robin and Tomtit translocation	August 2016
	Kōrure settling into new home	Published	HB Today article on kōrure (mottled petrel) translocation 18th April page 6	August 2016
	Massive Effort to Restore Maungaharuru for endangered Kōrure	Published	Te Kaea, Māori TV article 17th April 2016 on kōrure translocation http://www.maoritelevision.com/news/regional/massive-effort-restore-maungaharuru-endangered-korure	August 2016
Research and monitoring	Milestones 1.1 and 1.2 report on integrated research workstream of Te Matau a Māui activities	Completed	The report summarises the main activities within the research workstream, including aligned components that are not directly related to this contract.	August 2015

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Optimising translocation efforts of mottled petrels (Pterodroma inexpectata): growth, provisioning, meal size and the efficacy of an artificial diet for chicks	Published	Link to Rachael Sagar's presentation at inaugural world seabird twitter conference: storify.com/Seabirders/wstc1	August 2015
	MacLeod, L.; Dickson, R.; Leckie, C.; Stevenson, B.; Glen, A.S. 2015: Possum control and bird recovery in an urban landscape, New Zealand. *Conservation Evidence 12:* 44–47.	Published	Bird recovery in an urban landscape.	August 2015
	Glen, A; Dickson, R. 2015: Wide-scale predator control for biodiversity in Hawke's Bay. *Kararehe Kino/Vertebrate Pest Research 25*: 6–7.	Published	Newsletter article on wide-scale predator control.	August 2015
	Jones, C; Norbury, G; Glen, A; Dickson, R. 2015: Predator control benefits native species but not rabbits. *Kararehe Kino/Vertebrate Pest Research 25*: 14–15.	Published	Newsletter article on effects of predator control on native birds and rabbits.	August 2015
	Glen, A; Perry, M; Ruscoe, W. 2014: Wide-scale trapping suppresses predators and promotes biodiversity in Hawke's Bay. Proceedings of the 28th Australasian Wildlife Management Society Conference. Brisbane, AWMS.	Conference	Effects of wide-scale predator control on biodiversity.	August 2015

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Ruscoe, W; Glen, A.S; Perry, M; Forrester, G. (In prep): Impacts of rabbit grazing on pasture in Hawke's Bay, New Zealand. *Wildlife Research*	submitted	Rabbit grazing impacts on pasture production.	August 2015 updated Aug 2016
	Norbury, G; Jones, C 2015: Pests controlling pests: does predator control lead to greater European rabbit abundance in Australasia? *Mammal Review 45*: 79–87.	Published	Predator and rabbit interactions.	August 2015
	Glen, A.S; Anderson, D; Veltman, C.J; Garvey, P.M; Nichols, M. (2016) Wildlife detector dogs and camera traps: a comparison of techniques for detecting feral cats. *New Zealand Journal of Zoology*.	Published	Comparing techniques for detecting cats.	August 2015 updated Aug 2016
	Nichols, M.; Garvey, P; Glen, A.S.; Ross, J. (In prep): Influence of camera trap orientation on detection rates of invasive predators. *New Zealand Journal of Ecology*.	Submitted	Camera-trap orientation and predator detection.	August 2015 updated Aug 2016
	Nichols, M.; Gormley, A.; Garvey, P.; Glen, A.S.; Ross, J. (In prep): Estimating abundance of feral cats: a comparison of techniques. *Methods in Ecology and Evolution*.	In prep	Feral cat abundance estimates.	August 2015

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Garvey, P.; Nichols, M.; Glen, A.S.; Pech, R.P.; Clout, M.N. (In prep): Response of mesopredators to removal of feral cats. *Journal of Applied Ecology*.	In prep	Response of mesopredators to the removal of feral cats.	August 2015
	Glen, A.; Dickson, R.; Leckie, C. 2015: Wide-scale predator control and fauna recovery: Lessons from Hawke's Bay. NETS conference.	Conference	Biodiversity recovery following predator control.	August 2015
	Glen, A. 2014: Camera traps for monitoring pest animals. In: *Abstracts, NETS Conference*. NPCA, New Plymouth.	Conference	Camera traps.	August 2015
	Perry, M.; Glen, A.; Ruscoe, W. 2014: Quantifying rabbit damage to pasture in Hawke's Bay, New Zealand. *Proceedings of the 16th Australasian Vertebrate Pest Conference* (ed. M. Gentle). VPC, Brisbane, p. 115.	Conference	Rabbit damage to pasture.	August 2015
	Milestone 2.1 (LCR contract)	Completed	Proposed strategy for radio-tagging possums in the Cape to City footprint that will generate detection probability data used for identifying areas of low, medium, and high possum numbers. This will enable forecasting where and when control should be applied.	August 2015
	Milestone 2.3 (LCR contract)	Completed	The feasibility of the 'Ramsey' model (which uses occupancy data to estimate population density) for use in analysis of Poutiri Ao ō Tāne camera trap data to generate g0 and sigma values for feral cats is determined.	August 2015

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Milestone 2.4 (LCR contract)	Completed	A scoping report on optimising a monitoring design for Cape to City using cameras. Includes a critical review of potential gaps that should be addressed, using initial data from the Poutiri Ao ō Tāne camera trap work to date, to minimise risks associated with the use of this method.	August 2015
	Milestone 3.1 (LCR contract)	Completed	Identifies four or five possible scenarios for predator control to test based on the actual property footprint for Cape to City. Includes the implications of 'friction surfaces' (e.g. poorly accessible areas) for contractors (in consultation with contractors in the project).	August 2015
	Milestone 4.4 (LCR contract)	Completed	Based on learnings from the Poutiri Ao ō Tāne project and other wide-scale predator control initiatives (e.g. the Aorangi proposal being developed by LCR for OSPRI), a 10 page scoping document was produced (linking to the high-level milestones developed for the Aotearoa Foundation) outlining the design for biodiversity monitoring in the Cape to City footprint.	August 2015
	Glen, A.S.; Latham, M.C.; Anderson, D.; Leckie, C.; Niemiec, R.; Pech, R.P.; Byrom, A.E. 2015: Landholder participation rate in regional-scale control of invasive predators: a spatial model for an agro-ecosystem (unpublished),	Submitted	This research models a range of landowner participation rates on the success of predator control.	February 2016 Updated Aug 2016
	Milestone 4.2 (LCR Contract)	Completed	Brief options paper that scopes the development of coupled social-ecological models for the Cape-to-City footprint in tandem with the Biological Heritage National Science Challenge.	February 2016
	Milestone 2.5 (LCR Contract)	Completed	Review of the wireless trial results (Feb/March 2015) from the perspective of operational delivery of wireless technology into the field, and analysis of the ability of wireless technology to reduce operational costs.	February 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Milestone 2.6 and 2.7 (LCR Contract)	Completed	Determined how the Poutiri Ao ō Tāne trap network might be optimised for the maintenance control phase by using existing Poutiri Ao ō Tāne trap data in a simulation model, including three or four scenarios for optimal trap spacing and frequency of checks.	February 2016
	Milestone 4.3 (LCR Contract)	Completed	Report on the findings of the Biodiversity Trustworthy indicators focus groups.	February 2016
	Jones, C.; Warburton, B.; Carver, J.; Carver, D., 2015. Potential applications of wireless sensor networks for wildlife trapping and monitoring programs. *Wildlife Society Bulletin 39*: 341–348.	Published	Potential applications of wireless sensor networks for wildlife trapping and monitoring programmes.	February 2016
	Ozarski, J. 2015: Cooperation for Mutual Benefit: Opportunities for Primary Industry and the New Zealand Department of Conservation.	Published	Report by Jill Ozarski (Fulbright fellow), who use Poutiri Ao ō Tāne as a case study. http://www.fulbright.org.nz/publications/cooperation-for-mutual-benefit-opportunities-for-primary-industry-and-the-new-zealand-department-of-conservation-to-operate-public-private-partnerships/ Her presentation is at: http://www.fulbright.org.nz/news/video-ian-axford-new-zealand-fellowship-seminar-jill-ozarski/	February 2016
	Nichols, M and Glen, A 2015: Camera trapping to monitor the results of predator removal on Waitere Station	Completed	This report assessed the ability of camera traps as a non-invasive method for monitoring the presence of feral cats. Another objective was to determine the optimal statistical approach to estimate cat abundance from the camera trapping data.	February 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Landcare Research. 2015: Predator busters: Hawkes Bay predator control project. *Discovery 40*.	Published	Article in *Discovery* (issue 40, Nov 2015) about Cape to City, includes a video. This is a Landcare Research publication: http://www.landcareresearch.co.nz/publications/newsletters/discovery/discovery-issue-40/Predator-busters	February 2016
	Lowe, A. 2015: Cape Sanctuary. *NZES 2015 Talk Abstracts*. Talk during plenary symposium 'Non-government conservation initiatives'. New Zealand Ecological Society Conference, Christchurch, November 2015: p 60.	Conference	Andy Lowe's talk at the Ecological Society conference.	February 2016
	Sagar, R.L.; Leseberg, A.; Hunt, K.; Nakagawa, K.; Dunphy, B.; Rayner M.J. 2015: Optimising translocation efforts of mottled petrels (*Pterodroma inexpectata*): growth, provisioning, meal size and the efficacy of an artificial diet for chicks. *Emu 115 (2)*: 137-145.	Published	Paper on optimising translocation efforts of Mottled Petrels	February 2016
	Sagar, R.L. 2015: Cumulative impact of handling on chick physiology, growth. World Seabird Conference 2015.	Conference	Results of the study of the cumulative impact of handling on chick physiology, growth and condition were presented at the Second World Seabird Conference, Cape Town, in October 2015.	February 2016
	Milestone 7.1 Community Survey Brief report	Completed	Brief report by Pike Brown on the Cape to City community survey done end 2015	August 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Shiny App	Completed	Prototype "shiny app" has been developed to allow managers to predict trap catch by altering trap configurations online.	August 2016
	Pech R and Maitland M (2016) Conservation of native fauna in highly invaded systems: managing mammalian predators in New Zealand. *Restoration Ecology* (online early).	Published	Conservation of native fauna in highly-invaded systems	August 2016
	Niemiec, R.M., Pech, R., Norbury, G., Byrom, AE. (submitted). Landowners' Perspectives on Coordinated, Landscape-Level Invasive Species Control: the Role of Social and Ecological Context. *Environmental Management*.	Submitted	This paper utilises the data from the Cape to City rural survey	August 2016
	Garvey, P.M, Glen, A.S, Clout, M.N, Wyse, S.V, Nichols, M and Pech, R.P. (submitted). Exploiting interspecific olfactory communication to monitor predators. *Ecological Applications*	Submitted	This paper looks at using sense of smell as communication between species as a way of monitoring predators	August 2016
	Gormley AM, Warburton B (in prep). Optimising a kill-trap network for cost-effective predator control.	In Prep	Optimising a kill-trap network for cost-effective predator control	August 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Glen A.S, Perry M, Yockney I, Cave S, Gormley AM, Leckie C, Dickson R, Rakete-Stones W, Rakete-Stones P, Norbury GL, Ruscoe WA (in prep). Wide-scale predator control for biodiversity conservation: a case study from Hawke's Bay, New Zealand.	In Prep	A look at wide-scale predator control for biodiversity, using Cape to City as a case study	August 2016
	Byrom A, Brignall-Theyer M, Brown P, Dickson R, Glen A, Leckie C, Millard P, Norbury G, Pech R, Warburton B. 2015. Managing pest mammals in a whole-of-system context: a case study from Hawkes Bay. NETS conference	Conference	Managing pest mammals in a whole-of-system context: a case study from Hawkes Bay	August 2016
	Cowan P, Glen A, Norbury G, Byrom A, Dickson R, Leckie C 2015. Scaling up: From Island to Mainland Eradication. Proceedings of Vth International Wildlife Management Congress. Sapporo, Japan.	Conference	Scaling up: From Island to Mainland Eradication.	August 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Glen, A, Anderson, D, Veltman, C, Garvey, P and Nichols, M (2015). Canine vs camera: comparing camera traps with sniffer dogs for detecting feral cats. p. 43 in: Abstracts of the 28th Australasian Wildlife Management Society Conference. Australasian Wildlife Management Society, Perth.	Conference	Comparing camera traps with sniffer dogs for detecting feral cats.	August 2016
	Innes J, Fitzgerald N 2016. Possible bird-related research in the Hawkes Bay Cape-to-City project. Unpublished report to Hawkes Bay Regional Council, June 2016.	Completed	Possible bird-related research in the Hawke's Bay Cape to City project	August 2016
	Brown, SJ, Latham C, Warburton B. 2016. Cape to City Chew Card Analysis. Unpublished Landcare Research Contract Report LCxxxx, prepared for Hawke's Bay Regional Council.	Completed	Cape to City chew card analysis	August 2016
	Gormley AM, MacLeod CJ. 2016. Assessment of data sources for monitoring birds in Cape to City. Unpublished Landcare Research Contract Report LCxxxx, prepared for Hawke's Bay Regional Council.	Completed	Assessment of data sources for monitoring birds in Cape to City	August 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring (cont.)	Watts C, Holdaway R, Davis C, Wood J, Dickie I, Thomson F, Thornburrow D. 2016. Novel invertebrate monitoring opportunities within Cape to City: Research Synthesis 2015/2016. Unpublished Landcare Research Contract Report LCxxxx, prepared for Hawke's Bay Regional Council.	Completed	Invertebrate monitoring opportunities within Cape to City.	August 2016
	Byrom, AE. 2016. The Cape to City project and its relationship to the NZ's Biological Heritage National Science Challenge. Invited presentation, Hawkes Bay branch of the Royal Society of New Zealand, June 2016.	Presentation	Public lecture on Cape to City	August 2016
	Innes J, Fitzgerald N 2016. Restoring birds in Cape to City. 4 page. Infographic for Hawkes Bay Regional Council, June 2016.	Completed	Infographics on restoring birds in Cape to City	August 2016

Appendix 4: Te Matau a Māui updated milestones (June 2016)

Research and monitoring						
		2015	**2016**	**2017**	**2018**	**2019**
1	Research outputs	A minimum of three research outputs, two of which are submitted to peer-reviewed journals.	A minimum of three research outputs, two of which are submitted to peer-reviewed journals**.**	A minimum of three research outputs, two of which are submitted to peer-reviewed journals.	A minimum of three research outputs, two of which are submitted to peer-reviewed journals.	A minimum of three research outputs, two of which are submitted to peer-reviewed journals**.**
2	Methods of monitoring introduced mammalian predators before and after control	Compare camera traps, predator detection dogs and predator tracking tunnels in terms of sensitivity and cost-effectiveness.	Compare precision of various methods to estimate predator abundance from camera trapping data (e.g. occupancy modelling, mark–recapture modelling).	Gather sub-sample camera trapping data to determine optimal number of cameras per unit area.		Compare camera traps with electronic tracking pads being developed by Connovation Ltd (if available).
3	Decision analysis models for predicting the most cost-effective trapping configurations for managing introduced predators over large areas	Model effectiveness of predator control with varying levels of landholder participation.	Refine predator population model to predict outcomes of different trap configurations and	Refine population model further using real trapping data.	Gather sub-sample predator movement data (from trapping / telemetry) to	

Research and monitoring						
		2015	**2016**	**2017**	**2018**	**2019**
			frequency of checking.		determine optimal trap spacing.	
4	Increase in skinks, geckos, and native invertebrates in the Cape to City area; continued increase in skinks, geckos, and native invertebrates in the Poutiri Ao ō Tāne area	• Continue Poutiri monitoring (monitoring times may be extended out). • Specific Cape to City invertebrate monitoring is set up.	Continue Poutiri and Cape to City monitoring (Poutiri monitoring times may be extended).	Continue Poutiri and Cape to City monitoring (Poutiri monitoring times may be extended).	Continue Poutiri and Cape to City monitoring (Poutiri monitoring times may be extended).	• Continue Poutiri and Cape to City monitoring (Poutiri monitoring times may be extended) • Data analysed to determine changes in abundance
5	Analysis and reports on the integrated economic benefits of Te Matau a Māui		Produce a scoping report on integrated economic analysis (toxoplasmosis/green credentials/rabbit forage etc.).	Produce a scoping report on integrated ecosystem services analysis.		Produce and promote economic benefits report.

Research and monitoring						
		2015	**2016**	**2017**	**2018**	**2019**
6	Decrease of toxoplasmosis-related lamb abortion rates as a result of research and reduction in cats, vaccinations will no longer be necessary, leading to significant economic benefit to the region and nation	Design a detailed toxoplasmosis research programme, with key stakeholders engaged, and necessary baseline data gathered.	Produce an annual review of the research programme.	Produce a detailed mid-programme research review.	Produce an annual review of the research programme.	Produce final programme review including detailed economic assessment, and assessment of toxoplasmosis disease in the landscape.
7	Use of restored habitat by native wildlife	Design research for occupancy assessment of key indicator species.	Complete pre and post habitat meta-connectivity study for the project to determine benefits of habitat to key species.	Produce midpoint review on habitat connectivity and outcomes.	Conduct occupancy assessment of key indicator species.	Develop template for future projects on optimising habitat connectivity between private and public land.
8	Student participation	Engage two tertiary students in the project per annum.	Engage two tertiary students in the project per annum.	Engage two tertiary students in the project per annum.	Engage two tertiary students in the project per annum.	Engage two tertiary students in the project per annum.

Research and monitoring						
		2015	**2016**	**2017**	**2018**	**2019**
9	Increasing the participation in pest management and ecological restoration by landowners and the community	Complete baseline surveys on attitudes and barriers to participation.				Complete surveys on attitudes and barriers to participation to determine changes over the project

Community/social engagement and education						
	2015		**2016**	**2017**	**2018**	**2019**
1	A marked increase in the number of volunteers participating in the programmes over the next five years	Review needs for volunteer management systems and how the project best builds on existing Cape Sanctuary and DOC systems. Measure baseline for volunteer hours for Cape to City and Poutiri Ao ō Tāne.	A measured increase in volunteer hours trending upward	A measured increase in volunteer hours trending upward	A measured increase in volunteer hours trending upward	A 25% increase on baseline in the number of volunteers participating in the programmes over the previous five years

Community/social engagement and education						
	2015		**2016**	**2017**	**2018**	**2019**
2	Increased involvement of schools in the various conservation initiatives	Engage a total of three schools in the Cape to City project.	* Engage a total of six schools in the Cape to City project.	Engage a minimum of six schools in the Cape to City project and at least one tertiary institute initiative.	Develop a forum or process, in conjunction with schools, to transition school support from Cape to City from being actively managed to being self-sustaining in the long term.	Ensure process is in place with strong commitment from schools to continue their investment.
3	Communications strategy	Finalise communications strategy.	Implement communications strategy.	Implement communications strategy and review strategy	Implement communications strategy.	Implement communications strategy.
4	Through the social engagement strategy and communication plan, the Hawke's Bay community will value the importance of biodiversity and act accordingly so that	Review all other potential stakeholders including philanthropists.	Approach other investors in a prioritised way.	Continue to attract other investors; target minimum $300,000	Secure a minimum of $400,000 to match the final year's investment by the Aotearoa Foundation.	Continue to attract other investors; target minimum $300,000

Community/social engagement and education						
	2015		**2016**	**2017**	**2018**	**2019**
5	sustainability behaviours become part of the social norm	Review and implement Giblin Group community engagement strategy and scope further education opportunities at Poutiri Ao ō Tāne.	Review and implement community engagement strategy.	Review and implement community engagement strategy. Review education initiative at Poutiri Ao ō Tāne	Review and implement community engagement strategy.	Review and implement community engagement strategy.
6		Develop citizen science biodiversity monitoring programme begun to tie into current national programmes		Review the use of citizen science in Te Matau a Māui		Review the use of citizen science in Te Matau a Māui

* Definition of Milestone 2: '*Engage a total of six schools in the Cape to City project*' has been interpreted as: six schools will be engaged and will be made up of recruiting three to four new schools and doing at least two full school outdoor-nature teacher training workshops with schools who have already been part of our education programme, to ensure schools can be less reliant on external coordination for environmental education in the future.

Biodiversity/species						
	2015		**2016**	**2017**	**2018**	**2019**
1	Reintroduction and re-establishment of mottled petrels	Initiate the five-year translocation programme of mottled petrel juveniles from Codfish Island/Whenua Hou to the Maungaharuru Range following the successful trial in 2014.	Continue with Cook's petrel and mottled petrel translocations. Measure survival rates and patterns of weight loss through to fledging.	Continue translocations of mottled and Cook's petrels, and refine feeding regimes, if necessary, to improve fledging rates.	Translocations with systematic refinements of husbandry techniques continue. Camera monitoring initiated at Maungaharuru to detect returning adults.	Continue same work as 2018. Prepare report describing best methodology for seabird translocations.
2	Increase in the abundance of introduced and native birds that are already present in the area	Establish a bird monitoring programme and complete baseline estimates.	Carry out bird monitoring, including questionnaire surveys, to determine bird abundance in rural and urban gardens.	Continue bird monitoring with annual data analysis.	Continue bird monitoring with annual data analysis.	Continue bird monitoring; analyse data to determine changes in abundance over preceding 4 years.
3	Reintroduction and establishment of several threatened bird species into the Cape to City area, some species will spread from Cape	Design John Mclennan-led species monitoring programme for birds/invertebrates overflowing into broader	• Monitor species currently overflowing from Cape Sanctuary (pāteke, red-	Monitoring of outflow from Cape Sanctuary and translocated robins	• Continue monitoring of outflow from Cape Sanctuary;	Prepare publication for a peer-reviewed journal describing the halo effect of Cape Sanctuary and

Biodiversity/species						
	2015		**2016**	**2017**	**2018**	**2019**
	Sanctuary; others will be reintroduced and actively managed until self-sustaining	project area outside of Cape Sanctuary. Prepare translocation plans for robins and tomtits.	crowned kākāriki, etc.). • Translocate robins and tomtits to Mohi Bush to assist spread of native insectivores through Cape to City area	and tomtits continues	• Analyse species data to determine extent of spread through wider landscape.	its influence on wildlife communities in the surrounding hinterland.
4	Successful re-establishment of North island brown kiwi onto the Maraetotara Plateau in the Cape to City footprint		Complete kiwi translocation proposal	Translocate kiwi to Maraetotara Plateau after predator levels are reduced to levels sufficient for kiwi survival	Continue kiwi translocation to Maraetotara Plateau and monitor to determine if kiwi are becoming established there	Continue kiwi translocation to Maraetotara Plateau and monitor to determine if kiwi are becoming established there
**5	Successful re-establishment of whio/blue duck on the Maraetotara River (subject to risk analysis and resourcing). Successful colonisation of ponds and wetlands by pāteke	Develop DOC/John Mclennan whio Maraetotara translocation plan.	Scope a detailed technical analysis of risk around habitat and gradients, by	Gain clarity of long-term landowner commitment along the Maraetotara.	If funding is sourced and in-depth analysis provides recommendation to proceed, catch	• Introduce first whio juveniles into the Maraetotara River.

Biodiversity/species						
	2015		**2016**	**2017**	**2018**	**2019**
	in the Cape to City and Poutiri Ao ō Tāne areas		looking at other New Zealand examples.		and radio-tag wild whio adults to identify nest locations. Collect whio eggs to be hatched and raised to fledging age in captivity	• Continue egg collection from wild pairs; • Successful colonisation of ponds and wetlands by pāteke in the Cape to City and Poutiri Ao ō Tāne areas
6	Improvement in the numbers of long-tailed bats inhabiting Mohi Bush	• Complete initial design of monitoring programme. • Assess the impact of potential threats to the bat population.	• Implement measures that will improve conditions for a population increase. • Implement long-tailed bat monitoring programme.	Monitor bat population.	Monitor bat population.	Monitor bat population and review success.

Biodiversity/species						
	2015		**2016**	**2017**	**2018**	**2019**
7	Reintroduction and re-establishment of mottled petrels, Cook's petrels, kākā, kākāriki, and pāteke in the Poutiri Ao ō Tāne area	• Kākā and kākāriki have been released and a founder population establishes at the location. • Transfer pāteke successfully.	• ***Transfer and successfully fledge petrels. • Kākā and kākāriki populations have established and are self-sustaining.	• ***Transfer and successfully fledge petrels. • Transfer pāteke successfully.	• ***Transfer and successfully fledge petrels. • Transfer pāteke successfully.	• ***Transfer and successfully fledge petrels. • Petrels from previous releases are returning to breed. • Self-sustaining population of pāteke has been established.

Note:

* Milestone 4 is a new milestone endorsed by the Aotearoa Foundation and the governance team in 2016.

** Milestone 5 has significantly changed as the whio translocation will need more scoping research and funding to proceed. The kiwi translocation (milestone 4) is now the priority, due to increased benefits and reduced risk of re-introducing kiwi.

*** Milestone 7: 2016–2019 – there are some unknown factors regarding pāteke and kākāriki involved in these deliverables. Therefore, in the next review these may alter slightly.

Habitat protection and enhancement/restoration (primarily fencing, planting, maintenance, weed control)						
	2015		**2016**	**2017**	**2018**	**2019**
1	Improved water quality in the Maraetotara River following stock exclusion and riparian re-vegetation	• Establish water quality monitoring programme and monitoring sites; • Integrate existing HBRC water quality monitoring.	Confirm and implement water monitoring programme.	Confirm and implement water monitoring programme.	Confirm and implement water monitoring programme.	Complete detailed 5-year review of water quality trend data.
2	Increase in native habitat in the Cape to City area	• Conduct HBRC GIS scoping study to identify where habitat would be best placed (including bush remnants that could be fenced); • 15,000 plants are planted within project footprint by partners or community groups.	Ensure a minimum of 50,000 plants are planted within project footprint by partners or community groups.	Ensure a minimum of 50,000 plants are planted within project footprint by partners or community groups.	Ensure a minimum of 50,000 plants planted within project footprint by partners or community groups.	Ensure a minimum of 50,000 plants planted within project footprint by partners or community groups.
3	Enhancement of DOC's efforts on public land through landscape-scale ecological restoration on private land	Conduct operational assessment of how integration of public and private land within Cape to City project is best		Conduct midterm analysis of benefits to conservation programmes in terms of conservation		Conduct five year analysis of benefits to conservation programmes in terms of conservation

Habitat protection and enhancement/restoration (primarily fencing, planting, maintenance, weed control)						
	2015		2016	2017	2018	2019
		achieved and impacts monitored.		outcomes and operational savings.		outcomes and operational savings.

Pest control (contractor delivery, predator initial control and infrastructure set up and maintenance)						
	2015		2016	2017	2018	2019
1	High level landowner participation in pest control in the Cape to City area 'In principle' agreement among participating landowners to continue predator control beyond timeframe of the programme	Obtain agreement in principle from 50% of land owners across sufficient land area to be likely to deliver wide scale predator control outcomes.	Obtain agreement in principle from 75% of land owners across sufficient land area to be likely to deliver wide scale predator control outcomes.	Conduct feasibility report (go/no go) on whether wide scale predator control maintenance ability to deliver outcomes.	Obtain voluntary agreements.	Obtain voluntary agreements; review landowner commitment.
2	A marked reduction in introduced predators in the Cape to City area		Establish 4,000 ha of predator control infrastructure.	• Establish minimum of 14,000 ha of predator control infrastructure;	Graduate 30% of farmers to maintenance of predator control.	Graduate 50% of farmers to maintenance of predator control.

Pest control (contractor delivery, predator initial control and infrastructure set up and maintenance)						
	2015		**2016**	**2017**	**2018**	**2019**
				• Continue initial predator control.		
3	Use of wireless trap networks to optimise control	Complete small scale operational trials of wireless trap networks.	Install additional wireless trap networks within the Cape to City project footprint.		Optimise wireless trap networks within Cape to City as a template for very large-scale use.	Review wireless trapping trials
4	Examination of the long-term effectiveness and reliability of self-resetting traps for rat control in Boundary Stream Mainland Island	Install trap network over 800 ha, check six times per year and monitor rat population density.	Reduce checking frequency to four times per year and monitor rat density.	Reduce checking frequency to three times per year and monitor rat density.	Reduce checking frequency to two times per year and monitor rat density.	Review effectiveness and reliability of self-resetting rat traps
5	Sustained suppression of introduced predators at low densities in the Poutiri Ao ō Tāne pest control area	Continue contractor control at reduced control intensity.	Continue contractor control at reduced control intensity.	Continue contractor control at reduced control intensity.	Continue contractor control at reduced control intensity.	Continue contractor control at reduced control intensity.

Pest control (contractor delivery, predator initial control and infrastructure set up and maintenance)						
	2015		**2016**	**2017**	**2018**	**2019**
6	Demonstration that effective ongoing predator control in the Cape to City area can be undertaken for less than ~$3 per ha	Establish systems to analyse control costs.		Analyse initial control costs.		Analyse final maintenance control costs across programme.
7	Demonstration that the cost of predator control can be met by transferring resources from possum control programmes, while still maintaining possums at low densities	Complete chew carding on 20,000 ha with follow-up compliance where necessary for possums.	Optimise large-scale delivery of chew cards for possums based on research by Landcare Research.	Assess risk of chew card concept failing and possum numbers recovering is made based on past two years of data.		Monitor project possum programme to establish if there are any early trends for possum numbers increasing as a result of more targeted control.
8	Operational monitoring for predator control	Complete operational monitoring plan for control.	Undertake monitoring.	Undertake monitoring.	Undertake monitoring.	• Undertake monitoring. • Analyse data to determine changes over the preceding four years

Appendix 5: Governance team meeting Agenda item

Agenda item 11 – Proposed whio milestone change

Decision item: Yes

Purpose: To provide background and detail to the project teams' proposed change of the whio translocation milestone

Background:

Under the Aotearoa Foundation agreement, the purpose of translocating whio was to have an iconic native species thriving in a primary productive landscape. However, the project team have identified some short-term challenges with translocating whio as the iconic native species, and would like to propose translocating kiwi as an alternative species. However, subject to resourcing, the team would like to translocate whio as well within a three to four year period.

Key points to consider:

Challenges with whio:

1. The whio recovery group has a number of priorities. The Cape to City translocation would fit into these, but it would take time when considering the other priorities. This is mostly due to limited resources and facilities.

2. In principle commitment from Cape to City landowners to long-term predator control maintenance is high. However, this has yet to be finalised into a binding commitment. For whio reintroduction we need to be confident there is a long-term maintenance commitment from landowners along the entire river corridor.

3. The habitat may not be optimal in terms of riparian planting and river gradient, however other parts of New Zealand have whio in a similar context, it is just not considered optimal and requires the team to do more work looking at other similar areas where whio live.

Points in favour of kiwi:

1. It is an iconic New Zealand species and it has been demonstrated to survive in habitat within farmland.

2. Within the overall landowner commitment there are 3-4 large farms have committed to ongoing predator control in Cape to City, therefore we have high confidence that release of kiwi within that area will have quality predator control.

3. The properties have suitable habitat.

4. In a political context kiwi are high on the agenda, which increases the likelihood of additional project funding.

Fundamentally kiwi deliver the project vision with an increased likelihood of a successful translocation and funding opportunities.

Project team to consider subsequently translocating whio subject to resourcing:

1. The longer timeframe would allow us to scope a more detailed technical analysis of risk around habitat and gradients, by looking at other NZ examples.
2. We are likely to be able to build a captive rearing facility on the Maraetotara
3. We have already had initial conversations about a likely source population
4. The longer timeframe would give us clarity of long-term landowner commitment along the Maraetotara

Recommendations:

The project team recommend switching the milestone to kiwi, but subject to resourcing being available for whio, would still like to build towards translocating whio in the next 3-4 years.