



# Te Matau a Māui project update

## Interim report

### February 2018

*Native species thrive where we live, work and play*



Transforming Biodiversity Conference field trip to Poutiri Ao o Tāne. *Photo: Melissa Brignall-Theyer*

This report provides project status information from 1 July to 30 December 2017  
Prepared by the Te Matau a Māui Project Management Team



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## Executive summary

The last 6 months have been very busy for the project team, which continues to work well together and deliver the Te Matau a Māui contract milestones. The team has expanded with new hapū members (Figure 1), who are providing new ideas and opportunities for the team.

The Te Matau a Māui contract is now over the halfway mark, with only 2 more years until completion. The milestones for 2017 are 98% complete. The bat monitoring milestone will be completed in March 2018, which is the recommended time of year for this type of work. The expenditure is on track to be within budget by the end of the financial year in June 2018.

Some other highlights from the past 6 months:

- The next Manaaki Whenua/Landcare Research contract was signed; it includes 18 research projects, covering both new and continuing research.
- The education programmes continue to show that, anecdotally, their effect has a wide impact on student achievement throughout the curriculum. Research is currently evaluating these programmes.
- The Transforming Biodiversity Conference took a lot of preparation by the team, but the feedback was extremely positive – and it actually made a small profit.  
<https://capetocity.co.nz/conference/>
- Six kākā were released into Poutiri Ao ō Tāne, boosting the banded population to 21.
- Thirty-five toutouwai were released successfully and are being heard regularly in the Cape to City Maraetotara bush remnants.
- A whitebait spawning site restoration project within Cape to City was funded through Million Metres Streams crowdfunding.
- Live capture knockdown trapping has been completed on 99% of the 26,000 ha, with only 600 ha remaining. This is well ahead of the milestone.

Over the next 6 months the project team will not only deliver the Te Matau a Māui contract milestones, but will also work on making sure that the knowledge, biodiversity and pest control outcomes gained through these projects are not lost, and can be built on beyond the Te Matau a Māui contract.

## **1. Project management update**

The last 6 months have been very busy for the project team, which continues to work well together. The team has expanded with new members (Figure 1). This could have made the team unwieldy and difficult to manage – but the trust and robust systems in place have meant that the expansion has instead re-invigorated and strengthened the team and projects with new ideas and opportunities.

### **1.1 Project structure update**

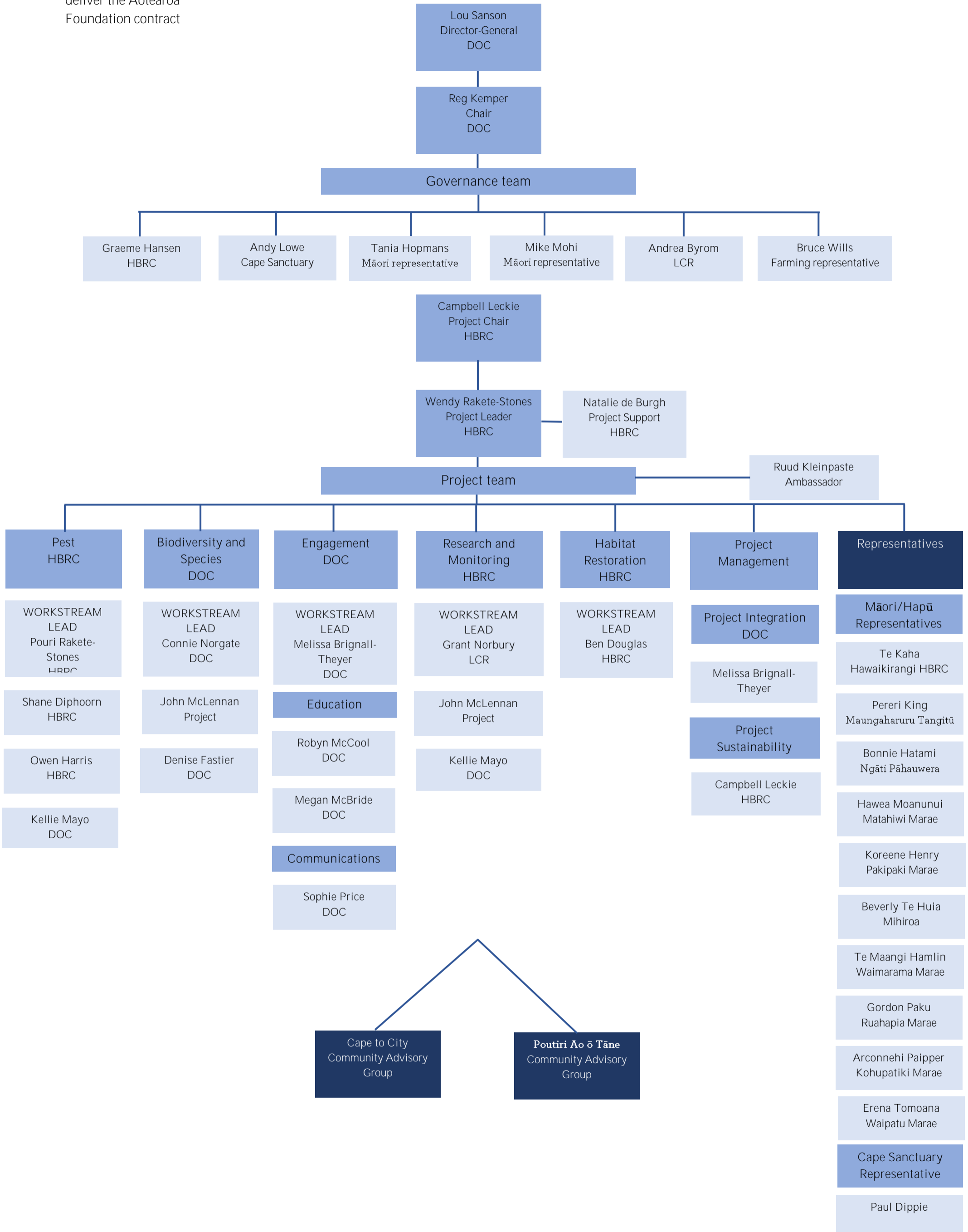
The vacant Communications Advisor position has been filled by Sophie Price (DOC). Five new hapū representatives have joined the project team: Beverly Te Huia (Mihiroa), Te Maangi Hamlin (Waimarama), Gordon Paku (Ruahapia), Arconnehi Paipper (Kohupatiki) and Erena Tomoana (Waipatu). Pereri King has replaced Shayne Walker as the Maungaharuru Tangitū representative.

### **1.2 Governance update**

Andrea Byrom (Director of the Biological Heritage National Science Challenge) has replaced Richard Gordon, as the Manaaki Whenua (formerly Landcare Research, abbreviated to 'LCR' in this report) representative on the governance team.

# Cape to City and Poutiri Ao ō Tāne Project structure

Figure 1: Project structure to deliver the Aotearoa Foundation contract



### **1.3 Community advisory group update**

The Poutiri Ao ō Tāne and Cape to City Community Advisory Groups (CAG) had their final meetings for the year in December. Both groups are progressing well and are comfortable with the projects' progress and their relevance to the parts of the community they represent.

### **1.4 Big picture update**

Zero Invasive Predators/NEXT Foundation

The Project team have engaged with the Zero Invasive Predators (ZIP) team over the last six months. Firstly, both teams met twice discussing research and the application of predator control over large areas. Staff from the Taranaki Regional Council also attended these meetings. The ZIP team assisted us with our preparation of a possum eradication proposal for Predator Free 2050. Two key ZIP staff (their CEO Al Bramley and innovations manager Phil Bell) also presented in the Transforming Biodiversity conference we hosted in Napier.

In late October and early November Campbell Leckie was invited by NEXT\ZIP to tour the Bottle Rock predator trial site and Project Janszoon areas at the top of the South Island.

Biological Heritage National Science Challenge (BHNSC)

Andrea Byrom as Director of the Challenge is now a member of the Governance Team. The Project team have been engaging with Andrea about how to strengthen ties with the BHNSC in particular around the implementation of research and the delivery of the BHNSC mission.

Predator Free - 2050

The project team have been engaging with Predator Free 2050 Ltd (PF2050). Ed Chignell (the PF2050 CEO) visited Hawke's Bay, met the team and spent time in the field looking over Cape to City. Ed also spoke at the Transforming Biodiversity conference. The team submitted an expression of interest to PF2050 and were subsequently asked to submit a full request for proposal for the project "Predator Free Hawke's Bay". The Project Team anticipate hearing if this proposal has been successful by mid-February. Pulling together a high quality 200-page proposal within three weeks was both a challenge and a real achievement by the team.

### **1.5 Māori engagement**

Kaumātua Trevor Taurima has been developing a Hikoi Tutuki (discovery and learning walks) programme to enable hapū and community to re-connect with the whenua (land) stories and Poutiri Ao ō Tāne and Cape to City. These are due to start in February 2018.

Maungaharuru Tangitū kaumātua led the cultural proceedings for the Transforming Biodiversity conference – starting with a pōwhiri, where the project team welcomed all the manuhiri (visitors). Cultural protocol was observed throughout the conference including closing with a karakia (blessing). Many participants commented that the cultural aspect added great value to the holistic nature of the conference.

The hapū representatives on the project management team have met to talk about increasing Māori engagement and how the project can support hapū aspirations. Many ideas have been



raised, and representatives now need to work out which opportunities to pursue. This is an ongoing discussion.

## The projects from a Māori perspective

**Ngāti Pāhauwera** update:

Ngāti Pāhauwera Development Trust (NPDT) staff – Bonny Hatami, Theresa Thornton, Jaz Thornton, and members Walker Gilbert, Awhina Waaka, Elizabeth Hira and Gene Waihape – participated in the Cape to City and Poutiri Ao ō Tāne projects in this period.

Theresa Thornton, Jaz Thornton and Gene Waihape also volunteered at the Cape to City display at the A&P Show – Theresa and Jaz were representing Pāhauwera and their mahi with Poutiri Ao ō Tāne (ie feeding petrels at Easter) and Cultural Harvest on NPDT lands, while Gene had her rongoā products on display.

In September 2017 Theresa Thornton and Walker Gilbert participated in translocations, catching toutouwai (robin) at Maungataniwha, and Pāhauwera Kuia Awhina Waaka (91), escorted by her granddaughter Bonny Hatami, released them at Boundary Stream.



Awhina Waaka, Trevor Taurima, John McLennan and Isobel Hodgkinson. *Photo: Bonny Hatami*

In November, Ngāti Pāhauwera Development Trust staff Theresa Thornton and Jaz Thornton, and members Walker Gilbert and Elizabeth Hira, attended the Cape to City Biodiversity Conference. They were very impressed with the conference speakers, content and site visit.

A visit to Maungaharuru Boundary Stream is planned for January 2018 as part of wānanga.

*Outside of the project's footprint (but related to Hawke's Bay biodiversity):*

Reserve management planning is in progress, in conjunction with the Department of Conservation (DOC). Site visits (including to Te Heru o Tureia) have been conducted, to decide which areas to prioritise.

NPDT convened the Putere Lakes hui held November 2017 to bring landowners, hapū, experts and scientists together to discuss hornwort (invasive aquatic weed) that has infested two of the three Putere lakes.



Ngāti Pāhauwera pest control team. *Photo: Bonny Hatami*

On the 27<sup>th</sup> Sept 2017 there was a formal signing of the contract between the Ngāti Pāhauwera Development Trust and Lewis Pest Control Ltd (a Ngāti Pāhauwera member-owned business). The contract is a direct result of the Memorandum of Understanding between Ospri (TBfree NZ) and the Trust, which was negotiated in 2017 with the iwi position of no 1080 in Ngāti Pāhauwera forest.

Waimarama Marae:

*Hawke's Bay Regional Council (HBRC)*

With the help of HBRC the hapū members have been active with the riparian planting of approximately 5,000 natives and maintaining of our rediverted awa Waingongoro to its natural course adjacent the marae. New fences have also been erected and the third plot of 2,500 natives has been prepared for planting with the help of HBRC.

### *Whare Ora*

Hapū members have been running an Eastern Institute of Technology (EIT) Horticulture Course (concurrently with other land-based courses eg sustainable techniques), for the past three years. By starting their own maara kai with a range of traditional Māori maara kai and other vegetables, they have reconnected the hapū to the whenua. The garden nourishes kaumātua who live in the kaumātua flats next door, the kōhanga tamariki who frequently visit any parties hiring the marae, and many local community members.

Through these EIT courses they have also planted a range of over 50 fruit and nut trees to enable local tamariki, who cut through the marae to get to school, to harvest and enjoy nature's fruits when ready.

Hapū members also helped the local primary school establish garden beds, and pruned their fruit garden, and even built an earth cob pizza oven at the back of the marae for entertaining visitors.

Next semester the hapū will start a fruit production course, covering botany and using organic 'bio-dynamic' growing techniques, to raise a healthy fruit forest. Although they are not certified they have been following the organic - bio-dynamic techniques and principles of Rudolf Steiner that are based fundamentally on soil biology and holistic health.

The course covers native plants and different planting ecosystems eg riparian planting; this has allowed us to maintain the plants through sustainable techniques, such as transplanting and mulching, which shows clear improvement compared to the inaccessible side of the awa/river. The hapū have also stopped the use of glyphosate-based weed killers. Concerned with the chemical deposits, runoff and leaching they agree not to overuse sprays, and use them only when strictly necessary. Although organic sustainable techniques are more labour and time-intensive the hapū are committed to not spraying the whenua/land and awa.

### *Te Pouhono ki Maraeatea*

The hapū have just completed a wānanga-based course through Te Awanuiarangi teaching and reinvigorating our local hapū tikanga, kōrero pū rākau and waiata while giving in-depth knowledge and mātauranga māori of the marae ātea and the correct etiquette to use in different situations of māori tikanga.

### *Cape to City*

The hapū have started discussing this project's potential for their whenua and whānau – not just of the local hapū and community but also the whole iwi as a collective.

They believe Cape to City will allow the people to connect back to nature, and to stop taking the country's beauty for granted.

## 2. Workstream update: 1 July – 31 December 2017

This section outlines progress on the activities and objectives outlined in Attachment 1 of the Aotearoa Foundation contract. An updated version and review of these is in Appendix 3. These are separated into five workstreams: research and monitoring; community engagement and education; biodiversity and species; habitat restoration and pest control. Table 1 summarises progress in each workstream.

Table 1: Progress on 2017 activities

Workstream	Number of activities	% complete
Research and monitoring	7	100
Community engagement and education	6	100
Biodiversity and species	6	92
Habitat restoration	3	100
Pest control	7	100

Significant risks and opportunities are reported under each workstream. These have been kept the same as 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.

### 2.1 Research and monitoring

The research and monitoring workstream is led by Manaaki Whenua/LCR. There are four strands to this research: pests, indigenous biodiversity, social research 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).

### 2.1.1 Progress towards outcomes



Common gecko found during biodiversity monitoring at Cape to City. *Photo Sam Cave*

#### Highlights:

- There are 18 research projects in the 2017/18 LCR contract (Appendix 5). These include the continuation of programmes from earlier contracts, and some new projects including:
  - baseline eDNA surveys of invertebrates that examine the habitat value of mānuka for invertebrates
  - reviewing threatened and iconic plant, invertebrate, lizard and bat species in Cape to City, and recommending which taxa could be selected for further survey and possible translocations
- Out of the 44 talks at the Transforming Biodiversity conference, LCR staff presented 15, highlighting the breadth and depth of the research programme supporting Cape to City and Poutiri Ao o Tāne.

Table 2: Progress on research and monitoring milestones

Milestone	2017 activity	Update	% complete
Research outputs.	A minimum of three research outputs, two of which are submitted to peer-reviewed journals.	<p>Research outputs since the beginning of Te Matau a Māui:</p> <ul style="list-style-type: none"> <li>• 9 research articles published in science journals</li> <li>• 5 manuscripts (either submitted or drafted)</li> <li>• 19 conference presentations</li> <li>• 30 unpublished reports</li> <li>• 4 public lectures</li> <li>• 5 newsletter articles</li> </ul>	100
Methods of monitoring introduced mammalian predators before and after control.	Gather sub-sample camera-trapping data to determine the optimal number of cameras per unit area.	<p>This milestone was completed in June 2017 and reported in the August 2017 interim report.</p> <p>Motion-sensitive cameras continue to be used for monitoring predator abundance.</p>	100
Decision-analysis models for predicting the most cost-effective trapping configurations for managing introduced predators over large areas.	Refine population model further using real trapping data.	This milestone was completed in June 2017 and reported in August 2017 interim report.	100

Milestone	2017 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).	Biodiversity monitoring occurred in November. Some of the transects will be redeployed, from the forest blocks that are to be logged to the mānuka plantation at Taurapa station.	100
Analysis and reports on the integrated economic benefits of Te Matau a Māui.	Produce a scoping report on integrated ecosystem services analysis.	This milestone was completed in June 2017 and reported in August 2017 interim report.	100
Decrease of toxoplasmosis-related lamb abortion rates. Because of research and reduction in cat numbers, vaccinations will no longer be necessary, leading to significant economic benefits to the region and nation.	No 2017 Aotearoa Foundation milestone	Toxoplasmosis infection rates in ewes are higher this year across all study sites (with or without cat trapping) compared with the initial sampling 2 years ago (possibly due to greater rainfall). Only a marginal reduction in infection rates was detected in areas with cat trapping, but a full trapping treatment has only recently been completed – so more time is needed to detect putative effects.	

Milestone	2017 activity	Update	% complete
Use of restored habitat by native wildlife.	Produce midpoint review on habitat connectivity and outcomes.	This milestone was completed in June 2017 and reported on in August 2017 interim report.  There are a couple of research projects in the 2017/18 LCR contract addressing this milestone (Appendix 5). One is setting appropriate restoration goals to achieve biodiversity and cultural aspirations within Maungaharuru Tangitū Takiwa. The other is to outline strategies to promote localised planting of the right plants in the right places to maximise benefits for birds, lizards and invertebrates	100
Student participation.	Engage two tertiary students in the project per annum.	This milestone was completed in June 2017 and reported on in August 2017 interim report.	100
Increasing the participation in pest management and ecological restoration by landowners and the community.	No 2017 milestone.		

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

### **2.1.2 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     Research continues into pest density impact functions to address this issue (Appendix 5)

### **2.1.3 Significant opportunities update**

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



- Update      The BHNSC was the platinum sponsor for the Transforming Biodiversity Conference.
- Original     LCR is considering aligning another of its core research portfolios ('Enhancing biodiversity') to Te Matau a Māui. This work is in progress.
- Update      Research from the Enhancing Biodiversity portfolio continues to be aligned with the project through the 2017/18 LCR contract.

## 2.2 Community engagement

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

### 2.2.1 Progress towards outcomes



Cutting the cake at the launch of the MOU between Te Matau a Māui and EIT

*Photo: Melissa Brignall-Thayer*

#### Highlights:

- The education coordinators helped Te Mata School run their Backyard Biodiversity programme, which included running a successful 'bioblitz' with Ruud Kleinpaste and Karamu High School students as mentors. This year they worked with a syndicate (approximately 100 children), rather than just one class. This upscaling meant more utilisation of the teachers. The teachers needed more support than expected, but once they became confident they were able and willing to help deliver the programme. In the debrief it was revealed that this programme not only helped student environmental awareness, but also increased achievement in other curricular areas, such as writing.

- The coordinators have also been working with Te Kura o Pakipaki. They ran the Freshwater programme with this school, which culminated with a field trip to the Waipuka river/estuary – part of their cultural lands. This school is now undertaking restoration of the stream which runs past the school. A video taken by a reporter on the field trip is available at [http://www.nzherald.co.nz/hawkes-bay-today/video/news/video.cfm?c\\_id=1503454&gal\\_cid=1503454&gallery\\_id=184169](http://www.nzherald.co.nz/hawkes-bay-today/video/news/video.cfm?c_id=1503454&gal_cid=1503454&gallery_id=184169).
- The “Transforming Biodiversity-Challenging the Boundaries” conference, run by the project team in November, was very successful. There were nearly 300 delegates ranging in age, background and expertise. The 44 presentations covered a range of topics and were well received. Talks were videoed and are available online at <https://capetocity.co.nz/conference/>; participants said they learned a lot and felt they were able to go back to their place and use what they had learned. For the survey and summary of the feedback, visit <http://www.questionpro.com/t/PDAU7Za9f4>.

Table 3: Progress on community engagement and education milestones

Milestone	2017 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.	<p>There was significant volunteer effort in the kākā translocation at Poutiri Ao o Tāne.</p> <p>The volunteer effort in Cape to City has been mostly through supporting the education programmes, a regular volunteer who helps with Māori engagement initiatives and habitat restoration.</p> <p>Volunteer hours (to Dec 2017)</p> <table border="1"> <thead> <tr> <th></th> <th>2016</th> <th>2017</th> </tr> </thead> <tbody> <tr> <td>Poutiri Ao o Tāne</td> <td>2,601</td> <td>2,388</td> </tr> <tr> <td>Cape to City</td> <td>416</td> <td>464</td> </tr> </tbody> </table>		2016	2017	Poutiri Ao o Tāne	2,601	2,388	Cape to City	416	464	100
	2016	2017										
Poutiri Ao o Tāne	2,601	2,388										
Cape to City	416	464										

Milestone	2017 activity	Update	% complete
Increased involvement of schools in the various conservation initiatives.	Engage a minimum of six schools in the Cape to City project and at least one tertiary institute initiative.	<p>Te Mata School and Te Kura o Pakipaki have completed education programmes.</p> <p>Implementation of the MOU with EIT continues.</p> <p>The Community Engagement team is working on a proposal with other stakeholders to ensure the environment as a context for learning continues to be used by schools beyond the Te Matau a Māui contract.</p>	100
Communications strategy.	Implement communications strategy, and review strategy.	<p>The communications strategy and plan have been reviewed and updated to reflect the status and messages of the projects now.</p> <ul style="list-style-type: none"> <li>• Since July 2017 there have been six press articles, one TV article, three radio interviews (Appendix 4) and many Facebook posts on both project pages.</li> <li>• The projects also get mentioned in other organisations websites, press releases and pages.</li> <li>• Twitter accounts have been created.</li> <li>• The Cape to City website is updated regularly with articles and announcements, and the Poutiri Ao ō Tāne website upgrade continues.</li> </ul>	100

Milestone	2017 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.	Continue to attract other investors; target minimum \$300,000.	<p>Two expressions of interest were submitted to Predator Free 2050. One has made it to the second round and the team will submit its full proposal due 29 January 2018.</p> <p>An environmental education proposal has been submitted to the Air New Zealand Environment Trust. This is part of the multi-stakeholder proposal being developed by the Community Engagement team mentioned above.</p>	100
	Review and implement community engagement strategy. Review education initiative at Poutiri Ao ō Tāne.	<p>Poutiri Ao ō Tāne and Cape to City were promoted at the Hawke's Bay A&amp;P show in October.</p> <p>The first Poutiri Ao ō Tāne and Cape to City Conference was held in November. Feedback has been extremely positive.</p> <p>The community engagement strategy was reviewed as part of the review of the communications strategy, and now sits under the communications strategy.</p> <p>Education initiatives in the Poutiri Ao ō Tāne project area were reviewed. Concluding that there are a number of ongoing initiatives, which are in good health and are all working closely together. These include: Maungaharuru Tangitū, Guthrie Smith and HBRC.</p>	100

Milestone	2017 activity	Update	% complete
	Review the use of citizen science in Te Matau a Māui.	A further review following-on from the LCR report on citizen science looked at the ways in which Te Matau a Māui has used citizen science. The projects have used citizen science as an engagement tool, rather than a quantitative tool. The main tools that have been used and promoted are the New Zealand Garden Bird survey, Naturewatch, TrapNZ and water quality testing.	100

### 2.2.2 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 The project team has now engaged with all marae affiliated with Cape to City. These marae are in varying stages of committing a marae representative to the project.
- 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. *No change to this update.*
- 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. *No change to this update.*

### 2.2.3 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 An MOU between the project and EIT has been signed and is now being implemented.
- Original The Community Conservation Partnerships Fund (\$26 million over 4 years), administered by DOC, is a significant opportunity for community groups to receive funding and align themselves with. Proposals are being considered.
- Update Projects already funded continue. The Maraetotara Tree Trust has just been awarded further funding under the DOC Community Fund.

## 2.3 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.

### 2.3.1 Progress towards outcomes



Blessing of toutouwai before being released into Cape to City. *Photo: Tamsin Ward-Smith*

Highlights:

- Six kākā were translocated to the Boundary Stream aviary in September from two different locations to (hopefully) increase the gene-pool. This brings the total number released into Boundary Stream to 21. They were released into the wild during conservation week in

October. Kaumātua and community were involved in both events and many volunteers have been helping with the supplementary feeding schedule.

- Thirty five toutouwai (robins) were released into bush remnants on the Maraetotara Plateau in August. More toutouwai are now being picked up in counts than before.

Table 4: Progress on biodiversity and species milestones

Milestone	2017 activity	Update	% complete
Reintroduction and re-establishment of mottled petrels.	Continue translocations of kōrure/mottled petrel and tītī/Cooks petrel, and refine feeding regimes, if necessary, to improve fledging rates.	Denise Fastier and Kaumātua Trevor Taurima visited the Whenua Hou Island Committee in November. The committee have given their permission to translocate another 100 chicks in 2018.	100
Increase in the abundance of introduced and native birds that are already present in the area.	Continue bird monitoring with annual data analysis.	Spring counts have been completed. Some monitoring sites are at risk of logging and so will be moved into other pine forests in autumn.	100
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.	Monitoring of outflow from Cape Sanctuary, and translocated robins and tomtits continues.	Thirty five Toutouwai (robins) were released into bush areas on the Maraetotara Plateau. Toutouwai were heard on a few bird monitoring transects in the area in the recent spring counts, making successful establishment likely.  Not enough miromiro (tomtits) were found to be translocated. Translocation of tomtits will be reviewed in 2018.	100

Milestone	2017 activity	Update	% complete
Successful re-establishment of North Island brown kiwi onto the Maraetotara plateau in the Cape to City footprint.	No milestone in 2017	The species team has decided to extend the milestone for another year. There is a lot of work to do to ensure kiwi survive. Having more time to plan will mean we will be able to extend trap networks and prepare landowners.	
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.	Gain clarity of long-term landowner commitment along the Maraetotara.  Scope a detailed technical analysis of risk around habitat and gradients, by looking at other New Zealand examples.	A scoping report has been completed. The report recommended bringing a whio expert to assess the habitat suitability. He is now scheduled to visit in 2018.  Landowner commitment continues to be strong, with a few exceptions – the team is working with these landowners.  The focus for this milestone is now on providing and preparing habitat to support whio released in the future.	100
Improvement in the numbers of long-tailed bats inhabiting Mohi Bush.	Monitor bat population.	Bat monitoring is scheduled to start in March 2018. The work includes monitoring roost sites to provide an idea of the number of sites. This milestone has been delayed until March, which is the ideal time for roost-site monitoring.	50
Reintroduction and re-establishment of kōrure/mottled petrels, tītī/Cook's petrels, kākā, kākārīki, and pāteke in the Poutiri Ao ō Tāne area.	Transfer and successfully fledge petrels. Transfer pāteke successfully.	Kōrure were translocated and fledged successfully. Six kākā were translocated to Boundary Stream enclosures in September and released in October. So far they are doing well and are seen regularly.	100



### **2.3.2 Significant risks update**

- Original      It is yet unknown what level of predator control is sufficient for survival of pāteke and who; there is therefore a risk that control cannot be achieved to levels supporting the survivability of these species. This will be managed through monitoring and adaptive management.
- Update        After review, it was concluded that it would be unwise to release more pāteke while the current level of predator control is in place. Increasing predator control at this stage would interfere with the Wide scale predator control experimental design. *No change to this update*
- The species team has advised that we should make sure adequate control and planning is put in place for kiwi translocation.
- 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.

### **2.3.3 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. *No change to this update.*

## 2.4 Habitat restoration

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

### 2.4.1 Progress towards outcomes



Planting day at the Maraetotara River. Photo Hastings mail

Highlights:

- The Pukepuke Tangiora Trust, in partnership with HBRC, DOC and Cape to City, raised \$16,000 for planting to protect a whitebait spawning site along the Waipuka river, near ocean beach. See <https://millionmetres.org.nz/funded-project/restoring-waipuka-stream-near-ocean-beach>.
- Control of old man's beard and banana passionfruit, funded through the DOC 'Dirty Dozen' weed funding, is progressing well. All control in the Maraetōtara catchment will be complete by the end of February 2018.
- The Maraetōtara Tree Trust has received \$10,000 from the DOC Community Fund to continue their riparian planting programme in 2018. The Trust has also received \$37,500 from the Pacific Conservation and Development Trust, to fill gaps in existing plantings – important to achieve a canopy cover and suppress weeds.
- Bare-rooted plants have shown excellent survival and growth to date. They are of similar size and resilience to PB3 grade plants, but are cheaper to purchase and transport. Bare-rooted plants can be purchased for \$1 each, compared to \$2.20-\$3.00 for the same plant in PB3 grade.
- Contractors completed the planting of 26,000 plants on the margins of the Maraetōtara River on Okahu, Taurapa and Maraetuna stations.

Table 5: Progress on habitat restoration milestones

Milestone	2017 activity	Update	% complete
Improved water quality in the Maraetotara River following stock exclusion and riparian revegetation.	Confirm and implement water-monitoring programme.	This milestone was completed in June 2017 and reported on in August 2017 interim Report	100
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.	This milestone was completed in June 2017 and reported on in August 2017 interim report.  All planting has been completed to meet this milestone to the end of the project. However, maintenance of plantings will continue and community groups will continue to plant with project support	100
Enhancement of DOC's efforts on public land through landscape-scale ecological restoration on private land.	Conduct mid-term analysis of benefits to conservation programmes in terms of conservation outcomes and operational savings.	This milestone was completed in June 2017 and reported on in August 2017 interim report.  To help answer this longer-term question, one of the research milestones in the current LCR contract is to identify the type of data that needs to be collected on public conservation land and adjacent land to understand the mutual benefits of predator control.	100

#### 2.4.2 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	DOC 'Dirty Dozen' funding is delivering \$30,000 for old man's beard and banana passionfruit control to the Maraetōtara. The Maraetōtara Tree Trust has also been awarded DOC community funding to infill past plantings.
Original	Lack of landowner cooperation is another risk; this will be managed through landowner/council agreements and by forming solid relationships with landowners and community groups.
Update	Landowner support is growing as the results of the Maraetotara Tree Trust and Cape to City plantings become more and more visible. Likelihood of being required to fence off (due to HBRC plan changes) is helping increase landowner interest in being involved in programme. <i>No change to this update</i>
New (Aug 2017 report)	The myrtle rust incursion has the potential to restrict new and existing plantings of mānuka. Scion, and Plant and Food Research have launched a research programme, but the effects of the rust are unclear at this stage as the research is not complete. <i>No change to this update</i>

### **2.4.3 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 through sponsorship for riparian restoration.
Update	The Pukepuke Tangiora Trust, in partnership with HBRC, DOC and Cape to City, raised \$16,000 for planting to protect a whitebait-spawning site along the Waipuka river, near Ocean Beach. See <a href="https://millionmetres.org.nz/funded-project/restoring-waipuka-stream-near-ocean-beach">https://millionmetres.org.nz/funded-project/restoring-waipuka-stream-near-ocean-beach</a> .
New (Feb 2017 Report)	There is an opportunity to establish mānuka for honey production on erodible land (classes 6 and 7) within the footprint. Planting mānuka will provide important habitat and erosion control. This is a partnership between HBRC, Kauri Park, AGS (Afforestation Grant Scheme) and landowners.
Update	Planting has been completed at the mānuka site on Taurapa Station. Goats – initially a problem as they were drawn in to the grass within the fenced-off blocks – were controlled by shooting. Now the grass has become rank, goats are not attracted to the sites.
New	Waimarama Marae has applied to the Ministry for the Environment Community Environment Fund for a planting project on the Waingongoro Stream. If funding is approved, Cape to City will partner with the marae by organising HBRC willow removal and funding weed control prior to planting. The decision to due in February.

## **2.5 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.

### 2.5.1 Progress towards outcomes



Mustelid podiTRAP being serviced on Landcorp (Pamu) Te Apiti Station. *Photo: Pouri Rakete-Stones*

#### Highlights:

- Phase two Cape to City knockdown trapping has been completed on 26,000 ha, and the maintenance network has been established across the whole project footprint. Over 400 feral cats have been killed in the live-trapping knockdown. This work has taken about 18 months.

This shows that upscaling is achievable. Contractors were used to help roll out the predator control so they could learn from the Cape to City team.

The main things the Cape to City team has learned from working with contractors are:

- Good training for contractors is essential, because the trapping regime Cape to City uses is not business-as-usual for most contractors.
- Making sure relationship management with landowners by contractors is robust, and clear.
- Project team members met with Spark New Zealand Ltd (the telecommunications company) to talk about the possibility of linking our wireless network with their new LoRa WAN coverage network being rolled out across the country. This is looking promising.

Table 6: Progress on pest-control milestones

Milestone	2017 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.	Conduct feasibility report (go/no go) on whether wide-scale predator control maintenance ability to deliver outcomes.	Landowner support continues to be strong. Landowners in phases one and two are kept well-informed. More than 75% of landowners have agreed in principle to continue predator control beyond the timeframe of the project.	100
A marked reduction in introduced predators in the Cape to City area.	Establish minimum of 14,000 ha of predator control infrastructure; continue initial predator control.	Phase two live capture knockdown trapping has been completed on 99% of the 26,000 ha. The maintenance kill trap network has also been completed.	100
Use of wireless trap networks to optimise control.	No 2017 milestone.	Wireless trials continue and is being trialled on two Cape to City properties. Some wireless nodes at both trial sights are currently being replaced with new nodes due to water damage and dead batteries.	

Milestone	2017 activity	Update	% complete
Examination of the long-term effectiveness and reliability of self-resetting traps for rat control in Boundary Stream mainland island.	Reduce checking frequency to three times per year, and monitor rat density.	<p>The latest tracking tunnel results for Boundary Stream were 6%. This is slightly higher than the previous few checks. Tracking tunnels are monitored four times per year.</p> <p>All traps are now only checked twice a year for lure and gas replacement, plus one small check of a sub-sample of traps part way through to check the lure is still effective.</p>	100
Sustained suppression of introduced predators at low densities in the Poutiri Ao ō Tāne pest control area.	Continue contractor control at reduced control intensity.	<p>There are four checks per year. Based on monitoring results, it appears this level of maintenance is not compromising the network.</p> <p>The latest check results showed lower rat, stoat and ferrets numbers compared to the previous check. Bycatch is still hedgehogs and rabbits.</p>	100
Demonstration that effective ongoing predator control in the Cape to City area can be undertaken for less than ~\$3/ha.	Analyse initial control costs.	High level analysis of initial control costs indicate a range of \$24 - \$45 per ha are likely.	100

Milestone	2017 activity	Update	% complete
Demonstration that the cost of predator control can be met by transferring resources from possum control programmes, while still maintaining possums at low densities.	Assess risk of chew card concept failing and possum numbers recovering is made based on past 2 years of data.	This milestone was completed in June 2017 and reported in August 2017 interim report.	100
Operational monitoring for predator control.	Undertake monitoring.	Monitoring using motion-sensitive cameras continues.	100

### 2.5.2 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 that demonstrates rabbit numbers are driven by bottom-up influences such as climate, disease and pasture growth, rather than by predators.

Update There are two landowners with high rabbit numbers. The project and governance teams decided not to do predator control on the two properties, but to maintain a cat-trapping buffer around the properties to control reinvasion into the treated area instead. Monitoring of rabbits will continue; these properties are being considered for a new calici-virus trial in 2017. *This will be 2018 now because the virus was not permitted in time for release in 2017. No change to this update.*

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 farm 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 pet cats is high (eg 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 were consulted and landowners were offered the chance to have their domestic cats photographed and/or microchipped. If landowners are concerned, they can put their cats in a cattery. *No change to this update.*



### **2.5.3 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	<ul style="list-style-type: none"><li>• The project team and ZIP have been working on a joint programme to eradicate possums from part of Cape to City. A draft proposal was sent as an Expression of interest for Predator Free 2050. This proposal was unsuccessful; the project team will now review this proposed trail.</li><li>• The BHNSC is the platinum sponsor for the Cape to City and Poutiri Ao ō Tāne conference in November. The director of the BHNSC gave the closing address and gave a presentation during the conference.</li></ul>
New (Feb 2017 report)	In July 2016 PF2050 was announced. Cape to City was used as an example in the announcement and has a very good chance of benefitting from PF2050.
Update	The project team submitted two proposals to the PF2050 expressions of interest process 1. Predator Free Hawkes Bay made it through to the second stage. 2. The ZIP possum eradication trial was unsuccessful.

### **3. Work planned for 1 January – 30 June 2018**

#### **3.1 Research and monitoring**

- Continue to model Cape to City trap data to optimise use of wireless technology.
- Ferret odour longevity trial continuation.
- National predator monitoring protocol development.
- Deriving pest density-impact functions, and developing a national framework for pest density-impact functions.
- Biodiversity and predator response monitoring at Poutiri Ao ō Tāne and Cape to City.
- Baseline eDNA surveys of invertebrates in a mānuka plantation.
- Review of threatened and iconic species in Cape to City.
- Toxoplasmosis monitoring continuation.
- Setting appropriate restoration goals to achieve biodiversity and cultural aspirations for the Maungaharuru ki Tangitu hapū.
- Strategies to promote localised planting to maximise benefits for biodiversity.
- Impact of education programme assessed.
- Te Matau a Māui case study research continuation.
- Social networks for socio-ecological modelling.
- Advice on supporting Māori engagement through the research programme.

#### **3.2 Community engagement and education**

- Run the Bush Education programme with Richmond School.
- Run a 'Nature connection' workshop with EIT 2<sup>nd</sup>-year primary teacher training degree students.
- Impact of education programme assessed.
- Hikoi Tutuki – journey of achievement (walks and talks) have been rescheduled to start in February 2018.
- Continuation of:
  - Hawke's Bay wide education proposal development
  - Increasing project profiles through communication strategy

#### **3.3 Biodiversity and species**

- Kākāriki translocation.
- Kōrure translocation to Poutiri Ao ō Tāne.

- Cape to City bird monitoring continuation.
- Bat-roosting site monitoring.

### **3.4 Habitat restoration**

- Complete DOC Dirty Dozen-funded intensive old man's beard and banana passionfruit control in upper Maraetōtara River.
- Complete control of willow regrowth on Maraetōtara River.
- Oversee HBRC Works Group willow removal on Tuahu Farm, Okahu Station and Pukepuke Tangiora Estate.
- General weed-control as necessary.
- Willow removal, fencing and weed control in Waingongoro Stream (pending success of Waimarama Marae Ministry for the Environment application).
- Organise 2018 planting contracts.
- Organise 2018 plant delivery, contracts, and pre-spray.
- Low cost habitat restoration trial.
- Next round of inanga spawning reporting.

### **3.5 Predator control**

Continuation of:

- Review camera monitoring of initial control/live capture at Cape to City, and potentially revisit any hotspots
- Servicing of Poutiri Ao ō Tāne and Cape to City permanent networks
- Wireless traps trial in Cape to City
- SSRT trial at Poutiri Ao ō Tāne.

## 4. Conclusion

The Te Matau a Māui contract is now over the halfway mark, with only 2 years remaining. The milestones for 2017 are 98% complete. The bat monitoring milestone will be completed in March 2018 (the recommended time of year for this type of work).

Expenditure is on track to be within budget by the end of the financial year in June 2018. The annual milestone review has added only a couple of suggested changes to the milestone table (Appendix 3).

The past 6 months have been both busy and rewarding for the project team. The Transforming Biodiversity Conference took a lot of preparation, but the feedback was extremely positive, and the conference actually made a small profit. The conference presentations are now available on YouTube and the Cape to City website, so many more people can learn from both projects.

<https://www.capetocity.co.nz/conference/>

Some of the other highlights:

- The next Manaaki Whenua/LCR contract was signed; it features 18 research projects which include both new and continuing research.
- The education programmes continue to show (anecdotally) a broad effect on student achievement throughout the curriculum. Research is underway evaluating these programmes.
- Six kākā were released into Poutiri Ao ō Tāne, boosting the banded population to 21. Toutouwai were also successfully released and are heard regularly in the Cape to City Maraetotara bush remnants.
- A whitebait spawning site restoration project within Cape to City was funded through Million Metres Streams crowdfunding.
- Live capture knockdown trapping has been completed on 99% of the 26,000ha, with only 600 ha remaining – well ahead of the milestone.

The project team is now putting a lot of effort into making sure that the knowledge, biodiversity and pest control outcomes already gained through these projects are not lost, and can be built on beyond the Te Matau a Māui contract. This effort is mainly through PF2050 and education proposals and we should know the outcomes of these proposals in the first half of 2018. Work will also continue to make sure the project team meets the 2018 milestones in the Te Matau a Māui contract.

## 5. Appendix 3: Te Matau a Māui milestone review

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 (eg 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 (if available).

Research and monitoring						
		2015	2016	2017	2018	2019
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 frequency of checking.	Refine population model further using real trapping data.	Gather sub-sample predator movement data (from trapping / telemetry) to 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 Ao ō Tāne monitoring (monitoring times may be extended out).  Specific Cape to City invertebrate monitoring is set up.	Continue Poutiri Ao ō Tāne and Cape to City monitoring (Poutiri Ao ō Tāne monitoring times may be extended).	Continue Poutiri Ao ō Tāne and Cape to City monitoring (Poutiri Ao ō Tāne monitoring times may be extended).	Continue Poutiri Ao ō Tāne and Cape to City monitoring (Poutiri Ao ō Tāne monitoring times may be extended).	Continue Poutiri Ao ō Tāne and Cape to City monitoring (Poutiri Ao ō Tāne 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/gre	Produce a scoping report on integrated		Produce and promote economic benefits report.

Research and monitoring						
		2015	2016	2017	2018	2019
			en credentials/rabbit forage etc).	ecosystem services analysis.		
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 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.

Research and monitoring						
		2015	2016	2017	2018	2019
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.
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

#### Review of Research and Monitoring

- Milestone 2: No change, just note - The comparison with Connovation tracking pads would be contingent on financial viability and technological readiness.

Community/social engagement and education						
		2015	2016	2017	2018	2019
1	A marked increase in the number of volunteers	Review needs for volunteer management	A measured increase in	A measured increase in	A measured increase in	A 25% increase on baseline in the



Community/social engagement and education						
	2015		2016	2017	2018	2019
	participating in the programmes over the next 5 years	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.	volunteer hours trending upward	volunteer hours trending upward	volunteer hours trending upward	number of volunteers participating in the programmes over the previous 5 years
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.

Community/social engagement and education						
		2015	2016	2017	2018	2019
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 sustainability behaviours become part of the social norm	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 Aotearoa Foundation.	Continue to attract other investors; target minimum \$300,000
5		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.

Community/social engagement and education						
	2015		2016	2017	2018	2019
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

#### Review of Community Engagement

- Milestone 2: Reword 2018 milestone to reflect a more realistic outcome of this years work: Develop a forum or process, in conjunction with schools, to transition school support from Cape to City from being actively managed to being confident at using the environment as a context for learning in the long term.
- Milestone 2: Add text to 2019: Ensure process is in place with strong commitment from schools to continue their investment in education using the environment as the context.

Biodiversity/species						
	2015		2016	2017	2018	2019
1	Reintroduction and re-establishment of mottled petrels	Initiate the 5-year translocation programme of mottled petrel juveniles from Codfish	Continue with Cook's petrel and mottled petrel translocations.	+ Continue translocations of mottled and Cook's petrels, and	Translocations with systematic refinements of husbandry	Continue same work as 2018. Prepare report describing best

Biodiversity/species						
		2015	2016	2017	2018	2019
		Island/Whenua Hou to Maungaharuru Range following the successful trial in 2014.	Measure survival rates and patterns of weight loss through to fledging.	refine feeding regimes, if necessary, to improve fledging rates.	techniques continue. Camera monitoring initiated at Maungaharuru to detect returning adults.	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 in rural and urban landscapes.
3	Reintroduction and establishment of several threatened bird species into the Cape to City area, some species will spread from Cape Sanctuary; others will	Design John McLennan-led species monitoring programme for birds/invertebrates overflowing into broader	Monitor species currently overflowing from Cape Sanctuary (pāteke, red-crowned kākārīki,	Monitoring of outflow from Cape Sanctuary and translocated	Continue monitoring of outflow from Cape Sanctuary; analyse species data to	Prepare publication for a peer-reviewed journal describing the halo effect of Cape Sanctuary

Biodiversity/species						
	2015		2016	2017	2018	2019
	be reintroduced and actively managed until self-sustaining	project area outside of Cape Sanctuary.  Prepare translocation plans for robins and tomtits.	etc.). Translocate robins and tomtits to Mohi Bush to assist spread of native insectivores through Cape to City area	robins and tomtits continues	determine extent of spread through wider landscape.	and 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 sufficient levels for kiwi survival	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	Develop DOC/John McLennan whio Maraetotara translocation plan.		Gain clarity of long-term landowner commitment along the Maraetotara.	If funding is sourced and in-depth analysis provides recommendation to proceed, catch and radio-tag wild whio adults	Introduce first whio juveniles into the Maraetotara River. Continue egg collection from wild pairs; Successful colonisation of

Biodiversity/species						
	2015		2016	2017	2018	2019
	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 New Zealand examples.	to identify nest locations. Collect who eggs to be hatched and raised to fledging age in captivity	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, kākārīki, and pāteke in the Poutiri Ao ō Tāne area	Kākā and kākārīki have been released and a founder population establishes at the location. Transfer pāteke successfully.	Transfer and successfully fledge petrels. Kākā and kākārīki 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.

#### Review of Biodiversity/Species

- Milestone 4: Push 2018 milestone to 2019. This is to ensure predator numbers remain consistently low to give confidence in translocation.
- Milestone 7: 2016–2019 – Remove pāteke from these milestones. There will be no further Pāteke releases, as this would require changing the WSPC research.

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.

+ Expert technical advice has recommended that the 2017 translocation of tītī (Cooks petrel) does not occur. The advice is to hold off until we confirm some released tītī are returning.

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 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.	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	Conduct operational assessment of how integration of public and		Conduct midterm analysis of benefits to		Conduct 5-year analysis of benefits to



Habitat protection and enhancement/restoration (primarily fencing, planting, maintenance, weed control)						
	2015		2016	2017	2018	2019
	ecological restoration on private land	private land within Cape to City project is best achieved and impacts monitored.		conservation programmes in terms of conservation outcomes and operational savings.		conservation programmes in terms of conservation 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.

Pest control (contractor delivery, predator initial control and infrastructure set up and maintenance)						
	2015		2016	2017	2018	2019
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; continue initial predator control.	Begin graduating 30% of farmers to maintenance of predator control and continue initial control.	Graduate 50% of farmers to maintenance of 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	Continue contractor control at reduced control intensity.	Continue contractor control at reduced control intensity.	Continue contractor control	Continue contractor control at	Continue contractor control

Pest control (contractor delivery, predator initial control and infrastructure set up and maintenance)						
		2015	2016	2017	2018	2019
	densities in the Poutiri Ao ō Tāne pest control area			at reduced control intensity.	reduced control intensity.	at reduced control intensity.
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 2 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

Pest control (contractor delivery, predator initial control and infrastructure set up and maintenance)						
	2015		2016	2017	2018	2019
						changes over the preceding 4 years

## 6. Appendix 4: Project outputs so far

Workstream	Title	Status	Description	Interim report date
Community engagement	<i>Backyard Biodiversity</i> 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 <a href="http://naturewatch.org.nz/projects/cape-to-city">naturewatch.org.nz/projects/cape-to-city</a>	Published	Cape to City set up as a project on the Nature Watch website.	August 2015
	Project pledges \$6 m for conservation	Published	<i>Hawke's Bay Today</i> 18 December 2014 – article about Te Matau a Māui signing.	August 2015
	Redressing human impact	Published	<i>Hawke's Bay Today</i> 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 <i>Profit</i> Magazine – May 2015 issue.	August 2015
	Cape to City on Facebook <a href="http://www.facebook.com/capetocity">www.facebook.com/capetocity</a>	Active	Cape to City Facebook page set up.	August 2015
	Trustworthy Biodiversity measures <a href="http://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/birds/biodiversity-measures/research-updates">www.landcareresearch.co.nz/science/plants-animals-fungi/animals/birds/biodiversity-measures/research-updates</a>	Published	Highlights the results from the Building Trustworthy Biodiversity Measures focus groups.	August 2015

Workstream	Title	Status	Description	Interim report date
Community engagement cont.	Andy Lowe gave a speech at the Deer Industry Conference <a href="http://www.youtube.com/watch?v=tARC D82ACy8">www.youtube.com/watch?v=tARC D82ACy8</a> (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	<i>Hawke's Bay Today</i> , 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 New Zealand	Published	<i>Hawke's Bay Today</i> , 4 July 2015, pp.12-13. Double-page spread of articles about Cape to City.	February 2016
	Cape to City website	Active	<a href="http://capetocity.co.nz/">http://capetocity.co.nz/</a>	February 2016
	Radio article – Rod Dickson interviewed	Published	Radio New Zealand article on morning rural news, 5 November 2015, about Cape to City (forward to minute 1.28). <a href="http://www.radionz.co.nz/audio/player/201777443">http://www.radionz.co.nz/audio/player/201777443</a>	February 2016
	Te Matau a Māui: Māori Communications and Engagement Strategy (Draft)	Draft	Draft Māori Communications and Engagement Strategy.	February 2016
	Pair bring skills to work in Cape to City project	Published	Article in <i>Hawke's Bay Today</i> , 6 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
Community engagement cont.	Project document templates	Completed	A set of templates – Powerpoint, letter, factsheet and banners, designed by DOC’s Publishing 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 School.	August 2016
	Bugman helps in nature push	Published	Hawke’s Bay Today article, 5 March 2016, p.9, 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 Biosecurity Institute meeting – April 14 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
	Digging deep to create a better world	Published	Article in <i>Hawke’s Bay Today</i> , July 2016, advertising the Clifton County Cricket Club planting day.	February 2017
	Planting for the future	Published	Article in <i>Hawke’s Bay Today</i> 25 July 2016, regarding the Clifton County Cricket club planting day.	February 2017
	Project overview talk	Completed	NETS conference presentation by Campbell, July 2016.	February 2017
	Project overview talk	Completed	Campbell and Wendy gave a talk at the BHNSC general meeting in August 2016.	February 2017
	Cape to City was included in Lou Sanson speech for Conservation Week 2016	Completed	Cape to City was included in Lou Sanson’s speech for Conservation Week 2016.	February 2017

Workstream	Title	Status	Description	Interim report date
Community engagement cont.	Poutiri Ao ō Tāne endorsed in Maungaharuru Tangitū newsletter Parikaranga, August 2016	Completed	Poutiri Ao ō Tāne endorsed in Maungaharuru Tangitū newsletter 'Parikaranga', August 2016.	February 2017
	Kaitiakitanga Hui at Waimarama	Completed	Hui held at Waimarama Marae 14 September 2016 to gauge how local Hapū want to be involved in Cape to City.	February 2017
	Kaitiakitanga Hui mentioned in Hawke's Bay today	Completed	Small piece on page 2 in the "what you need to know" section of <i>Hawke's Bay Today</i> , Thursday 15 September 2016.	February 2017
	Submission on the draft National Strategy for Environmental Education for Sustainability	Completed	Cape to City submission on the draft National Strategy for Environmental Education for Sustainability.	February 2017
	Cape to City and Poutiri Ao ō Tāne brochure	Brochure	Brochure with an overview of the projects to be used at events, etc.	February 2017
	Painting helps restore natives	Published	<i>Hastings Leader</i> p.5. Oct 19 2016. Article promoting Cape to City and Poutiri Ao ō Tāne involvement in the Hawke's Bay A&P show, and prints of 'Boundary Stream' by local artist John Staniford.	February 2017
	A closer look at Cape to City	Published	A DOC blog/ intranet story providing an introduction and overview of the Cape to City project. <a href="https://blog.doc.govt.nz/2016/10/31/cape-to-city/">https://blog.doc.govt.nz/2016/10/31/cape-to-city/</a>	February 2017
	Hawke's Bay A&P show exhibit	Completed	Cape to City and Poutiri Ao ō Tāne exhibit at the Hawke's Bay A&P show.	February 2017
	New Cape to City website	Completed	A revamp of the original Cape to City website to improve efficiency, design and user friendliness. Server relocated to HBRC (December 2016).	February 2017
	Cape to City overview talk	Completed	Campbell gave a talk at the New Zealand Association of Resource Managers conference (Napier). Audience of around 150.	February 2017
Cape to City overview talk	Completed	Campbell gave a talk at the Ecological Resilience Conference in Hamilton in November 2016.	February 2017	



Workstream	Title	Status	Description	Interim report date
Community engagement cont.	Spotlight: Cape to City, in New Zealand Biodiversity Action Plan 2016-2020	Published	Spotlight: Cape to City, in New Zealand Biodiversity Action Plan 2016-2020. There is an overview of Cape to City on p.35 of the action plan.	February 2017
	Tuku Whenua - gifting of treasured lands	Published	Media release about Maungaharuru Tangitu giftback week in Jan 2017, which included Poutiri Ao ō Tāne, <a href="http://community.scoop.co.nz/2017/01/tuku-whenua-gifting-of-treasured-lands/">http://community.scoop.co.nz/2017/01/tuku-whenua-gifting-of-treasured-lands/</a> Also on: <a href="https://blog.doc.govt.nz/2017/01/31/tuku-whenua/">https://blog.doc.govt.nz/2017/01/31/tuku-whenua/</a>	Aug 2017
	Conservation at heart of community hui at Matahiwi Marae	Published	<a href="http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11850278">http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11850278</a>	Aug 2017
	National bird survey starts today	Published	Media article about the New Zealand Garden bird survey: <a href="http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11881274">http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11881274</a>	Aug 2017
	Cape to City overview talks by Campbell Leckie and Andy Lowe at the Crazy and Ambitious - biological Heritage National Science Challenge conference. May 2017	Completed	<a href="https://youtu.be/-PuaqoEK7xM">https://youtu.be/-PuaqoEK7xM</a>	Aug 2017

Workstream	Title	Status	Description	Interim report date
Community engagement cont.	Cape to City overview talks by Campbell Leckie to various audiences	Completed	<ul style="list-style-type: none"> <li>Parliamentary Commissioner for the Environment staff visit 13th December 2016 – Napier</li> <li>Business and innovation function 2nd March 2017 - Napier</li> <li>Environment and services committee (HBRC) 15 March - Napier</li> <li>Corporate services group (HBRC) 17 May - Napier</li> <li>Zero Invasive Predators 18th May – Wellington</li> <li>OMV Group 7th June – Wellington</li> <li>Minister for Research and Technology Paul Goldsmith 15th June - Napier</li> <li>Regional biodiversity Implementation group 15th June – Napier</li> <li>Annual pest contractors meeting 16th June – Napier</li> </ul>	Aug 2017
	Cape to City and Tumbleweed Ts partnership launched	Online	<p>Cape to City and Tumbleweed tees went into partnership. Tumbleweed tees is a t-shirt company which sells t-shirts and gives some of the properties to conservation projects.</p> <p><a href="https://www.tumbleweedtees.com/pages/long-tailed-bat-conservation">https://www.tumbleweedtees.com/pages/long-tailed-bat-conservation</a></p>	Feb 2018
	Volunteers Mulch in for tree planting scheme	Published	<i>Hastings mail</i> article page 7, August 2nd 2017	Feb 2018
	Cape to City bird relocation success	Published	<i>Hawke's Bay Today</i> article page 8, 23rd August 2017 <a href="http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11908713">http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11908713</a>	Feb 2018
	EIT puts green values at core with partnership	Published	<i>Hawke's Bay Today</i> article 30 <sup>th</sup> Sept 2017 <a href="http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11928164">http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11928164</a>	Feb 2018
	Predator Free by 2050 on Target	Published	<i>Hawke's Bay Today</i> 28th July 2017 <a href="http://www2.nzherald.co.nz/the-country/news/article.cfm?c_id=16&amp;objectid=11895429">http://www2.nzherald.co.nz/the-country/news/article.cfm?c_id=16&amp;objectid=11895429</a>	Feb 2018
	Minister wants wider use of traps in Hawke's Bay	Published	<i>Hawke's Bay Today</i> 9 <sup>th</sup> Sept 2017 <a href="http://www2.nzherald.co.nz/the-country/news/article.cfm?c_id=16&amp;objectid=11918965">http://www2.nzherald.co.nz/the-country/news/article.cfm?c_id=16&amp;objectid=11918965</a>	Feb 2018

Workstream	Title	Status	Description	Interim report date
Community engagement cont.	Conservation week Radio Kidnappers articles	Completed	Robyn McCool, Campbell Leckie and Melissa Brignall-Theyer were interviewed on Radio Kidnappers during Conservation week Oct 2017 on various parts of the projects.	Feb 2018
	Hawke's Bay A&P show exhibit	Completed	Cape to City and Poutiri Ao ō Tāne exhibit at the Hawke's Bay A&P show in October 2017	Feb 2018
	Transforming Biodiversity: Challenging the Boundaries Conference	Completed	Cape to City and Poutiri Ao ō Tāne conference 14-16 November 2017 <a href="http://www.capetocity.co.nz/conference/">http://www.capetocity.co.nz/conference/</a>	Feb 2018
	Hawke's Bay showcases transformation for biodiversity	Published	<i>Hawke's Bay Today</i> article 22nd Nov 2017 <a href="http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11946397">http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11946397</a>	Feb 2018
	Twitter Feed from Transforming Biodiversity Conference	Published	<a href="https://storify.com/NZBatman/transforming-biodiversity-challenging-the-boundari">https://storify.com/NZBatman/transforming-biodiversity-challenging-the-boundari</a>	Feb 2018
	Te Kaea, Māori TV episode including Poutiri Ao ō Tāne. Part of Conference	Published	Go to 18.47 min into the episode for the article <a href="http://www.maoritelevision.com/tv/shows/te-kaea/S14E320/te-kaea">http://www.maoritelevision.com/tv/shows/te-kaea/S14E320/te-kaea</a>	Feb 2018

Workstream	Title	Status	Description	Interim report date
Community engagement cont.	Cape to City overview talks by Campbell Leckie to various audiences	Completed	<ul style="list-style-type: none"> <li>• Biodiversity implementation planning group Napier – 3rd July</li> <li>• Ravensdown management team - 1st August</li> <li>• Biodiversity National Policy Statement working group</li> <li>• HBRC internal staff presentation – bite sized lunch time talks - mid August</li> <li>• Minister for research, technology and innovation - 7th September</li> <li>• Ed Chignall CEO of Predator Free 2050 Ltd - 12 September</li> <li>• Mahia – key community members - 13th September</li> <li>• ZIP and Taranaki Mounga teams - 18th September</li> <li>• Transforming biodiversity conference – Napier (opening address, one talk, two panel discussions and assisting with two other talks) – 13-15th November</li> <li>• Spark digital team on Lora wireless technology and Cape to City - 23 November</li> </ul>	Feb 2018
	Cape to City and Poutiri Ao ō Tāne presentation by Wendy Rakete-Stones	Completed	Kohupatiki Marae 18th September 2017	Feb 2018
	Building home for birds and bugs	Published	Press article about the education programme outcomes at Taikura Rudolf Steiner school. <i>Hastings Leader</i> page 5, 20th Dec 2017	Feb 2018
	Poutiri Ao ō Tāne Education Review	Completed	A review of education initiatives in and around the Poutiri Ao ō Tāne project area. Information taken from interviews with education providers.	Feb 2018
Pest Control	Trapped pests will trigger text message	Published	<i>Hawke's Bay Today</i> article 30 April 2015, about the launch; article syndicated by the <i>Dominion Post</i> and <i>Farmers Weekly</i>	August 2015
	Hi-tech traps target possums	Published	<i>Hawke's Bay Today</i> , 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	<i>Hawke's Bay Today</i> , 19 November 2015, p.7 article about the toxoplasmosis trial.	February 2016

Workstream	Title	Status	Description	Interim report date
Pest Control cont.	Cape to City: Next phase – predator control goes wireless	Published	Article in <i>Our Place</i> newsletter, November 2015 issue, p.8 (HBRC publication).	February 2016
	Cat hunt after toxoplasmosis found	Published	<i>Hastings Mail</i> , 2 December 2015, p.15. Newspaper article about the toxoplasmosis trial.	February 2016
	Traps target feral cats	Published	<i>Hastings Mail</i> , 13 April, 2016, p.8. 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. <a href="http://zip.org.nz/findings/2016/2/catching-more-rats-run-through-vs-single-entry-traps">http://zip.org.nz/findings/2016/2/catching-more-rats-run-through-vs-single-entry-traps</a>	August 2016
	New podiTRAP a long time in the making	Published	PFNZ article on PodiTRAP. November 30th 2017 <a href="https://predatorfreenz.org/new-poditraps-long-time-making/">https://predatorfreenz.org/new-poditraps-long-time-making/</a>	Feb 2018
Biodiversity and Species	Pāteke fly home after time away	Published	<i>Hastings Leader</i> , 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	<i>Hawke's Bay Today</i> article on kōrure translocation, 18 April, p.6.	August 2016
	Massive effort to restore Maungaharuru for endangered Kōrure	Published	Te Kaea, Māori TV article, 17 April 2016, on kōrure translocation. <a href="http://www.Māoritelevison.com/news/regional/massive-effort-restore-maungaharuru-endangered-korure">http://www.Māoritelevison.com/news/regional/massive-effort-restore-maungaharuru-endangered-korure</a>	August 2016
	Release returns robin's song to former homes	Published	Article in <i>Hawke's Bay Today</i> 9 July 2016, regarding the toutouwai release to Cape to City.	February 2017

Workstream	Title	Status	Description	Interim report date
Biodiversity and Species cont.	The Cape to City Project: Baseline bird counts in treatment and in non-treatment area. Unpublished report by John McLennan. March 2017	Completed	Baseline report on initial bird survey data	Aug 2017
	Re-establishing mottled petrels in the Bay	Published	Media release about the kōrure release in HB Today, page 7, 12th April 2017	Aug 2017
	Cape to City bird relocation success	Published	Article in <i>Hawke's Bay Today</i> 22nd August 2017 <a href="http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11908713">http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&amp;objectid=11908713</a>	Feb 2018
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
	Optimising translocation efforts of mottled petrels ( <i>Pterodroma inexpectata</i> ): 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: <a href="http://storify.com/Seabirders/wstc1">storify.com/Seabirders/wstc1</a> .	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. <i>Conservation Evidence</i> 12: 44–47.	Published	Bird recovery in an urban landscape.	August 2015

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Glen, A.; Dickson, R. 2015: Wide-scale predator control for biodiversity in Hawke's Bay. <i>Kararehe Kino/Vertebrate Pest Research 25: 6-7.</i>	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. <i>Kararehe Kino/Vertebrate Pest Research 25: 14-15.</i>	Published	Newsletter article on the 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 28 <sup>th</sup> Australasian Wildlife Management Society Conference. Brisbane, AWMS.	Conference	Effects of wide-scale predator control on biodiversity.	August 2015
	Ruscoe, W.; Glen, A.S.; Perry, M.; Forrester, G. (in prep): Impacts of rabbit grazing on pasture in Hawke's Bay, New Zealand. <i>Wildlife Research</i>	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? <i>Mammal Review 45: 79-87.</i>	Published	Predator and rabbit interactions.	August 2015

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	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. <i>New Zealand Journal of Zoology</i> , 43, 127-137	Published	Comparing techniques for detecting cats.	August 2015 – updated Aug 2016
	Nichols M, Glen AS, Garvey P, Ross J (2017). Influence of horizontal versus vertical camera placement to detect feral cats and mustelids. <i>New Zealand Journal of Ecology</i> 41, 145-150	Published	Camera-trap orientation and predator detection.	August 2015 – updated Feb 2018
	Nichols, M.; Gormley, A.; Garvey, P.; Glen, A.S.; Ross, J. (in prep): Estimating abundance of feral cats: a comparison of techniques. <i>Methods in Ecology and Evolution</i> .	In prep	Feral cat abundance estimates.	August 2015
	Garvey, P.; Nichols, M.; Glen, A.S.; Pech, R.P.; Clout, M.N. (in prep): Response of mesopredators to removal of feral cats. <i>Journal of Applied Ecology</i> .	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



Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Glen, A. 2014: Camera traps for monitoring pest animals. In: <i>Abstracts, NETS Conference</i> . 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. <i>Proceedings of the 16th Australasian Vertebrate Pest Conference</i> (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 to generate detection probability data used for identifying areas of low, medium, and high possum numbers. This will enable forecasting of 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
	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' (eg poorly accessible areas) for contractors (in consultation with contractors in the project).	August 2015

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Milestone 4.4 (LCR contract)	Completed	Based on lessons from the Poutiri Ao ō Tāne project and other wide-scale predator control initiatives (eg 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 AS, Latham MC, Anderson D, Leckie C, Niemiec R, Pech RP, Byrom AE (2016). Landholder participation in regional-scale control of invasive predators: an adaptable landscape model. <i>Biological Invasions</i> 19, 329-338.	Published	This research models a range of landowner participation rates on the success of predator control.	February 2016 Updated August 2017
	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
	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

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Jones, C.; Warburton, B.; Carver, J.; Carver, D., 2015. Potential applications of wireless sensor networks for wildlife trapping and monitoring programmes. <i>Wildlife Society Bulletin</i> 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 uses Poutiri Ao ō Tāne as a case study. <a href="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/">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/</a> . Her presentation is at: <a href="http://www.fulbright.org.nz/news/video-ian-axford-new-zealand-fellowship-seminar-jill-ozarski/">http://www.fulbright.org.nz/news/video-ian-axford-new-zealand-fellowship-seminar-jill-ozarski/</a> .	February 2016
	Nichols, M.; 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 estimating cat abundance from the camera trapping data.	February 2016
	Landcare Research 2015: Predator busters: Hawke's Bay predator control project. <i>Discovery</i> 40.	Published	Article in <i>Discovery</i> (issue 40, Nov 2015) about Cape to City, includes a video. This is an LCR publication: <a href="http://www.landcareresearch.co.nz/publications/newsletters/discovery/discovery-issue-40/Predator-busters">http://www.landcareresearch.co.nz/publications/newsletters/discovery/discovery-issue-40/Predator-busters</a>	February 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Lowe, A. 2015: Cape Sanctuary. <i>NZES 2015 Talk Abstracts</i> . 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 ( <i>Pterodroma inexpectata</i> ): growth, provisioning, meal size and the efficacy of an artificial diet for chicks. <i>Emu 115 (2)</i> : 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
	Shiny App	Completed	Prototype 'shiny app' has been developed to allow managers to predict trap catch by altering trap configurations online.	August 2016

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Pech R and Maitland M (2016) Conservation of native fauna in highly invaded systems: managing mammalian predators in New Zealand. <i>Restoration Ecology</i> 24, 816-820.	Published	Conservation of native fauna in highly invaded systems.	August 2016
	Niemiec, R.M., Pech, R., Norbury, G., Byrom, AE. (2017). Landowners' Perspectives on Coordinated, Landscape-Level Invasive Species Control: the Role of Social and Ecological Context. <i>Environmental Management</i> 59, 477-489.	Published	This paper uses the data from the Cape to City rural survey.	August 2016 Updated February 2017
	Garvey, P.M., Glen, A.S., Clout, M.N., Wyse, S.V., Nichols, M., Pech, R.P., (2017). Exploiting interspecific olfactory communication to monitor predators. <i>Ecological Applications</i> 27, 389-402.	Published	This paper looks at using sense of smell as communication between species as a way of monitoring predators.	August 2016 Updated February 2017
	Gormley, A.M.; 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, A.M.; Leckie, C.; Dickson, R.; Rakete-Stones, W.; Rakete-Stones, P.; Norbury, G.L.; Ruscoe, W.A. (in prep). Wide-scale predator control for biodiversity conservation: a case study from Hawke's Bay, New Zealand.	Submitted	A look at wide-scale predator control for biodiversity, using Cape to City as a case study.	August 2016 Updated February 2017
	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 Hawke's Bay. NETS conference	Conference	Managing pest mammals in a whole-of-system context: a case study from Hawke's 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.; Nichols, M. 2015: Canine vs camera: comparing camera traps with sniffer dogs for detecting feral cats. p.43 in: <i>Abstracts of the 28th Australasian Wildlife Management Society Conference</i> . 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 Hawke's Bay Cape to City project. Unpublished report to Hawke's Bay Regional Council, June 2016.	Completed	Possible bird-related research in the Hawke's Bay Cape to City project.	August 2016
	Brown, S.J.; Latham, C.; Warburton, B. 2016: Cape to City Chew Card Analysis. Unpublished Landcare Research Contract Report LC2582, prepared for Hawke's Bay Regional Council.	Completed	Cape to City chew card analysis.	August 2016
	Gormley, A.M.; MacLeod, C.J. 2016: Assessment of data sources for monitoring birds in Cape to City. Unpublished Landcare Research Contract Report LC2622, 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 LC2541, prepared for Hawke's Bay Regional Council.	Completed	Invertebrate monitoring opportunities within Cape to City.	August 2016
	Byrom, A.E. 2016: The Cape to City project and its relationship to New Zealand's Biological Heritage National Science Challenge. Invited presentation, Hawke's 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. Four-page infographic for Hawke's Bay Regional Council, June 2016.	Completed	Infographics on restoring birds in Cape to City.	August 2016
	Glen, A. 2016: Cape to City predator monitoring: initial knockdown. Unpublished Landcare Research Contract Report, prepared for Hawke's Bay Regional Council.	Completed	Report on initial knockdown phase of Cape to City.	February 2017



Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Glen, A.; Norbury, G. 2016: Biodiversity monitoring in Cape to City: lizards and invertebrates. Unpublished Landcare Research Contract Report, prepared for Hawke's Bay Regional Council.	Completed	Lizard and invertebrate monitoring in Cape to City.	February 2017
	Cape to City: Pest management and restoration science at scale	Lecture	LINK Seminar in Wellington, by Campbell and Grant in July 2016. <a href="http://www.landcareresearch.co.nz/about/news/events/link-seminars">http://www.landcareresearch.co.nz/about/news/events/link-seminars</a>	February 2017
	Norbury, G.; Leckie, C.; Dickson, R.; Glen, A.; Byrom, A.; Pech, R. 2016: Regional-scale biodiversity restoration: towards a Predator-Free New Zealand, in Conference Programme and Abstracts of the 2016 Australasian Wildlife Management Society Conference, Auckland. 29 Nov – 1 Dec, 2016.	Conference	Regional-scale biodiversity restoration using Cape to City and Poutiri Ao ō Tāne as examples.	February 2017
	Norbury, G.; Glen, A.; Pech, R.; Byrom, A.; Leckie, C.; Dickson, R. 2016: Regional-scale biodiversity restoration in Hawke's Bay: towards a Predator-Free New Zealand. Kararehe Kino Vertebrate Pest Research Newsletter, Issue 28, pp 7-8.	Newsletter	Regional-scale biodiversity restoration in Hawke's Bay using Cape to City and Poutiri Ao ō Tāne as examples.	February 2017

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Warburton B, Leckie C, Rakete-Stones W. 2017. Remote monitoring traps using wireless networks. 17th Australasian Vertebrate Pest Conference. Canberra. May 1-4.	Conference	Remote monitoring traps using wireless networks	Aug 2017
	Warburton B, Jones C, Ekanayake J (2017). The economics of using wireless networks for monitoring traps. Kararehe Kino - Vertebrate Pest Research 29.	Newsletter	The economics of using wireless networks for monitoring traps	Aug 2017
	Glen A, Norbury G, Warburton B, Pech R. 2016. Predator monitoring for compliance in Cape to City: Discussion paper. Unpublished Landcare Research Contract Report, prepared for Hawke's Bay Regional Council.	Completed	Predator monitoring for compliance in Cape to City	Aug 2017
	Glen A, Norbury G, Garvey P, Dickson R. 2017. Effectiveness of feral cat control using para-aminopropiophenone (PAPP) on Toronui Station, Hawke's Bay. Unpublished Landcare Research Contract Report LC2743, prepared for Hawke's Bay Regional Council.	Completed	Effectiveness of feral cat control using para-aminopropiophenone (PAPP) on Toronui Station, Hawke's Bay	Aug 2017

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	White, D. (2016). <i>Toxoplasma gondii</i> screening in cats and mice using PCR as part of the Cape to City Initiative. Unpublished Landcare Research Report, prepared for Hawke's Bay Regional Council.	Completed	<i>Toxoplasma gondii</i> screening in cats and mice using PCR as part of the Cape to City Initiative.	Aug 2017
	Flood S. 2017. Education review for TMAM – Cape-to-City and Poutiri Ao ō Tāne. Project discussion document. Unpublished Landcare Research Report prepared for Hawke's Bay Regional Council.	Completed	Education review for TMAM – Cape-to-City and Poutiri Ao ō Tāne.	Aug 2017
	Norbury G, Glen A, Pech R. 2017. Linking predator camera trap monitoring to biodiversity and economic benefits: density-impact functions in principle. Unpublished Landcare Research Scoping Report, prepared for Hawke's Bay Regional Council.	Completed	Linking predator camera trap monitoring to biodiversity and economic benefits: density-impact functions in principle.	Aug 2017

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Norbury G, Pech R, Glen A. 2017. Linking predator camera trap monitoring to biodiversity and economic benefits: how to derive density-impact functions for Cape-to-City. Unpublished Landcare Research Follow-Up Report, prepared for Hawke's Bay Regional Council.	Completed	Linking predator camera trap monitoring to biodiversity and economic benefits: how to derive density-impact functions for Cape-to-City	Aug 2017
	Cowan P, Warburton B. 2016. Economic outcomes of broadscale predator control in the Hawke's Bay region. Unpublished Landcare Research Contract Report LC2738, prepared for Hawke's Bay Regional Council.	Completed	Economic outcomes of broadscale predator control in the Hawke's Bay region	Aug 2017
	Niemiec, R.M., Pech, R., Norbury, G. and Byrom, A. 2017. Policy recommendations based on landholder's perspectives on coordinated pest control. Hawkes Bay Regional Council Policy Brief 2_1_2017.	Completed	Policy recommendations based on landholder's perspectives on coordinated pest control	Aug 2017
	Glen A & Norbury G 2017. Cape to City and Poutiri Ao ō Tāne: pest and biodiversity responses. Unpublished Landcare Research Progress Report, prepared for Hawke's Bay Regional Council.	Completed	Cape to City and Poutiri Ao ō Tāne: pest and biodiversity responses.	Aug 2017

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Norbury G, Campion M, Brown S, Garvey P. 2017. Milestone 1.5 Conduct a ferret body odour longevity trial to determine how long odour lasts, and therefore how often it needs to be refreshed in the field. Unpublished Landcare Research Progress Report, prepared for Hawke's Bay Regional Council.	Completed	Ferret body odour longevity trial to determine how long odour lasts, and therefore how often it needs to be refreshed in the field.	Aug 2017
	Latham ADM, Latham MC, Warburton B 2017. Effect of predator control at Poutiri Āo ō Tāne on Boundary Stream Mainland Island.	Completed	Effect of predator control at Poutiri Āo ō Tāne on Boundary Stream Mainland Island.	Aug 2017
	Burge OR, Innes J, Fitzgerald N, Richardson SJ 2017. Habitat availability for native New Zealand bird species within the Cape-to-City footprint – a preliminary assessment.	Completed	Habitat availability for native New Zealand bird species within the Cape-to-City footprint	Aug 2017
	Gormley AM, Warburton B. 2017. TrapSim: A decision-support tool for simulating predator trapping. Unpublished Landcare Research Contract Report LC2993, prepared for Hawke's Bay Regional Council.	Completed	TrapSim: A decision-support tool for simulating predator trapping.	Aug 2017

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Flood S 2017. HBRC Aotearoa PFNZ: Project 5.1: Education review for TMAM – Cape to City and Poutiri Ao ō Tāne: Report on initial data analysis. Unpublished Landcare Research Contract Report, prepared for Hawke’s Bay Regional Council.	Completed	Education review for TMAM – Cape to City and Poutiri Ao ō Tāne: Report on initial data analysis.	Aug 2017
	Watts C, Dopheide A, Holdaway R, Davis C, Wood J, Thornburrow D, Dickie IA 2017. DNA metabarcoding as a new tool for invertebrate community monitoring – a case study comparison with conventional techniques. Restoration Ecology.	Submitted	Comparing eDNA with conventional invertebrate sampling techniques	Feb 2018
	Glen A 2017. Controlling feral cats on farmland with a new toxin: PAPP. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Controlling feral cats on farmland with PAPP	Feb 2018
	Glen A 2017. Using cameras for operational and compliance monitoring. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Using cameras for operational and compliance monitoring	Feb 2018

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Glen A 2017. Outcomes of predator control: responses of lizards and invertebrates. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Responses of lizards and invertebrates to Predator control	Feb 2018
	Warburton B, Leckie C 2017. Transformational levers - wireless trap monitoring. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Wireless trap monitoring	Feb 2018
	Watts C 2017. Invertebrate monitoring using conventional methods and eDNA. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Invertebrate monitoring using conventional methods and eDNA	Feb 2018
	Gormley A, Warburton B 2017. Fewer traps but still delivering large scale success - optimising trapping. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Fewer traps but still delivering large scale success - optimising trapping	Feb 2018

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Norbury G 2017. Linking predator camera trap monitoring to biodiversity benefits. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Linking predator camera trap monitoring to biodiversity benefits	Feb 2018
	Garvey P 2017. Long life lures - how close to reality for field use? Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Long Life Lures	Feb 2018
	Burge O, Innes J, Fitzgerald N, Richardson S 2017. Joining the dots on habitat. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017. Presented by G Norbury	Conference	Habitat connectivity	Feb 2018
	Pech R 2017. It's about people and outcomes - landowner participation modelling. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Socio-ecological modelling participation	Feb 2018



Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Warburton B 2017. Economic outcomes of predator control. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Economic outcomes of predator control	Feb 2018
	Norbury G, Latham D, Binny R 2017. The importance of the right foundation for predator catch data. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	The importance of the right foundation for predator catch data	Feb 2018
	Greenaway A 2017. Insight into the team - Cape to City case study. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Insight into the Cape to City and Poutiri Ao ō Tāne Project team	Feb 2018
	Byrom A. 2017. The problem with rabbits and other perverse outcomes. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	The problem with rabbits and other perverse outcomes	Feb 2018

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	Flood S 2017. Measuring education outcomes. Transforming Biodiversity Conference: 'Challenging the boundaries', Napier, 14-16 November 2017.	Conference	Measuring education outcomes	Feb 2018
	Warburton B. 2017. Economic assessment of using wireless monitoring for managing large-scale trap-networks. Unpublished Landcare Research Contract Report LC2915, prepared for Hawke's Bay Regional Council.	Completed	Economic assessment of using wireless monitoring for managing large-scale trap-networks	Feb 2018
	Reynolds F, Greenaway A. 2017. Implementing social-ecological transformation through Cape-to-City and Poutiri Ao ō Tāne: an interim case study report. Unpublished Landcare Research Contract Report, prepared for Hawke's Bay Regional Council.	Completed	Implementing social-ecological transformation through Cape-to-City and Poutiri Ao ō Tāne	Feb 2018

Workstream	Title	Status	Description	Interim report date
Research and monitoring cont.	<b>Watts C, Dopheide A, Holdaway R, Davis C, Wood J, Thornburrow D, Dickie IA 2017.</b> DNA metabarcoding as a new tool for invertebrate community monitoring – a case study comparison with conventional techniques. Unpublished Landcare Research Contract Report, prepared for Hawke’s Bay Regional Council.	Completed	DNA metabarcoding as a new tool for invertebrate community monitoring – a case study comparison with conventional techniques	Feb 2018

## 7. Appendix 5: Contract for Services

<p>CLIENT: ("the Client"):  Hawke's Bay Regional Council  Private Bag 6006  Napier 4142  Tel: (06) 835 9200  Fax: (06) 835 3601</p>	<p>CONTRACTOR: ("Landcare Research"):  Landcare Research New Zealand Limited,  PO Box 69040  Lincoln 7640  Tel: (03) 321 9999  Fax: (03) 321 9998</p>
<p>CLIENT PROJECT MANAGER: Campbell Leckie  Campbell@hbrc.govt.nz</p>	<p>LCR PROJECT MANAGER: Grant Norbury  NorburyG@LandcareResearch.co.nz</p>
<p>PROJECT TITLE:  Te Matau a Māui Hawkes Bay Project: research  workstream</p>	<p>LCR CONTRACT ADMIN.: Lynn Booth  BoothL@LandcareResearch.co.nz</p>

### SCOPE AND NATURE OF THE SERVICES:

#### Background

New Zealand is seeking a credible pathway towards the vision of being predator-free by 2050. This is a significant aspirational vision that will take both time and progressive steps to achieve. The Cape to City (C2C) project on Hawkes Bay is on the pathway to this vision. The Hawkes Bay context is not necessarily unique; there are sufficiently similar opportunities in many other parts of the country for the concept to be considered in other regions. Within the Hawkes Bay large areas (around 500,000 ha) are currently under long-term sustained possum control with the farming community responsible for ongoing maintenance. There is now the opportunity to trial the integration of feral cat, stoat and ferret control into large-scale possum control with minimal or no increase to maintenance control costs. This will be achieved by targeting possum control more effectively, and by shifting resources from possums to the wider suite of pests. Conceptually this resource shift is possible because current monitoring of possums indicates residual trap catch rates are generally <2%. There are significant outcome gains (particularly biodiversity) from integration of the additional pests.

This contract is for the fourth year of this work, and focuses on improving the cost-effectiveness of pest control, monitoring of pest and biodiversity responses and relating them to residual pest densities, social and educational research, targeted habitat restoration, and economic outcomes of pest control. The work is jointly funded through HBRC (\$150k) and Landcare Research (CORE 'Invasive Mammals' funding \$300k, and CORE 'Enhancing Biodiversity' funding \$100k). The milestones are grouped according to the Aotearoa Foundation objectives and milestones:

#### Aotearoa Foundation Objectives:

1. Pest control
  - a. Sustained suppression of introduced predators at low densities in the Poutiri Ao ō Tāne pest control area.
  - b. Use of wireless trap networks to optimise control.
  - c. Demonstration that effective ongoing predator control in the C2C area can be undertaken for less than ~\$3 per ha.
  - d. Methods of monitoring introduced mammalian predators before and after control.

Milestone	Output	Due date
1.1	Model the C2C trap data to optimise use of wireless technology. Provide report by May 2018.	
1.2	Continue ferret body odour trial to determine odour longevity and how often it needs to be refreshed in the field. Report by June 30, 2018.	
1.3	Identify the type of data that needs to be collected on Public Conservation Land and adjacent land to understand the mutual putative benefits of predator control. Report by Feb 28, 2018.	

#### Aotearoa Foundation Objectives:

2. Pest monitoring
  - a. Methods of monitoring introduced mammalian predators before and after control.
  - b. A marked reduction in introduced predators in the C2C area

Milestone	Output	Due date
2.1	Predator response monitoring at Poutiri Ao ō Tāne and C2C. Report on pest and biodiversity responses (combined with 3.1 below) by May 30, 2018.	
2.2	Socially-acceptable compliance monitoring of predators. In anticipation of HBRC's extension of the RPMP to include enforceable predator control, examine socially-acceptable predator monitoring options for properties of different sizes, including options that do not necessarily involve cameras, such as use of wireless trapping.	

**Aotearoa Foundation Objectives:**

- 3. Achieving outcomes
  - a. Increase in skinks, geckos, and native invertebrates in the C2C and Poutiri Ao ō Tāne areas.
  - b. Use of restored habitat by native wildlife
  - c. Reduction in toxoplasmosis levels in sheep

Milestone	Output	Due date
3.1 Biodiversity response monitoring at C2C and Poutiri Ao ō Tāne, including 100 ha of new mānuka plantings on Taurapa station to establish baseline of habitat value. Report on pest and biodiversity responses (combined with 2.1 above) by May 30, 2018.		
3.2 Pest density-impact functions. Develop a GIS-based data management system for the C2C project that will allow rapid comparisons of predator abundances with outcome monitoring data, and identify additional predator monitoring that may be required to fill data gaps. Report by May 30, 2018.		
3.3 National framework for pest density-impact functions. Produce a document that sets the regional and national socio-political context of DIFs, outline a national co-ordinated approach to consistent data collection procedures, and explore options for curation of meta-data at a national level. Report by Feb 28, 2018.		
3.4 Baseline eDNA surveys of invertebrates. Select sites and plan an invertebrate eDNA sampling project that examines the habitat value of mānuka for invertebrates. Site selection by Dec 31, 2017. Report on sampling plan by Mar 30, 2018.		
3.5 Review threatened and iconic plant, invertebrate, lizard and bat species in C2C, and recommend which taxa could be selected for further survey and possible translocations, and estimate survey costs. Report by May 30, 2018.		
3.6 Re-measure toxoplasmosis levels in sheep and cats. Collect blood sera from ewes in spring, and brain samples from cats, to assess prevalence and transmission routes of toxoplasmosis on the 6 study farms in the C2C and non-treatment sites. Report by Dec 31, 2017.		

**Aotearoa Foundation Objectives:**

- d. Habitat enhancement
  - a. An increase in native habitat in the C2C area

Milestone	Output	Due date
4.1 Set appropriate restoration goals to achieve biodiversity and cultural aspirations. Improve bird and cultural connectivity in the Maungaharuru ki Tangitu hapū by planning appropriate restoration methods. Present a summary of the benefits and disadvantages of habitat connectivity for biodiversity, especially birds, in a hui to allow local knowledge and aspirations to feed into the overall project plan. Include revised recommendations in the biodiversity inventory and restoration recommendations being prepared for Maungaharuru ki Tangitu. Report by June 30, 2018.		
4.2 Planting for wildlife. Outline strategies to promote localised planting of the right plants in the right places to maximize benefits for birds, lizards and invertebrates. Explore management context and lessons to foster uptake in other parts of Hawkes Bay and other regions. Report by 31 Dec 2017.		

**Aotearoa Foundation Objectives:**

- e. Educating and understanding people
  - a. 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

Milestone	Output	Due date
3.1 Evaluate changes resulting from the C2C and Poutiri Ao ō Tāne education programmes. Complete compilation of student and teacher actions, collate DOC data on evaluation feedback, conduct electronic surveys of teachers involved, including phone interviews, and provide literature review of the value of environmental education in improving student learning. Report by June 30, 2018.		
3.2 Continue case study of C2C programme. Conduct third round of interviews with core management team members, including new people recently involved in the project, and run a reflective conversation workshop with members. Report by May 30, 2018.		
3.3 Social networks for socio-ecological modelling. Support Audrey Lustig's post-doctoral research on landholders' influence on one another, agencies influence on landholders, and key influential landholders who might help catalyse actions, by providing data that couples landowners' actions during the C2C trapping roll-out with their views expressed in the rural survey. Report by June 30, 2018.		
3.4 Kaupapa Māori. Provide advice on how best to support Māori engagement through the research programme. Scoping report by April 30, 2018.		
3.5 Presentations by LCR staff at the 'Transforming Biodiversity Conference'. Preparation of 13 talks and attendance at conference in November 2017. Post talks on C2C website by Dec 30, 2017.		

STARTING DATE: 1 <sup>ST</sup> SEPTEMBER 2017	
FINISHING DATE: 30 <sup>th</sup> June 2018	
FEES AND TIMING OF PAYMENTS: A total of \$150,000 plus GST, according to the payment schedule:  31 <sup>ST</sup> DECEMBER 2017: \$60,000 31 <sup>ST</sup> MARCH 2018: \$60,000 30 <sup>TH</sup> JUNE 2018: \$30,000	
<i>The Client engages Landcare Research to provide the Services described above ("the Services") and Landcare Research agrees to perform the Services for the remuneration provided above. Both parties agree to be bound by the provisions of the Conditions of Engagement (overleaf). Once signed, this agreement, together with the conditions overleaf and any attachments, will replace all or any oral agreements previously reached between the parties.</i>	
SIGNED FOR THE CLIENT:  _____  _____  NAME AND POSITION  DATE:	SIGNED FOR LANDCARE RESEARCH:  _____  _____

CONDITIONS OF ENGAGEMENT

1. Landcare Research's Obligations

In providing the Services Landcare Research will:

- exercise the degree of skill, care and diligence normally exercised in scientific research;
- use its best endeavours to achieve the objectives of the project;
- comply with all relevant ethical and regulatory requirements and statutory obligations;
- provide reports on the project in accordance with the Reporting Schedule, or as reasonably requested by the Client.

2. Client's Obligations

The Client will:

- provide Landcare Research with all relevant information required to undertake the project;
- pay Landcare Research the fees in the manner set out in this contract.

3. Payment of Fees

For all reimbursable costs, and where the Services are carried out on a time charge basis, Landcare Research will maintain up to date records which clearly identify relevant time and expenses incurred in providing the Services. If the Client defaults in the payment of any monies payable to Landcare Research by the due date for payment, then the Client will pay to Landcare Research interest at the rate of 15% per annum calculated on a daily basis on the monies unpaid from the due date for payment until the actual date of payment.

4. Intellectual Property

Each party will retain ownership of any existing intellectual property they bring to and use for the project. Unless agreed otherwise and noted as a variation, ownership of new intellectual property developed as a result of the Services will, after payment of fees and expenses payable to Landcare Research, lie with the Client.

5. Liability

Landcare Research will not be liable to the Client, nor any third party, for any loss of profits (direct or indirect, special or consequential) or any loss or damage arising directly or indirectly from any act, default or omission of Landcare Research pursuant to this contract.

6. Confidentiality

Any confidential information disclosed by either party to the other party will be kept secret and not disclosed to any third party, or used for any purpose other than the project, without the written permission of the disclosing party. This clause will apply to any employee or contractor of the parties.

7. Variation of Contract

The Client may order variations to the Services in writing or may request Landcare Research to submit proposals for variation to the Services. Variations may incur greater or lesser costs than those originally agreed to and must be negotiated separately.

8. Termination of Contract

The Client may suspend all or part of the Services or terminate the contract by notice to Landcare Research, who will immediately make arrangements to stop the Services and minimise further expenditure. Suspension or termination will not prejudice or affect the accrued rights or claims and liabilities of the parties.

9. General

- (a) Nothing in this contract creates an employment or partnership relationship.
- (b) Notwithstanding any of the provisions of this contract, neither party will be liable for any delay or default due to unforeseen causes beyond their control and not due to their fault or neglect.
- (c) Disputes will first be referred to mediation for settlement.