

I hereby give notice that an ordinary meeting of the Environment Committee will be held on:

Date: Tuesday, 13 June 2017
Time: 9.00am
Venue: Tararua Room
Horizons Regional Council
11-15 Victoria Avenue, Palmerston North

ENVIRONMENT COMMITTEE

AGENDA

MEMBERSHIP

Chair	Cr GM McKellar
Deputy Chair	Cr PJ Kelly JP
Councillors	Cr JJ Barrow
	Cr LR Burnell
	Cr DB Cotton
	Cr EB Gordon JP (ex officio)
	Cr RJ Keedwell
	Cr NJ Patrick
	Cr PW Rieger, QSO JP
	Cr BE Rollinson
	Cr CI Sheldon
	Cr WK Te Awe Awe

Michael McCartney
Chief Executive

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Palmerston North 4442

Full Agendas are available on Horizons Regional Council website
www.horizons.govt.nz

for further information regarding this agenda, please contact:
Julie Kennedy, 06 9522 800

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REGIONAL HOUSES	Palmerston North 11-15 Victoria Avenue	Whanganui 181 Guyton Street		
DEPOTS	Levin 11 Bruce Road	Taihape Torere Road Ohotu		
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AGENDA

1 Welcome/Karakia

2 Apologies and Leave of Absence

At the close of the Agenda no apologies had been received.

3 **Public Speaking Rights**

Notification to speak is required by 4pm on the working day prior to the meeting. Further information is available by phoning 0508 800 800.

Petitions/Deputations

Deputations: Written notice (fewer than 150 words) concerning the nature of the deputation must be lodged with the Chief Executive at least 2 working days before the date of the meeting and subsequently approved by the Chairperson.

Petitions: Written notice to the Chief Executive is required at least 2 working days before the date of the meeting.

Further information is available by phoning 0508 800 800.

4 Supplementary Items

To consider, and if thought fit, to pass a resolution to permit the Committee/Council to consider any further items relating to items following below which do not appear on the Order Paper of this meeting and/or the meeting to be held with the public excluded.

Such resolution is required to be made pursuant to Section 46A(7) of the Local Government Official Information and Meetings Act 1987 (as amended), and the Chairperson must advise:

- (i) The reason why the item was not on the Order Paper, and
- (ii) The reason why the discussion of this item cannot be delayed until a subsequent meeting.

5 Members' Conflict of Interest

Members are reminded of their obligation to declare any conflicts of interest they might have in respect of the items on this Agenda.

Minutes of the second meeting of the tenth triennium of the Environment Committee held at 9.02am on Tuesday 11 April 2017, in the Tararua Room, Horizons Regional Council, 11-15 Victoria Avenue, Palmerston North.

PRESENT Crs (Chair) GM McKellar, JJ Barrow, LR Burnell (from 9.20am), DB Cotton, EB Gordon JP (ex officio), PJ Kelly JP, NJ Patrick, PW Rieger, QSO JP, BE Rollinson, CI Sheldon, and WK Te Awe Awe.

IN ATTENDANCE Chief Executive Mr MJ McCartney
Committee Secretary Mrs JA Kennedy

ALSO PRESENT At various times during the meeting:

Dr N Peet (Group Manager Strategy & Regulation), Mr R Strong (Group Manager River Management), Dr J Roygard (Group Manager Natural Resources & Partnerships), Ms S Galley (Environmental Educator), Ms C Morrison (Media & Communications Manager), Mr G Bevin (Regulatory Manager), Ms A Matthews (Science and Innovation Manager), Mr A Madden (Environmental Coordinator Biodiversity), Mr L Brown (Freshwater & Partnerships Manager), Mr C Davey (Environmental Coordinator – Plants), Mr Tangi Utikere (Deputy Mayor), Mr Ray Swadel (General Manager City Networks), Mr Robert van Bentum (Water and Waste Services Manager), and Mr Phil Walker (Special Projects Manager) Palmerston North City Council, members of the public, and a member of the Press.

The Chairman welcomed everyone to the meeting and invited Cr Te Awe Awe to say a Karakia.

APOLOGIES

ENV 17-7 *Moved* **McKellar/Barrow**

That the Committee receives an apology from Cr Keedwell, and an apology from Cr Burnell for lateness.

CARRIED

PUBLIC SPEAKING RIGHTS

There were no requests for public speaking rights.

SUPPLEMENTARY ITEMS

There were no supplementary items to be considered.

The Chairman circulated a letter from Mr Charles Rudd, and noted that a “List of Significant Non-Compliances for December 2016 to mid March 2017” had been tabled for Members’ information.

MEMBERS’ CONFLICTS OF INTEREST

Cr Patrick noted a potential conflict of interest. She said she worked for Te Kaahui o Rauru which had connections with the Te Mana o te Wai Project (mentioned in Item 8, Freshwater Progress Report).

During discussion of Item 8, Freshwater Progress Report, Cr Rollinson identified a potential conflict of interest. He said there was a proposed site for a fencing project in the Hautapu catchment which was on his property.

CONFIRMATION OF MINUTES

ENV 17-8 **Moved** **Kelly/Gordon**

That the Committee:

confirms the minutes of the Environment Committee meeting held on 14 December 2016 as a correct record, and notes that the recommendations were adopted by the Council on 20 December 2017.

CARRIED

ENVIRONMENTAL EDUCATION

Report No 17-66

This item provided Members of Council's Environment Committee with an Environmental Education progress report for the period 3 December 2016 to 2 April 2017. Ms Morrison (Media & Communications Manager) introduced Ms Sarah Galley who had been appointed as the Environmental Educator and was a great asset to the team. Ms Galley highlighted the activities and tasks undertaken with over 500 children during "Seaweek 2017" which ran from 25 January to 5 March, the Waiora activity report, the use of two Waiora kits which were borrowed by Dannevirke High School for use in their NCEA Level 2 assessments at the Manawatu River, noted her attendance at the National Facilitator Hui for Enviroschools in Hamilton, and responded to questions of clarification about a submission to the Horowhenua District Council's Annual Plan which sought \$4,000 per annum to support Enviroschools. Ms Galley explained the suggested change to Environmental Education reporting to four times per year to coincide with the school terms.

Ms Galley was complimented on her great work and efforts throughout the Region.

ENV 17-9 **Moved** **Sheldon/Patrick**

That the Committee recommends that Council:

- a. receives the information contained in Report No. 17-66.
- b. agrees that from the next financial year, environmental education reports four times per year only.

CARRIED

Cr Burnell joined the meeting at 9.20am.

FRESHWATER PROGRESS REPORT

Report No 17-67

The purpose of this item was to introduce the Freshwater progress report for the period 1 November 2016 to 28 February 2017. Dr Roygard (Group Manager Natural Resources & Partnerships) introduced the item and explained that a supplementary item would be presented to the Strategy & Policy Committee (12 April 2017) to inform Council of the proposed packages that were being prepared for submission to Central Government. Mr Brown (Freshwater and Partnerships Manager) spoke to the report and highlighted the continuing work around fencing

contaminated crop did not escape. Dr Roygard undertook to draft a letter to the Ministry of Primary Industries seeking an update on the Pea weevil situation at the Bonny Glenn land fill.

Mr Davey commented on the potential use of drones to monitor pest plants.

ENV 17-12 **Moved** **Kelly/Te Awe Awe**

That the Committee recommends that Council:

a. *receives the information contained in Report No. 17-69 and Annexes.*

CARRIED

ONE PLAN IMPLEMENTATION DASHBOARD

Report No 17-70

This item presented the four-monthly dashboard report showing One Plan implementation progress. Mr Bowen (Manager Strategy & Policy) took Members through the information on progress, and responded to Members' questions. He then sought Members' feedback both on the format and content of the report. Members were generally in support of the current reporting method.

ENV 17-13 **Moved** **Kelly/Cotton**

That the Committee recommends that Council:

a. *receives the information contained in Report No. 17-70 and Annex.*

CARRIED

REGULATORY MANAGEMENT AND RURAL ADVICE ACTIVITY REPORT - DECEMBER 2016 TO MARCH 2017

Report No 17-72

This item updated Members on regulatory activity for the period December 2016 to March 2017. It also included information on Rural Advice activity as it related to implementation of land-use consents for intensive agriculture. Dr Peet (Group Manager Strategy & Regulation) explained the proposed future focus for future reporting as outlined in paragraph 6.7. He commented briefly on the implications of the Environment Court Declaratory Proceedings decision on the consenting process, and said a more detailed discussion would be held at the Strategy & Policy Committee meeting to be held the next day (Wednesday 12 April 2017).

Mr Bevin (Regulatory Manager) took the report as read, commented further on progress in regard to the Foxton, Eketahuna and Pahiatua Wastewater Treatment Plants, and referred to the historic photos depicting a range of environmental incidents. Mr Bevin then clarified Members' questions around progress with consent applications. Members provided their views on the proposed focus of future reports (para 6.7), with a followup action taken to discuss the style of reporting for the Environment Committee in more depth at the upcoming Councillors' Strategy Session (14-15 June 2017). Mr Bevin and Dr Peet spoke of the challenges associated with the recruitment of senior consent planners.

ENV 17-14 **Moved** **Sheldon/Rollinson**

That the Committee recommends that Council:

a. *receives the information contained in Report No. 17-72.*

CARRIED

MEMBERS' QUESTIONS

The Chair commented on the tabled letter received from Mr Charles Rudd and suggested that Council could tour the 'polluted hot spots' in the Horowhenua District (as mentioned in the letter), as part of a Councillors' Southern Tour.

The meeting adjourned at 11.25am.

The meeting reconvened at 11.30am.

UPDATE ON PALMERSTON NORTH CITY COUNCIL WASTEWATER TREATMENT PLANT

Report No 17-71

Mr Ray Swadel (General Manager City Networks), Mr Robert van Bentum (Water and Waste Services Manager), and Mr Phil Walker (Special Projects Manager) Palmerston North City Council (PBCC), made a presentation on progress with implementing the revised Wastewater Treatment Plant (WWTP) consent. Deputy Mayor Tangi Utikere was also in attendance. Mr Walker outlined the advances in implementing the varied resource consent conditions since speaking to the Committee in May 2016. A project steering group had been established comprising Mayor Grant Smith, Councillors Duncan McCann, Bruno Petrenas, Susan Baty and Brent Barrett. Mr van Bentum said PNCC would be hosting a Wasterwater Forum on 21 April 2017, intended to advise the community on emerging trends and best practice in wastewater treatment and beneficial re-use of wastewater. He then outlined PNCC initiatives for a joint funding application to the Ministry for the Environment Freshwater Improvement Fund. PNCC staff and the Deputy Mayor responded to Members' questions of clarification.

ENV 17-15

Moved

Barrow/Burnell

That the Committee recommends that Council:

- a. *receives the presentation from Mr Ray Swadel, General Manager City Networks; Mr Robert van Bentum, Water and Waste Services Manager; and Mr Phil Walker, Special Projects Manager from Palmerston North City Council.*

CARRIED

The meeting closed at 12.00pm.

Confirmed

CHIEF EXECUTIVE

CHAIRMAN

Report No.	17-114
Information Only - No Decision Required	

ENVIRONMENTAL EDUCATION

1. PURPOSE

- 1.1. The purpose of this item is to provide members of Council’s Environment Committee with an Environmental Education progress report for the period 3 April to 2 June 2017.
- 1.2. For the purpose of this report, both the ‘Educator’ and the ‘Regional Coordinator’ refer to the **Horizons Regional Council (Horizons)** Environmental Educator. .5FTE of the role is regional coordination of the Enviroschools Programme, with the remaining .5FTE of the role delivering Horizons Environmental Education programmes.

2. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 17-114.

3. FINANCIAL IMPACT

- 3.1. There is no financial impact associated with recommendations in this paper.

4. COMMUNITY ENGAGEMENT

- 4.1. This is a public item and therefore Council may deem this sufficient to inform the public.

5. SIGNIFICANT BUSINESS RISK IMPACT

- 5.1. There is no significant business risk associated with recommendations in this paper.

6. ANNUAL PLAN TARGETS

Measure	Reporting Period				YTD Actual	Target	%
	1 st	2 nd	3 rd	4 th			
Enviroschools workshops held	1	7	6	*5	19	24	79%
Waiora sessions conducted	4	8	16	*19	47	32	138%
Community engagements	8	8	9	*5	30	30	100%

*includes events until the end of the financial year (see Section 11.1)

- 6.1. The measure for Enviroschools workshops held includes workshops run by the Regional Coordinator as well as workshops run by contracted Facilitators.
- 6.2. The measure for Waiora sessions conducted includes only sessions run by the Educator. Sessions conducted using Horizons’ kits without the Educator are not included.
- 6.3. The measure for community engagements does not include Waiora sessions or Enviroschools workshops. This measure tracks all other events and activities that fall within Environmental Education.

7. ENVIROSCHOOLS DATA

	Districts								Total
	Ruapehu	Whanganui	Rangitikei	Manawatu	Palmerston North City	Tararua	Horowhenua	Ruahine Kindergarten Association	
Enviroschools	7	9	5	9	8	3	1	5	47
Friends of Enviroschools	1	2	1	3	5	3	4	4	23

- 7.1. There are 47 official Enviroschools spread throughout the Region covering all districts.
- 7.2. There are 23 Friends of Enviroschools in the Region.

8. ACTIVITY REPORT - WAIORA

- 8.1. The Educator conducted the following Waiora sessions; one session with Tokirima School at an un-named stream running through their school grounds, two sessions with Highbury Whānau Centre; four sessions with Ruahine School at Coppermine Creek, one session with St Mary's School Foxton at Whitebait Creek. This reporting period, the Educator took approximately 138 students through the Waiora programme.
- 8.2. The Educator collaborated with the Department of Conservation and Whanganui Regional Museum to explore three sections of the Matarawa Stream as it flows into Whanganui. Three classes of students from Durie Hill School attended this full day event which allowed students to undertake a stream study (using the Waiora kits) on their section of stream and to compare their results across all three sites. Thank you to Cr Patrick who also attended.

9. ACTIVITY REPORT - ENVIROSCHOOLS

- 9.1. The Regional Coordinator together with the Region's Enviroschools Facilitators, attended the Enviroschools National Facilitator Hui in Hamilton in April. Facilitators and Regional Coordinators across New Zealand gathered to connect with each other to share stories, insights and inspire and learn from one another. This was also a good opportunity to plan regional goals with the other Facilitators.
- 9.2. Roslyn Kindergarten, facilitated by the Ruahine Kindergarten Association (RKA), have moved off the Enviroschools programme and onto the Friends of Enviroschool network while they establish a new lead teacher.
- 9.3. Linton Kindergarten, facilitated by RKA, recently held a holistic reflection to the bronze stage of Enviroschools. They will be holding a celebration event in recognition of this in Term 3.
- 9.4. The Regional Coordinator has met with all Facilitators this reporting period.
- 9.5. The Regional Coordinator met with Friends of Enviroschools, Papatawa School, Parkland School, Linton Country School and Kumeroa-Hopelands School.
- 9.6. The Regional Coordinator submitted to the draft annual plans of Palmerston North City Council, Ruapehu District Council, Whanganui District Council, Rangitikei District Council and Manawatu District Council to thank them for their continued funding of the Enviroschools programme. The Regional Coordinator also submitted and talked to the Horowhenua District Council's draft Annual Plan 2017/18 on Enviroschools, to ask the Council to support Enviroschools. It is the only District in the Horizons region that has yet to commit funding to the programme. Tararua District Council did not consult on their annual plan.

- 9.7. The Regional Coordinator ran an Enviroschools unpacking workshop for Friends of Enviroschools, Carncot Independent School.

10. ACTIVITY REPORT - OTHER

- 10.1. The Educator was on the panel to assess the Horizons Community Grants applications.
- 10.2. The Educator attended the Sort it Careers Expo at Central Energy Trust Arena, providing some hands on freshwater activities for attendees.

11. END OF FINANCIAL YEAR SUMMARY

- 11.1. Enviroschools workshops are primarily run by the contracted Facilitators for each district. Various elements outside of Facilitator control can impact whether or not they go ahead in any given term. These include cross district workshops run in lieu of two separate workshops, or workshops not running due to clashing of different school's commitments. As a result the target of 24 workshops has not been met.
- 11.2. There are still an outstanding number of Waiora sessions, community engagement events and Enviroschools workshops which are scheduled until the end of the financial year, occurring after this report is due. Some of these are however weather dependent and so maybe re-scheduled into the new financial year. They are currently included in the 2016-17 targets.
- 11.3. Waiora continues to be a popular programme, with many schools adding Waiora to their school camp activities. There have also been many new schools engaging with the Waiora programme due to increase promotion in the Seedlings e-newsletter.



Ruahine School – Coppermine Creek



Freshwater Crayfish (Koura) - Coppermine Creek

12. SIGNIFICANCE

- 12.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Sarah Galley
ENVIRONMENTAL EDUCATOR

Chrissie Morrison
MEDIA AND COMMUNICATIONS MANAGER

ANNEXES

There are no attachments to this report.

Report No.	17-115
Information Only - No Decision Required	

FRESHWATER PROGRESS REPORT

1. PURPOSE

- 1.1. The purpose of this item is to introduce Members of Council's Environment Committee, the Freshwater Progress report for the period 1 March to 30 April 2017.

2. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 17-115 and Annex.

3. FINANCIAL IMPACT

- 3.1. There is no financial impact associated with recommendations in this paper.

4. COMMUNITY ENGAGEMENT

- 4.1. The Freshwater programme at Horizons is reported on publicly to the Environment Committee regularly throughout the year and also communicated via various forums and methods.

5. SIGNIFICANT BUSINESS RISK IMPACT

- 5.1. There is no immediate financial impact associated with this report.

6. SUMMARY

- 6.1. The Freshwater programme is the implementation of the water quality and quantity activity of the Annual Plan, which is primarily driven through riparian planting and fencing work in collaboration with landowners and multiple other stakeholders. The activity also includes a range of other water quality intervention work as a part collaborative work programmes such as the Manawatu Accord and Lake Horowhenua Accord.
- 6.2. The first 10 months of the year have seen a large number of enquiries and work being signed up to be completed by the end of June 2017. This has been aided by the Council decision to enable use of reserve funding for works. The focus of work from now until June 2017 is the completion of these signed up works. As an overview:
 - Across the region 24.1 kilometres of stream fencing and 36,519 riparian plants have been planted with another 62.3 kilometres of stream fencing and 57,060 riparian plants to be planted prior to the end of June 2017.
 - The Regional Freshwater programme has worked with 157 groups and provided grants to 30 projects so far this financial year. Works completed to date include 6.8 kilometres of stream fencing and 18,800 plants being put in the ground with another 21.2 kilometres of fencing and another 18,674 plants to be planted prior to the end of June 2017.

- The Manawatu Accord programme has completed 17.3 kilometres of stream fencing to date with a further 41.1 kilometres being signed up to be completed prior to the end of June 2017. To date 17,719 plants have been placed in the ground with another 38,386 to be planted before the end of June 2017.
- It is acknowledged that not all of the fencing and planting will proceed due to a shortage of fencers, wet weather or other reasons.
- In collaboration with multiple parties four applications were submitted to the Freshwater Improvement Fund by Horizons Regional Council. The applications included the Manawatu, Rangitikei, Whangaehu, and Lake Waipu Catchments. The applications are in total seeking \$51.1 million for a number of work programmes of which \$21.7 million was sought from the Fund.
- The High Court hearing for the Lake Horowhenua weed harvesting project was held on 15th May 2017 in Wellington with a decision likely to be months away. The construction of the fish pass on the Hokio Stream weir has been completed with riparian planting around the pass to occur prior to the end of June 2017, construction of the sediment trap has commenced and work with the horticulture growers has continued. Work with the Horticulture growers will be presented to Council via a separate item of this agenda.
- The Te Mana O Te Wai projects across the Rangitikei, Manawatu, Lake Horowhenua, and Nga Rauru projects are continuing with works ramping up for the winter planting season.

7. SIGNIFICANCE

- 7.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Logan Brown

FRESHWATER & PARTNERSHIPS MANAGER

Jon Roygard

GROUP MANAGER NATURAL RESOURCES & PARTNERSHIPS

ANNEXES

- A Freshwater Progress Report



1 Waterway Enhancement & Protection

1.1 Activity Overview

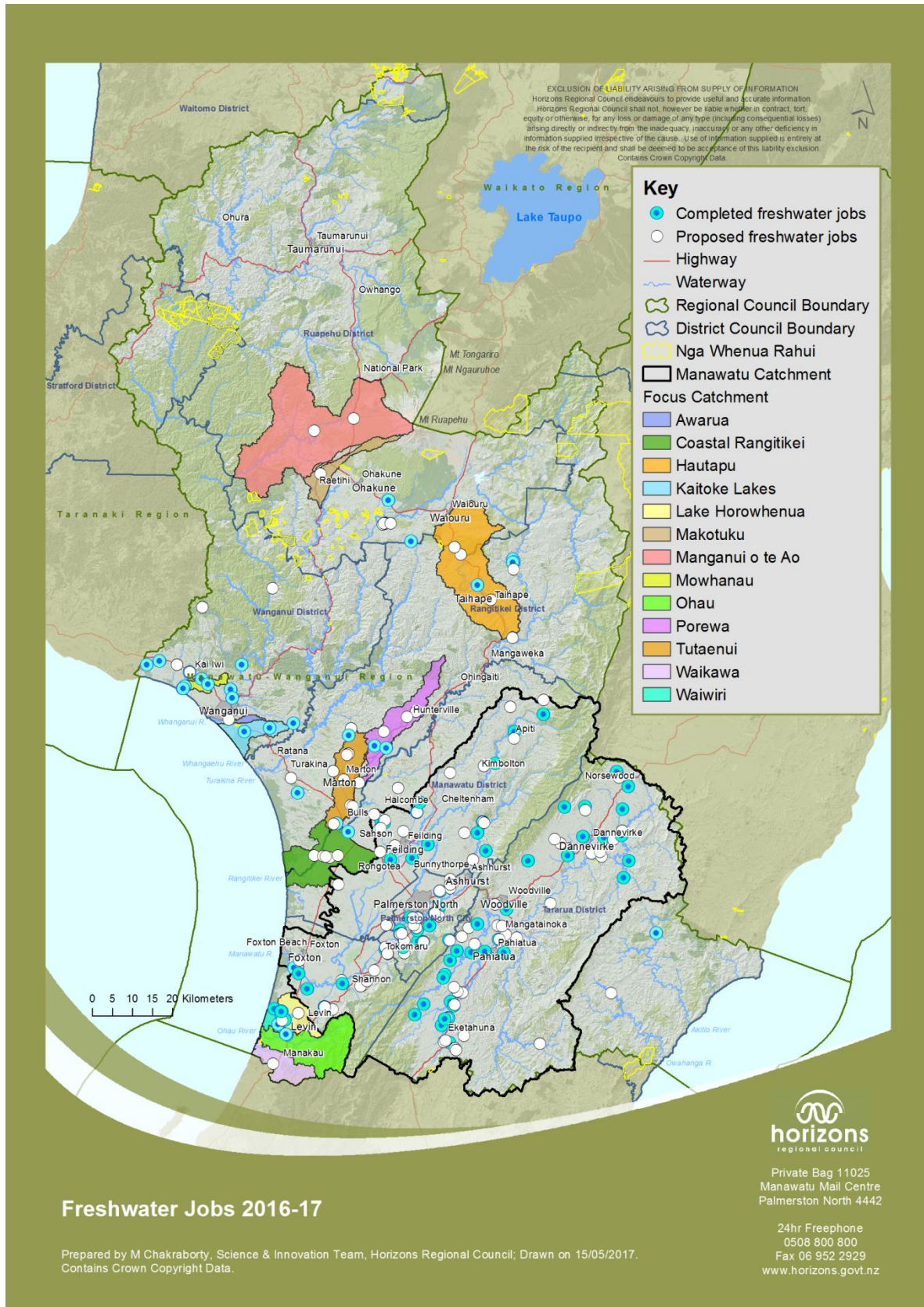
The Freshwater Team at Horizons is a small team that works closely with other Horizons teams as well as external people and organisations to implement works for water quality improvement. The Freshwater Team draws on the scientific monitoring work carried out by Horizons and other agencies to prioritise and focus implementation efforts. The team works with a number of external agencies including iwi and hapū, District and City Councils, industry and community groups to undertake collaborative projects and actively seeks funding from other sources, allowing the acceleration of works.

The team undertakes a range of work through Freshwater Clean-up Fund projects and Te Mana O Te Wai projects including support for large infrastructure upgrades for point source discharges, catchment level water quality interventions eg. sediment traps and lake weed harvesting, community projects and work with landowners such as fencing and planting.

The main activities of the team include riparian fencing and planting for water quality and fish habitat enhancement as well as the identification and enhancement of whitebait spawning habitat and fish passage improvement.

This activity report is arranged in four sections:

1. The Regional Freshwater programme;
2. The Manawatu Accord;
3. The Lake Horowhenua Accord; and
4. Te Mana O Te Wai projects (Rangitikei, Manawatu, Lake Horowhenua and Kai iwi).



Map 1: Locations of the proposed and completed (or partially completed) Freshwater Grants projects for the financial year 2016-17, including the Regional, Manawatu and Horowhenua programmes. Each point on the map represents one fencing and/or planting project.

2 Regional Freshwater Programme

2.1 Activity Overview

This programme focuses on the protection and enhancement of waterways across the Region. This section of the report does not include work in the Manawatu and Horowhenua catchments, which are reported in another section. The main component of the Freshwater team's work is supporting stock exclusion from waterways (via freshwater grants, advice and education), riparian enhancement and planting (where desirable), aquatic habitat enhancement, and supporting industry and community-led initiatives.

2.2 Targets

Table 2: Annual Plan performance measures for 2016-17 for the Regional Freshwater Programme (excluding the Manawatu Accord work for the Manawatu catchment and the Clean-up Fund for the Horowhenua Catchment).

Measure	Reporting Period				Allocated work	Target	% complete	% allocated
	1 st	2 nd	3 rd	4 th				
Continue to work with, and provide advice to, individuals, landowners, community and iwi groups to improve waterways ¹	88	124	157		N/A	25	628%	N/A
Freshwater grants are provided each year, with priority given to working in focus catchments and improving aquatic habitat ¹	14 grants claimed/ partially claimed 3.9 km of fencing and 5,800 plants	27 grants claimed/ partially claimed 6.3km fencing; 8,750 plants	30 grants claimed/ partially claimed 6.8km fencing; 18,800 plants		74 grants allocated 28 km of fencing 37,474 plants	20 grants	150%	370%

2.3 Activity Highlights

Work with individuals, community groups and iwi to improve waterways

2.3.1 The team has provided specialised advice to 157 projects so far this year. Of these, 74 have gone on to lodge a grant application while 83 haven't received grants so far in this financial year. There are some projects where the Freshwater team provided advice and logistical support but the funding comes via the Biodiversity, Land or Community Grant programmes. There are other projects where the landowners were provided advice and they had a grant approved but are no longer able to carry out the project within this financial year. There are also some projects where the applications are in process but not yet finalised so these are not yet counted in the grant figures, but as advice was given they are counted in the tally of contacts.

2.3.2 Staff collaborated with a wide range of stakeholders during this period to lodge four very comprehensive applications to the **Freshwater Improvement Fund** (FIF) which is administered by the **Ministry for the Environment** (MfE). These included projects for the Rangitikei, Manawatu, upper Whangaehu and Lake Waipu (Ratana) catchments. These projects were for works of a total value of approximately \$51.1 million for which approximately \$21.7 m was sought from the Fund. Contributions from district and city councils made up the bulk of the funding, with some contributions from Horizons programmes as well as some from stakeholder groups and iwi. MfE's initial decision on these applications is likely to be released in July this year.

- 2.3.3 Partnership projects with various iwi and hapū groups continued during this period, both as part of these FIF applications as well as following up the four current Te Mana o Te Wai projects.
- 2.3.4 Staff attended a workshop at MfE to discuss possible implementation of the proposed new stock exclusion regulations, should they go ahead. Media reports about these proposed regulations have resulted in many enquiries from landowners regarding their likely impact, and if the regulations go ahead these enquiries are likely to increase dramatically and put more pressure on staff resources.
- 2.3.5 Staff continued with their project in partnership with Whanganui River Enhancement Fund and Fish and Game on the Manganui o te Ao River. Weather delayed the removal of some large exotic trees and therefore the fencing work, but this is mostly on track now to be significantly progressed by the end of June.
- 2.3.6 Five school planting days are being planned around the Whanganui and Bulls area and are expected to be held in June and early July.

Environmental Grant applications supported

- 2.3.7 Seventy-four applications are approved and these are expected to be completed during this financial year, with 28 km of fencing and more than 37,000 native plants proposed. As is usual with this type of works, there have been 10 additional projects which were approved but have for various reasons been held up and therefore will not be completed by June 30 2017. The majority of these will be undertaken next financial year. There are a number of enquiries coming in now, some of which may result in grant applications which will be completed within this financial year.

2.4 Ngā Whenua Rāhui Work

- 2.4.1 The wet summer-autumn has seen more delays in fencing; however the fencing work at Tawanui Bush (110 ha) and Te Pā Bush (460 ha) is expected to be completed this calendar year.



Photo 1: A section of Tawanui Bush prior to fencing.

2.4.2 Fencing of the Hannah block (~52 ha) has been pushed back to October-November 2017 due to weather delays.

2.5 Spotlight on ... the success of the collaboration with Ngā Whenua Rāhui

2.5.1 Joe Martin has been working with **Ngā Whenua Rāhui** (NWR) since approximately 2005, and for the last nine years this has been under a formal contract between Horizons and NWR to cover his hours for this work. Ngā Whenua Rāhui is a government agency run through the Department of Conservation. It works with Māori landowners to protect areas of native bush, wetlands or culturally significant sites. This is primarily done by fencing to exclude stock, with some planting works if required. These sites are put under 'kawenata', which is similar to a QEII covenant but the timeframe is for 25 years rather than in perpetuity.

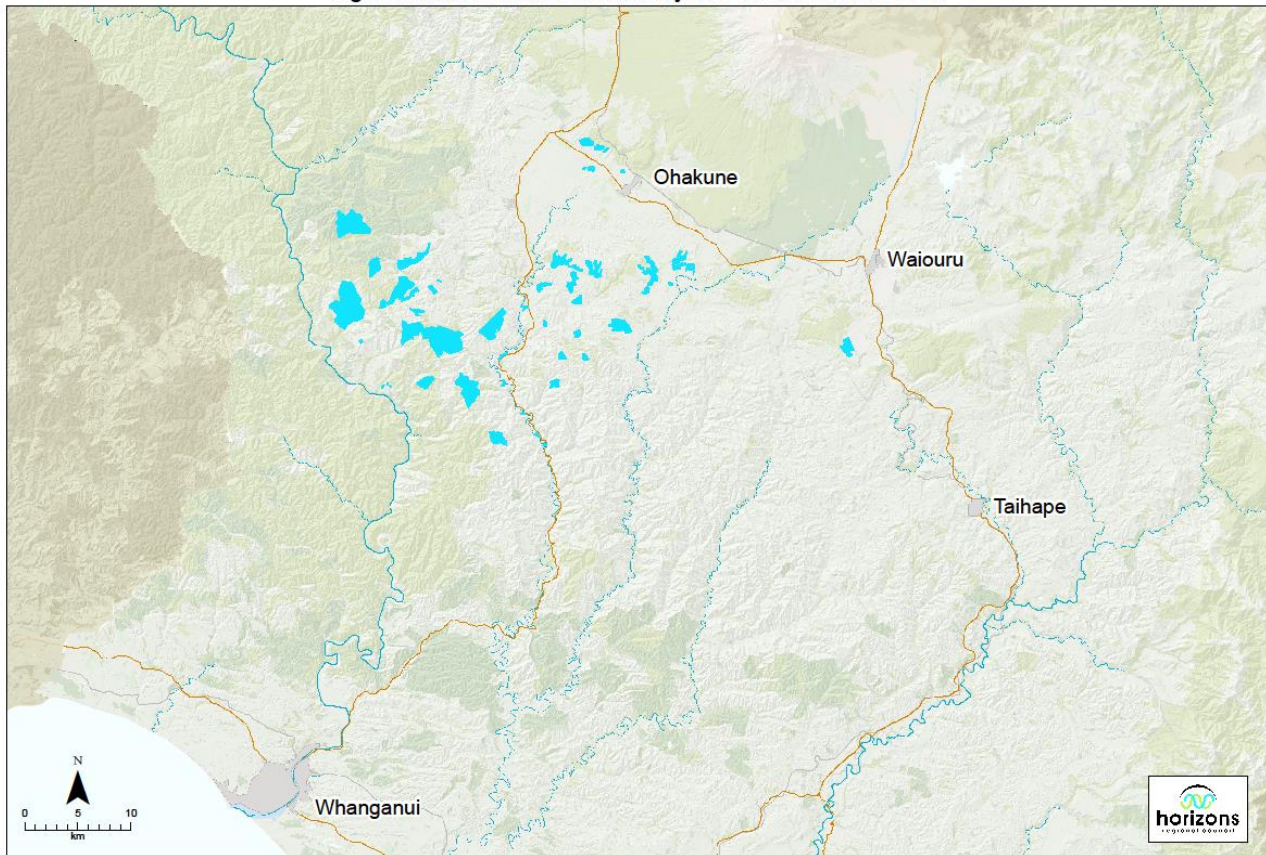


Photo 2 Joe Martin in 2014 surveying the Te Pā wetland, the first site fenced under the collaboration back in 2005.

2.5.2 Joe had a chance meeting with a NWR representative at a conference, and saw the potential for a strong partnership to protect sites within his traditional area of work - the Raetihi/Ohakune/Karioi area. These bush and wetland sites were extensive and required long lengths of fencing; therefore it would take a long time to complete if reliant on Horizons and landowner funding alone. He seized the opportunity to work alongside NWR to identify some impressive bush and wetland sites. He then initiated contact and worked with the iwi/hapū /trusts who own the land as well as the farm managers to develop practical solutions for often difficult fence lines, and developed funding applications to put forward to the NWR Board.

- 2.5.3 While Joe's work is recorded within this report as well as within some of the Biodiversity reporting. Reviewing the sum total of this work over the past 12 years has been a project done in conjunction with NWR staff members over the past few months, primarily based on their data.
- 2.5.4 The results from that review show just how big this programme has been, and is very impressive. Since 2005, Joe has assisted in protection of 57 bush remnant and wetland sites, totaling nearly 5,200 ha.
- 2.5.5 The funding coming into the region from Ngā Whenua Rāhui has totaled \$1.87 million (excluding GST). Of this, the fencing costs have been more than \$1.58 m with another nearly \$290,000 for planting and weed control.
- 2.5.6 Kiwi monitoring using automated recorders was another initiative of Joe's to determine the extent of brown kiwi on Māori-owned land in the Raetihi area. It has been very motivating for landowners and farm managers to know that they have kiwi present within their blocks, and has enhanced the active participation in restoration and protection works.
- 2.5.7 Following the kiwi monitoring, a prioritisation exercise was undertaken in conjunction with DOC and BNZ's "Kiwis for Kiwi" staff to determine where best to put intensive predator control. This had the aim of maximising the success of the populations. A predator control programme has now been set up at Ohorea Bush, which is a central site from which juvenile kiwi can disperse. This includes mustelid trapping as well as possum and goat control, and is funded by Atihau, Horizons and NWR. Longer term, the aim is to extend this programme to other nearby blocks.
- 2.5.8 In addition NWR, through Joe, has an intensive predator control programme underway at Anini on the Whanganui River Road. This is run in conjunction with NWR, Kia Wharite and Ernslaw One.
- 2.5.9 The map below outlines the extent of the Ngā Whenua Rāhui kawenata, work completed by Joe over this 12-year period.

Nga Whenua Rahui Kawenata by Joe Martin 2005 to 2017



Map 2: Joe Martin's 57 NWR kawenata approved and fenced between 2005 and 2017.

3 Manawatu River Accord

3.1 Activity Overview

The Manawatu River Leaders' Accord Action Plan includes an array of activities related to water quality, to achieve the goals of the Accord. This activity funds works to improve the water quality in the Manawatu Catchment as part of the Accord, including fencing off streams, riparian planting, improving fish passage and supporting community projects.

3.2 Targets

Table 3: Annual Plan performance measures for 2016-17 for Manawatu River Accord. These figures include Tu te Manawa projects.

Measure	Reporting Period				Allocated work	Target	% complete	% allocated
	1 st Jul to Oct	2 nd	3 rd	4 th				
Stream fencing. Measure lineal metres (km) of fencing installed (all types).	6.076 km	12.1 km	17.3 km		58.4 km	45	38.4%	129%
Improve native fish habitat and fish passage. Number of sites protected/enhanced.	24 planting sites & 17,719 riparian plants planted	24 planting sites & 17,719 riparian plants planted	27 planting sites & 17,919 plants & 2 fish passes		78 Sites 56,305 plants	10	270%	780%
Community involvement projects.	5 projects started, none completed	5 projects started, none completed	9 community projects underway, 1 completed		9	4	0%	225%

3.3 Activity Highlights

Manawatu River Leaders' Accord and Action Plan

- 3.3.1 An application to Central Government's Freshwater Improvement Fund was submitted on the 13 April. This application had input from all sectors of the Manawatu River Leaders' Forum' which helped shape the application. The application secured \$12.99 million of co-funding from within the Region and sought \$6.997 million from the fund for a work programme totaling \$19.987 million over five years.
- 3.3.2 The next Manawatu River Leaders' Forum is scheduled for the 3 August. Key topics identified for the meeting include reporting on progress against the new Action Plan in 2018, an update on the iwi-led Te Mana O Te Wai project and an update on the Freshwater Improvement Fund.

Manawatu River Accord Targeted Rate

- 3.3.3 During the reporting period staff continued to field more enquiries for funding for fencing and planting projects. This has resulted in more applications and the fencing target has now been surpassed in applications. Staff are now contacting all applicants who are still to complete their fencing and or planting projects to confirm completion prior to the end of the financial year.
- 3.3.4 17.3 km of stream fencing has been completed with a total of 58.4 km planned for completion in applications. 17,919 plants have been planted so far this financial year at 27 sites and two fish barriers were fixed during the reporting period. It is noted that the allocation of stream fencing jobs is now to well above the 45 km target.
- 3.3.5 A floating fish ladder was installed on a perched culvert near Whirokino and baffles were installed in a culvert where velocity is a barrier to fish passage intermittently. The floating ladder is ideal in tidal situations or where the bedrock is unsuitable to fasten the end of the fish ladder.

3.3.6 Councillors Gordon, McKellar and Sheldon assessed a further round of community fund applications during the reporting period. Another four community projects have been funded through this second round of applications for this year. These include: Stony Creek weed control and riparian planting; Mangaone West Landcare Group riparian planting; Gordon Consulting Urban Eels involves the development of a interactive platform on the Turitea Stream accessible via the new footpath and cycleway, and a Save Our River Trust project involving the dredging of the upper corridor of the Foxton Loop subject to consent conditions.

Item 8



Annex A

Photo 3 Baffles installed in a culvert on Stantial's drain, a tributary to the Mangaone near Shannon.

4 Lake Horowhenua Accord and Lake Horowhenua Freshwater Clean-Up Fund

4.1 Activity Overview

The Lake Horowhenua Accord is a partnership to address water quality issues in Lake Horowhenua. Horizons has the lead role in delivering on the Lake Horowhenua Freshwater Clean-up Fund, which consists of eight projects designed to contribute to the restoration of Lake Horowhenua.

4.2 Targets

Table 3: Annual Plan performance measures for 2016-17 for the Lake Horowhenua Accord and Freshwater Clean-up Fund.

Measure	Reporting Period				2016-17 Actual	Target	%
	1 st Jul. to Oct.	2 nd	3 rd	4 th			
Obtain consents and operate a lake weed harvester on Lake Horowhenua (Environment Court process for consents completed)* ¹	Consents obtained and appealed	Consents obtained and appealed	Consents obtained and appealed			Consents obtained	0%

*¹ AP targets

4.3 Activity Highlights

The Lake Horowhenua Accord and Freshwater Clean-Up Fund

- 4.3.1 The 11th quarterly report was submitted to MfE on 28 April.
- 4.3.2 The fish pass on the Hokio Stream weir has been constructed and commissioned.
- 4.3.3 Work on the sediment trap next to the Arawhata Stream has commenced, with the site having the drains opened up and the surface scraped back. Progress on the excavation has been delayed due to wet weather.
- 4.3.4 The hearing in the High Court relating to the operation of the weed harvester on Lake Horowhenua is scheduled for the 15 May.



Photo 4 The fish pass on the Hokio Stream weir was commissioned on 5 May. The weir is submerged in this photo but is situated from the small island in the centre of the photo out to the far bank of the Hokio Stream. The fish pass is the rock lined loop in the foreground. This has a very low gradient that will allow all fish species to access the lake.

5 Te Mana O Te Wai Projects

5.1 Activity Overview

The Te Mana o Te Wai Fund is administered by Ministry for the Environment and has had one round of project funding open to iwi/hapu/marae for freshwater restoration works. Horizons has supported a number of applications and has had four projects succeed in their funding bids, all of which have begun works. Approximately half of the available funding from the Te Mana o Te Wai Fund has been secured for work in Horizons Region, although it is noted that one of the projects does work in both the Taranaki and Manawatu-Wanganui regions. The projects run over a two year time frame with two officially beginning on 1 March 2016 and two on 1 July 2016. All four have now been announced.

5.2 Activity Highlights

Rangitikei – Ngā Puna Rau Rangitikei

- 5.2.1 During this period pre-planting weed control was undertaken at the Moawhango and Paharakeke planting sites.
- 5.2.2 A site visit to Lake Oporoa (Utiku) was held with the Trustees of the main land block, as well as the adjacent landowner and iwi representatives in early April. During this time a fenceline and planting plan was agreed. Monitoring of this site is still underway with a continuous buoy recording water quality data having been in place since February. This buoy is expected to be removed in early June.



Photo 5 Installation of monitoring buoys on Lake Oporoa (also known as Lake Poroa), Utiku.

Manawatu – Tu te Manawa

- 5.2.3 The sub-contract agreement between Horizons Regional Council and Rangitane o Tamaki Nui a Rua Incorporated has now been signed by both parties and Horizons staff continue to support the project through the stream fencing and planting component as well as other aspects of the wider project.
- 5.2.4 Horizons staff attended a hui at Te Ahu a Tūranga Marae in Woodville regarding the Te Kauru Taiao Strategy.

Lake Horowhenua – Te Kakapa Manawa o Muaūpoko – The Heartbeat of Muaūpoko

- 5.2.5 During this reporting period Horizons staff have been working on the development of the lake report card as well as the riparian fencing and planting component of the project. Further planning for the lake bed sediment trap work has also been undertaken.

Ngaa Rauru – Te Kaahui o Rauru Waterways Restoration

- 5.2.6 Over this period significant progress was made with willow removal along approximately 800 m of the Kai Iwi stream, and the area has also been fenced. This will allow the three marae along that reach of stream to access the stream and will also reduce the flooding risks.
- 5.2.7 Fencing work has been completed in the Ototoka catchment with some weed control undertaken. Plans are being finalised for planting both sites in June, with the Corrections Department helping the marae representatives plant 4,200 native trees/harakeke.



Photo 6 Fence at Ototoka Stream gully immediately upstream of SH3 and William Birch Pools. The area to the right will be planted with 4,200 native trees and flaxes.

5.2.8 The Okehu stream at SH3 site has some very large trees adjacent to the stream and staff are working with the NZ Transport Agency to have these removed prior to fencing and planting works going ahead.

6 Activity Progress Report

Project	Key Deliverables	Progress to Date
Working with individuals, community groups or iwi to improve waterways.	Work with 25 individuals, community groups or iwi.	<ul style="list-style-type: none"> There have been 157 contacts over this financial year with 83 being provision of advice only (some grants pending from that advice). Councils and community groups towards freshwater improvement projects and connecting the communities back to their rivers/streams. Three large Freshwater Improvement Fund bids submitted for the Rangitikei, upper Whangaeahu and Lake Waipu (Ratana) catchments.
Environmental Grant applications supported.	20 Environmental Grants supported	<ul style="list-style-type: none"> 74 Environmental Grant applications have been lodged and approved, which will be going ahead this year. Some applications that will not be done by June 30 have been moved into next financial year.
Nga Whenua Rahui (NWR)	Works completed in accordance with the contract to NWR, including assessing proposal for protection of bush remnants, wetlands and stream sites on Māori land.	<ul style="list-style-type: none"> The overall programme has in the last 12 years brought approximately \$1.87 million into the Region in terms of fencing, planting and pest control. This has also protected nearly 5,200 ha of bush and wetlands under kawenata. Fencing at Te Pa and Tawanui continues, other fencing has been delayed due to the weather.
Manawatu River Leaders' Forum (MRLF)	Meetings completed, Action Plan implemented.	<ul style="list-style-type: none"> Hui a iwi held at Caccia Birch on 26 October 2016 MRLF held on 30 November 2016 Sector group meetings for scoping of projects for Central Government's new Freshwater Improvement Fund Application for Freshwater Improvement Fund submitted on 13 April 2017
Manawatu Accord implementation work	Work to complement the goals of the Manawatu Accord.	<ul style="list-style-type: none"> Allocations to date are 58.4 km of fencing proposed, 56,305 riparian plants planned and 2 fish barriers fixed. Decisions on the second round of MRA community grants have been made.
Lake Horowhenua Accord	Regular meetings and progress on the Lake Accord projects	<ul style="list-style-type: none"> Lake Horowhenua Accord Group meetings held on 4 July and 28 September, 5 October 2016 and 28 February 2017.
Lake Horowhenua Clean-Up Fund	Lake weed harvesting	<ul style="list-style-type: none"> This project is completed from a financial perspective with MfE. In Oct 2016 NIWA undertook a further round of weed mapping to help inform the weed harvesting methodology. Consents have been obtained, with an appeal to the High Court received. The appeal relates to the weed harvesting project only. Appeal submissions were heard 15 May 2017.

Project	Key Deliverables	Progress to Date
	Boat wash facility	<ul style="list-style-type: none"> The boat wash was installed in 2014 and this project is completed.
	Riparian fencing and planting	<ul style="list-style-type: none"> This project has now been completed. 2 community planting days have been held. 7,100 plants planted and 4.3 km of fencing, 2 signs erected, and 1 fish ladder installed.
	Urban stormwater treatment	<ul style="list-style-type: none"> Horowhenua District Council has confirmed its withdrawal from the implementation of stage one of this project No MfE funding has been spent on this project.
	Sediment trap	<ul style="list-style-type: none"> Consents have been obtained. Archaeological authority gained. Construction started in April.
	Integrated stormwater management plan	<ul style="list-style-type: none"> \$300,000 of Horizons' Long-term Plan budget has been allocated for the upgrade of the Arawhata stormwater network, including 6 km of drain upgrades and replacement of culverts. Upgrades have started and 3 culverts have been replaced. 368 ha of cropped land has been mapped to identify areas of ponding and high risk soil loss areas. Plans are being implemented by the growers to reduce the impact of storm events and soil loss into the drainage network and ultimately finding its way into the lake.
	Sustainable milk production plans	<ul style="list-style-type: none"> This project has been completed with all 10 farms within the catchment mapped and plans delivered and discussed. All of these farms are now operating with resource consents.
	Fish pass on Hokio Stream	<ul style="list-style-type: none"> Fish pass has been constructed and opened with blessing on 12 May 2017.

Clare Ridler
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GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS

Report No.	17-116
Information Only - No Decision Required	

SCIENCE PROGRESS REPORT

1. PURPOSE

- 1.1. The purpose of this item is to introduce Members of Council's Environment Committee, the Science and Innovation Progress report for 1 March to 30 April 2017

2. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 17-116 and Annex.

3. FINANCIAL IMPACT

- 3.1. There is no financial impact associated with recommendations in this paper.

4. COMMUNITY ENGAGEMENT

- 4.1. The Science and Innovation work programme at Horizons is reported on publicly to the Environment Committee regularly throughout the year and also communicated via various forums and methods.

5. SIGNIFICANT BUSINESS RISK IMPACT

- 5.1. There is no immediate financial impact associated with this report.

6. SUMMARY

Water Quality and Quantity Monitoring

- 6.1. March and April are traditionally busy for the Science and Innovation Team, with field surveys and investigations often scheduled for the end of summer and early autumn when the weather is more settled and conditions in our waterways are suitable for low flow gauging and water quality sampling, as well as surveying fish and macroinvertebrates. Unfortunately the persistent rain throughout the 2016-17 "summer" has made the delivery of our field programmes rather challenging this year. Much of the programme has been delivered, largely through the team remaining agile and responsive to opportunities as they arose. However, some aspects of the biomonitoring and research programme have been deferred to 2017-18.
- 6.2. A recent report 'Aquatic Invertebrate Communities of the Manawatu-Whanganui Region – Trends in River Health' (1999-2016) by John Stark has now been received and the results are reported in our 'Spotlight On' section of the Science and Innovation progress report.
- 6.3. The Cawthron Institute's draft stocktake report of available trout data has been received and will be finalised by early June. Drafting of a **Memorandum of Understanding** (MoU) between Fish and Game and Horizons is underway. The MoU covers the sharing and use of data and information identified in the report for the benefit of our community.

Swimmability

- 6.4. The announcement from the **Ministry for the Environment** (MfE) around the Clean Water 2017 package and changes to the **National Policy Statement for Freshwater Management** (NPS-FM) required a redirection in staff time to ensure we could respond not only to the proposal itself, but compile data and information to better understand the implication of the proposed changes. We are now working closely with MfE to validate their national model with our regional data, and work through the potential mitigation packages that will help us reach the national-wide goal of 90% swimmable rivers by 2040. This work programme was further discussed in a Strategy & Policy item presented 7 June 2017.

Drinking Water

- 6.5. The first phase of the Havelock North Inquiry into the contamination of the town's public water supply is now complete. In August 2016, around 5,500 people became ill from campylobacter, resulting in widespread outbreak of gastroenteritis in the town. The contamination has since been traced back to a shallow groundwater supply contaminated by sheep faeces that had washed into nearby waterways and been drawn down into the pumping bore.
- 6.6. The initial inquiry report highlights a number of areas for potential improvement in the management of public water supplies throughout New Zealand. To ensure Horizons is meeting its requirements regarding the protection of drinking water quality, we are presently scoping a work programme to carry out a stocktake of water supplies in the Horizons Region and identify any at-risk supplies. This work programme is being carried out in consultation with local Public Health Officers and Territorial Authorities, following an initial meeting with our local Drinking Water Assessors.
- 6.7. A briefing paper to our Region's Chief Executives is now being prepared to outline a proposed work programme. This is likely to include an initial stock take and risk evaluation, a bench-marking exercise to establish risk to all supplies and the establishment of an ongoing management system.

Stormwater

- 6.8. Nationally, increasing attention is being drawn to the management of urban stormwater and its effects on water quality and ecosystem health. Policy directives, such as the **National Policy Statement for Freshwater Management** (NPS-FM) draw attention to the way in which urban stormwater is being accounted for in terms of its contaminant contribution to urban waterways.
- 6.9. An initial staff workshop was held in late March and an initial gap analysis and opportunities assessment will be completed by Morphum Environmental Ltd. during June 2017. This is envisaged as the first stage of an ongoing work stream that will continue into the 2017-18 reporting year and beyond.

Sediment Transport

- 6.10. A workshop was held with Horizons staff and research partners in March to scope a long term research programme around sediment transport and its effects on flood scheme infrastructure as well as water quality and ecosystem health. A key focus will be to continue our work around the Oroua River investigation, highlighted in a 'Spotlight On' section in the Science and Innovation progress report.

DoC Estuarine Systems of the Lower North Island Report

- 6.11. A long-awaited report by the Department of Conservation on the Estuarine Systems of the Lower North Island has recently been released. The document brings together a large amount of information on the estuarine ecosystems of the lower North Island and assesses the "current" state and future potential of 48 sites from the Manawatu river mouth on the west coast to the Waimata river mouth on the eastern Wairarapa coast. The authors also

present a ranking system that has been developed to guide decision making to prioritise ongoing management. The report covers many of the estuaries in the Region and is a valuable addition to the information Horizons is presently collecting on the ecological health of the Region's estuarine systems.

State of Environment Report 2018

- 6.12. **State of Environment** (SoE) reporting provides a mechanism to inform the public about the state of the Region's natural environment on a regular basis. The last SoE report was delivered in 2013, and planning and preparation for the 2018 SoE report is now underway. A steering group has been established to oversee the production of the report and other related material, which we are aiming to release in May/June 2018. Further information on the report work programme was provided to Council via Strategy and Policy committee in June.

7. SIGNIFICANCE

- 7.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Abby Matthews
SCIENCE & INNOVATION MANAGER

Jon Roygard
GROUP MANAGER NATURAL RESOURCES & PARTNERSHIPS

ANNEXES

- A Science Progress Report



Science and Innovation

1 Waterway Enhancement & Protection

1.1 Activity Overview

Water is an important resource that provides for the cultural, environmental and economic needs of our Region. The Science and Innovation Team serves the Water Quality and Quantity activity of Horizons' Annual Plan through a range of science monitoring and research programmes that track changes in the water resource and inform decision-making around water management.

Water Quality and Quantity activity during 2016-17 is focussed on improving our knowledge and understanding of the Region's water resource. Additional investment by Council will enable Horizons to comply with the revised **National Policy Statement for Freshwater Management 2014** (NPS-FM), which requires a monitoring plan, and freshwater quantity and quality accounting systems. Developing further understanding around the thresholds for managing contaminants to ensure the health of our freshwater systems is also a key outcome.

In addition to meeting the objectives of the NPS-FM, these programmes will inform the implementation of Regional Growth initiatives through the Accelerate25 programme. Finally, this information will also be useful to inform decision-making, **State of Environment** (SoE) reporting and, in some cases, measurement of policy effectiveness.

The provision of public information is reported in the Environmental Reporting and Air Quality Monitoring section of this report.

The Water Quality and Quantity monitoring and research programmes are measured against three performance measures:

Measure	Reporting Period					Actual	Target
	1 st	2 nd	3 rd	4 th	5 th		
Track changes in the health of the Region's water resource ^{*1}	33%	33%	16%			83%	100%
Inform policy and non-regulatory programme development ^{*1}	33%	33%	16%			83%	100%
Assess policy implementation effectiveness ^{*1}	33%	33%	16%			83%	100%

^{*1} AP/LTP targets

Further reporting to Strategy and Policy Committee during 2016-17 will see the Science and Innovation team deliver fully on our annual performance measures.

1.2 Activity Highlights

This report covers the reporting period from 1 March 2017 to 30 April 2017. A summary of the progress made against the targets for the year is in the table at the end of this section.

Water Allocation and Groundwater Monitoring

Context

The science and innovation team oversees the management and reporting of the water allocation and groundwater quality monitoring programmes, including work completed as a part of the core hydrology programme. This includes a wide range of environmental monitoring programmes, such as the measurement of river levels, flow, rainfall, soil moisture groundwater levels and quality (including monitoring for seawater intrusion), and the quantification of water use as part of the National Regulations on Water Measurement and Reporting, One Plan monitoring and reporting, and future freshwater accounting as required by the NPS-FM.

Activity

1.2.1 The telemetered water metering programme continues, although due to the relatively high rainfall experienced over the irrigation season most takes appear not to have been used to the same extent that they usually would be. Non-operation of systems has meant that inspection and repair work carried out by our field team has not been able to be completed in many cases. While the work will continue over the winter season where possible, this is likely to mean a heavier than usual workload for the field team at the beginning of the next irrigation season. Planning will be put in place to manage this. Table 1 summarises Horizons' current water metering status against the National Regulations on Water Use Measurement and Reporting.

Table 1: Summary of telemetered water meter status

	Consented rate of abstraction – Reg's categories			
	>20 L/s	10-20 L/s	5-10 L/s	<5 L/s
Number of consents	294	113	102	59
Number of water meters	276	104	48	20
Number of telemetry units	239 – 2 units to be removed as not in use	74	16	2
Number of water meters verified	245	82	23	9
Consents in progress or yet to install infrastructure	12 to install infrastructure (3-regs don't apply, 3 to surrender consent)	9 to install infrastructure	2 not set up, 53 to confirm flow meter is installed/ install infrastructure.	37 to confirm flow meter is installed/install infrastructure. 2 not required to install meter

1.2.2 The technical team has been very busy at the 'systems' end of the project, working on changing over data files to work with the new IRIS location identification codes and ensuring all is in place for changeover to the IRIS monitoring module when it is ready. Our Catchment Information team assures us that this will be in place before next irrigation season.

1.2.3 Staff from across the Science, Regulatory and Rural Advice teams attended a "Fundamentals of Irrigation" course during April. Designed and delivered by IrrigationNZ specialists, the course

covered the principals and basics of soil, crop and climate relationships, system types, hydraulics and the importance of good irrigation design, operation and maintenance.

- 1.2.4 The course provided a good overview for newer staff and some useful information and 'food for thought' for all. The HRC team is looking at developing some tools and information alongside IrrigationNZ to help support good practice and irrigation management in the Manawatu-Whanganui region. The team will also be partnering with IrrigationNZ to offer some training and advice to new, existing and potential irrigators wanting to work towards 'best practice' management of their own systems.
- 1.2.5 Cawthron Institute's work on behalf of Horizons, with Fish and Game, on stocktaking available trout data is ongoing but making good progress. The report should be finalised by the end of May. Drafting of a Memorandum of Understanding between our organisations is underway. This covers the sharing and use of data and information identified in the report for the benefit of our community.

Water Quality Monitoring

Context

The collection of accurate water quality information from sites throughout the Region is required for a range of outputs that seek to improve our knowledge of the current state and changes in water quality over time. This programme includes monitoring water quality in freshwater environments such as rivers and lakes, and our coastal and estuarine environments, along with improving our understanding of aquatic ecosystem health.

Activity

- 1.2.6 The monitoring programmes described in this section are considered long term programmes. Information gained from these long term programmes is utilised to underpin reporting on the state of the environment. Reporting for the 2016-17 year includes:
- the development of summary reports for target catchments for nutrient management
 - reporting on drivers of periphyton growth
 - reporting on the state and trends of macroinvertebrates in the region
 - supply of information to the LAWA website
 - provision of data to research programmes, the public and consultants upon request.
- 1.2.7 During the last Environment Committee meeting in April, a question was raised regarding the Science team's activity in monitoring metals in the environment. Horizons does undertake monitoring of certain metals. Surface water monitoring of metals largely focuses around point source discharges, and is often associated with consent conditions. These discharges can be industrial; storm water; or from wastewater where treatment with aluminium sulfate or other such flocculants occurs. The concern in this context is largely around the long term bioaccumulation of metals in aquatic invertebrates, plants and fish.
- 1.2.8 Metals are regularly monitored as part of the groundwater state of the environment programme. These parameters include arsenic, boron, calcium, iron, magnesium, manganese, potassium, silica, and sodium. It is standard practice to test for a range of metals in groundwater science as it forms a key part in characterising the type of water within an aquifer. Groundwater is typically in contact with rocks and sediment for lengths of time much greater than surface water, so the dissolved mineral content is used to describe the 'chemical facies' of groundwater.

- 1.2.9 The Science and Innovation team has prepared summary information on the environmental impacts of feedlots for the Council workshop. The summary focuses on leaching and run-off from feedlots, drawing mostly from international research and standard practices surrounding them.

Contact Recreation

Context

Our contact recreation monitoring programme provides information on the suitability of freshwater and coastal sites with regard to the health risks of swimming and water sports and the safety of gathering shellfish in the coastal environment. It also provides information on the effectiveness of the One Plan for meeting recreational values for our freshwater and coastal environments. This programme includes monitoring for indicator bacteria (*E. coli* and enterococci) and cyanobacteria.

Activity

- 1.2.10 Monitoring during the 2016-17 year focused on investigating a wider range of swimming spots around the region. As a means of achieving this, the number of sites monitored was increased from 17 to over 80 sites. This included partnering with staff from Ngati Rangī (Ohakune/Raetihi area) in order to better increase our coverage across the region. Data was uploaded to the LAWA website on a weekly basis and a close partnership with Mid Central District Health Board staff was maintained in order to ensure public health issues or concerns arising from this monitoring were dealt with in a timely fashion.
- 1.2.11 Monitoring of these contact recreation sites finished in the last week of April and analysis will be compiled in coming months. In particular, national conversation (at the SWIM meeting held in May 2017) identified the need for real time modelling of contact recreation data where appropriate, and applauded Horizons for undertaking some of this work already, particularly regarding our development of flow/*E. coli* relationships. The science team will investigate opportunities to advance this work further.
- 1.2.12 A joint project with MFE is using Horizons data as a case study region to develop a response to the **Ministry for Environment (MfE)** letter to regional councils requesting information on how each regional council would contribute to nationwide goals for improvements in swimmability. This project is further discussed in a Strategy & Policy item in June.

Innovative Science and Research

Context

Horizons undertakes a number of research programmes that aim to advance our understanding of natural systems and processes, and develop tools, techniques and technology to improve our ability to monitor and measure them. This year two of these projects are focusing on nutrient update by periphyton.

Activity

- 1.2.13 Horizons frequently uses water quality monitoring results as an indication of the likely nutrient limitation for periphyton growth within waterways. A common assumption is that nutrients that are available in the water column are directly related to the nutrients needed for periphyton growth, which fails to account for other potential sources of nutrients, such as those stored in sediments.
- 1.2.14 An intended research programme for the 2016 – 2017 financial year had revolved around undertaking nutrient diffusing substrate monitoring as a means to further assess the link between water column nutrient levels, and periphyton growth. This has requirements around suitable flow

conditions (i.e. extended periods of predicted low and/or stable flows) that did not eventuate during the summer or early autumn period. Whilst planning and preparation for this work did occur, the work itself was not able to be undertaken. Our intention is to complete this work programme in 2017-18 if conditions are favourable.

- 1.2.15 Many point-source discharges to rivers have significant proportions of their nitrogen content as ammonia. Traditionally, ammonia has only been managed for its acute and chronic toxic effects on aquatic life, and not for its contribution to periphyton growth. Recent work around some point-source discharges has raised a further question as to whether ammonia is a primary driver of growth of nuisance periphyton downstream of some of these discharges. Ammonia is known to be preferentially taken up by periphyton but the remaining question is: does this preferential uptake of nitrogen in the form of ammonia result in faster/more excessive growth compared to similar levels of nitrogen in the form of nitrate?
- 1.2.16 The results of this work potentially have large ramifications for point-source discharge treatment and management. This project is larger than what HRC can singularly fund and there are also multiple parties that will benefit from this knowledge. In light of this Horizons staff have coordinated a project including securing co-funding from other regional and district councils to complete this work.
- 1.2.17 During the reporting period, preliminary results were received from NIWA which indicates preferential uptake of ammonia by periphyton. This may have implications for the management of point source discharges high in ammonia. A final report of the outcome of the study will be available to Council later this year.

Resource Accounting

Context

The focus of this work programme is to meet the requirements of the **National Policy Statement for Freshwater Management 2014** (NPS-FM), which requires Horizons to establish freshwater accounting systems for both water quantity and quality. This ultimately sets the foundation for a cohesive catchment management-based approach to freshwater management.

Activity

- 1.2.18 Horizons in partnership with DairyNZ, Landcare Research and Massey University has developed a set of accounts for the Rangitikei catchment, and a draft report is now being peer reviewed by staff and research partners. Council can anticipate a report on the results early in the new financial year (2017-18 year).
- 1.2.19 During the reporting year, additional water quality and flow data across the Region was processed by Horizons staff and provided to the Fertiliser and Lime Research Centre (FLRC). This data set incorporates all sites at which in-river nutrient load calculations to be determined. These data are now being processed into load estimates, with an initial focus on the Upper Manawatu catchment, to support One Plan decision making around the implementation of the nutrient management rules.

Water Quality Data Management

Context

Water quality data collected in the field is entered into our Hilltop water quality data archiving system, via our provisional archive. It is then processed and quality coded and pushed to our final water quality archive. Combined these two archives hold all of our standard water quality monitoring data spanning from 1989 to

present. Our water quality archive provides data for analyses and data requests as required and we are constantly seeking to improve the process and the integrity of our data.

Activity

- 1.2.20 With the introduction of a new National Environmental Monitoring Standard (NEMS) for Discrete Water Quality pending, water quality data will be processed and quality coded in a more consistent way across the different Regional Councils. Horizons Regional Council was among the first to routinely use quality coding for environmental monitoring data and the framework that we developed has informed the development of a standard approach.
- 1.2.21 At Horizons, we continually seek to improve our systems and processes to increase efficiency in our processes, while ensuring that people are informed as to the quality of the data that they are using. Quality coding in the past has been a time consuming process as all data was checked and coded manually. The Science and Innovation team has been working with our Catchment Information team to automate a significant part of this process by developing a python script called Datatamer. The result will be a process that enables batch processing of data and a significantly smaller amount of data to be manually quality coded. This is an exciting development for the team and wider organisation, particularly as this work is now in the final stages of completion.
- 1.2.22 This work is an important part of the continuous improvement work to ensure Horizons water quality data archives are robust.

Stormwater

Context

Nationally, increasing attention is being drawn to the management of urban stormwater and its effects on water quality and ecosystem health. Policy directives, such as the **National Policy Statement for Freshwater Management** (NPS-FM) draw attention to the way in which urban stormwater is being accounted for in terms of its contaminant contribution to urban waterways. Opportunities to obtain global consents for urban discharges are increasingly being explored.

To date, little monitoring or research carried out in the Horizons Region around stormwater and its contribution to water quality. We are also aware that managing quantity will also be important for our urban areas that are likely to grow and develop. Our aim is to develop a work programme that aims to improve process and outcomes around stormwater consenting and management in the Horizons Region.

Activity

An initial staff workshop was held in late March to scope and identify a longer-term stormwater work programme. To inform the development of this work programme, an initial gap analysis and opportunities assessment will be completed by Morphum Environmental Ltd. during June 2017. This review will include staff from both Horizons and our territorial authorities, and give consideration of existing institutional capacity, data availability, environmental drivers, and current relevant initiatives such as the Manawatu Accord, Horowhenua Accord and Accelerate-25.

This is envisaged as the first stage of an ongoing work stream that will continue into the 2017-18 reporting year and beyond. Throughout the development of this work programme, we will be looking to identify opportunities to increase technical capability, data and information transfer, and consistency with design and delivery across the Region.

Drinking Water

Context

The recent enquiry into the contamination of Havelock North public water supply has highlighted a number of areas for improvement in the management of public water supplies throughout New Zealand. To ensure Horizons is meeting its requirements regarding the protection of drinking water quality, we are presently scoping a work programme to carry out a stocktake of water supplies in the Horizons Region, identify any at-risk supplies, and work with the appropriate agencies to ensure these risks are mitigated now and in future.

Activity

An initial review of the Havelock North inquiry (Phase One) is being provided by our consultants Pattle Delamore Ltd. This will provide an overview of potential areas Horizons may wish to focus attention, prior to the outcome of the second phase of the inquiry which will be released in December. This work programme is being carried out in consultation with local Public Health Officers and Territorial Authorities, following an initial meeting with our local Drinking Water Assessors.

A meeting of the Chief Executives of the Territorial Authorities, Mid Central Health and Horizons has been scheduled for early June. An outline of a proposed work programme will be presented for approval. This is likely to include an initial stock take and risk evaluation, a bench-marking exercise to establish risk to all supplies and the establishment of an ongoing management system.

Information pertaining to water quality where it is used for human consumption was prepared by the S&I team in 2014. This information will be reviewed, updated (if necessary) and redistributed to water users around the Region. Further information around bore security and groundwater consents will also be made available to the public.

1.3 Spotlight on Macroinvertebrates

Overview

- 1.3.1 Macroinvertebrates are present within waterways throughout the year and generally have annual life cycles. This means that they are exposed to all in-stream conditions (floods, nutrients, sediment and algae) over a period of time within a waterway. The monitoring of macroinvertebrate communities therefore provides an integrated indication of the health and life supporting capacity of waterways over annual time periods. While invertebrates respond to all environmental perturbations, they are particularly good at detecting the effects of land use practices on aquatic health.
- 1.3.2 Freshwater macroinvertebrate monitoring is a fundamental part of our state of the environment monitoring. The **Macroinvertebrate Community Index** (MCI) targets are specified in the One Plan for each sub-zone, so it is crucial that we carry out macroinvertebrate monitoring to inform decision-making around activities that might impact the instream health of our freshwater systems. Our macroinvertebrate monitoring programme continues to grow to address spatial gaps in the regional network and better understand our aquatic ecosystems. Horizons' **State of the Environment** (SoE) monitoring programme was expanded from 30 – 35 sites prior to 2009, to around 62 sites in 2012. In 2014-15 we sampled 73 sites, with 82 sites sampled in 2016.

2016 State and Trend Report

- 1.3.3 A recent report 'Aquatic invertebrate communities of the Manawatu-Whanganui Region – Trends in river health' (1999-2016) by John Stark has now been received and the results are reported herein.

1.3.4 Table 2 shows the MCI biotic class results for 2016 with statistically significant trends displayed as Improving ↑↑ and Degrading ↓↓. Despite the remaining results showing statistically insignificant trends that are difficult to interpret, for clarity we have elected to display the direction of trend. Trend direction whether negative or positive, is based on a LOWESS fit linear regression line through the full time series. So, while the slope of the trend line may change in direction throughout time, the overall trend is applied across the entire sampling record. As such, it is inappropriate to draw any conclusions from this data and the information should be treated with caution.

Table 2: MCI biotic class results for 2016 (Stark, 2017). Statistically significant trends are displayed as positive ↑↑ or negative ↓↓. Statistically insignificant trends are shown in terms of trend direction: positive ↑, negative ↓, or indeterminate – (i.e. there is no obvious trend in either direction).

Map Code	Macroinvertebrate monitoring sites	Current State (2016 MCI score)	Trend (over whole monitoring period)		
			Positive	Not statistically significant	Negative
3	Mangatainoka at Putara	Excellent		↑	
5	Tamaki at Reserve	Excellent		↓	
10	Manawatu at Weber Road	Good		↑	
11	Mangatera at Timber Bay	Fair		↑	
12	Makakahi at Hamua	Fair		↓	
13	Oroua at Apiti Gorge Bridge	Excellent		↑	
14	Tamaki at Stephensons	Good		↓	
15	Orouakeretaki at SH2	Good		↓	
16	Makuri at Tuscan Hills	Fair		↑	
17	Pohangina at Piripiri	Excellent		↑	
20	Tiraumea at Ngaturi	Good		↑	
23	Manawatu at Hopelands Reserve	Fair		↓	
24	Mangatainoka at SH2	Good	↑↑		
25	Mangahao at Ballance	Good		↑	
26	Mangatainoka u/s Tiraumea confluence	Good		↓	
28	Mangapapa at Troup Rd Bridge	Fair		↓	
29	Pohangina at Mais Reach	Good		↓	
30	Manawatu at Upper Gorge	Fair		↓	
31	Oroua at Almadale	Good		↑	
34	Kahuterawa at Johnstons Rata	Good		↑	
35	Oroua at Awahuri Bridge	Fair		↑	
36	Manawatu at Teachers College	Good		↑	
40	Manawatu at Opiki Bridge	Good		↑	
41	Tokomaru at Horseshoe Bend	Excellent		↓	
43	Rangitikei at Pukeokahu	Good		↑	
44	Hautapu at Alabasters	Fair		↑	
45	Hautapu u/s Rangitikei	Poor			↓↓
46	Rangitikei at Mangaweka	Good		↓	
47	Rangitikei at Onepuhi	Good		↓	
48	Porewa at Onepuhi Rd	Fair		–	
49	Rangitikei at McKelvies	Fair		↑	
51	Whanganui at Cherry Grove	Good		↓	
52	Whanganui at Te Maire	Good	↑↑		
53	Whanganui d/s Retaruke confluence	Fair		↑	
54	Manganui o te Ao at Ashworth Bridge	Good		↓	
55	Whanganui at Pipiriki	Fair	↑↑		
56	Mangawhero at DoC	Excellent		↑	
59	Makotuku at Raetihi	Poor			↓↓
60	Mangawhero at Pakihi Rd Bridge	Good		↓	
62	Tokiahuru Stream at Karioi	Good			↓↓
64	Patiki at Kawiu Road	Poor		↓	

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65	Arawhata at Hokio Beach Rd	Poor	↓
66	Hokio at lake outlet weir	Poor	↓
70	Ohau at Gladstone Reserve	Excellent	↑
76	Waikawa at Nth Manakau Rd	Excellent	↓
81	Owhanga at Branscombe Bridge	Fair	↓
82	Turakina at O'Neils Bridge	Fair	↑

1.3.5 Water quality classes for macroinvertebrates are divided into four categories with the following MCI thresholds: Excellent (> 119), Good (100 - 119), Fair (80 – 99) and Poor (< 80). From the 2016 analysis, 15 sites are graded Excellent, 36 are Good, 24 sites fall within the Fair category, and eight sites are Poor. The distribution of the four quality classes are shown in the previous table (Table 2) and geographically in Figure 1 (northern area of the Region) and Figure 2 (southern area of the Region).

1.3.6 For clarity, it is important to note the margin of error ($\pm 10\%$) associated with macroinvertebrate sampling methodology that can result in MCI values moving up or down a quality class from year to year. This is not a cause for concern necessarily, and why it is important to examine trends in MCI when interpreting SoE monitoring data.

Annex A

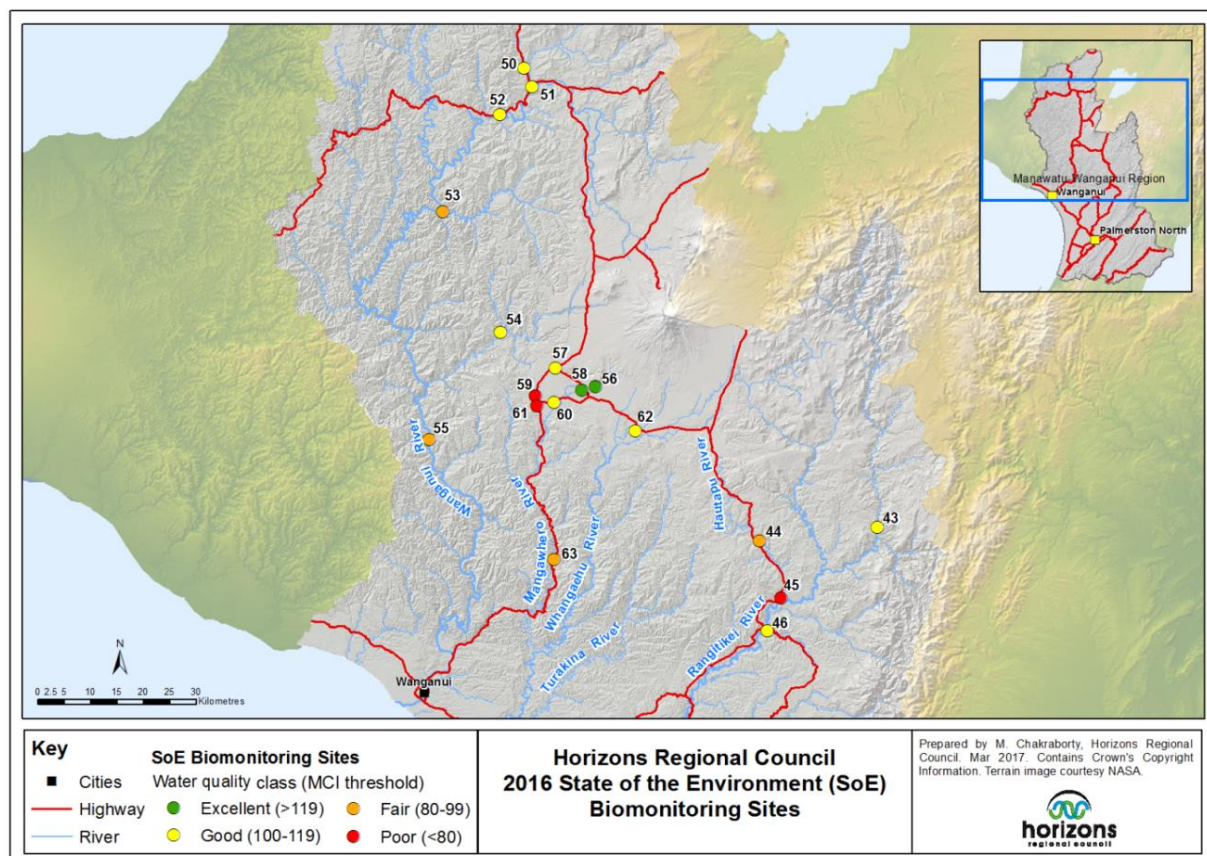


Figure 1: River quality classes based on the MCI for SoE monitoring sites in the northern part of Horizons' Region sampled in 2016. (Stark, 2017).

1.3.7 The majority of 'Good' or 'Excellent' water quality classes are located in the upper reaches of catchments where there is likely to be more suitable habitat and less human influence.

- 1.3.8 In the northern part of the Region, the Hautapu River upstream of the Rangitikei River and two sites on the Makotuku River near Raetihi stand out for their poor stream health in absolute terms (MCI < 80) and in relation to other nearby streams.
- 1.3.9 The remaining sites in poor condition are lowland streams located in the southern part of the Region in the Lake Horowhenua catchment (viz., Arawhata Stream @ Hokio Beach Road, Hokio Stream @ lake outlet weir), the Ohau River catchment (Manganaono Stream @ Kuku Beach Road), and the Waikawa Stream catchment (Manakau Stream @ Cemetery) and can be seen in Figure 2.

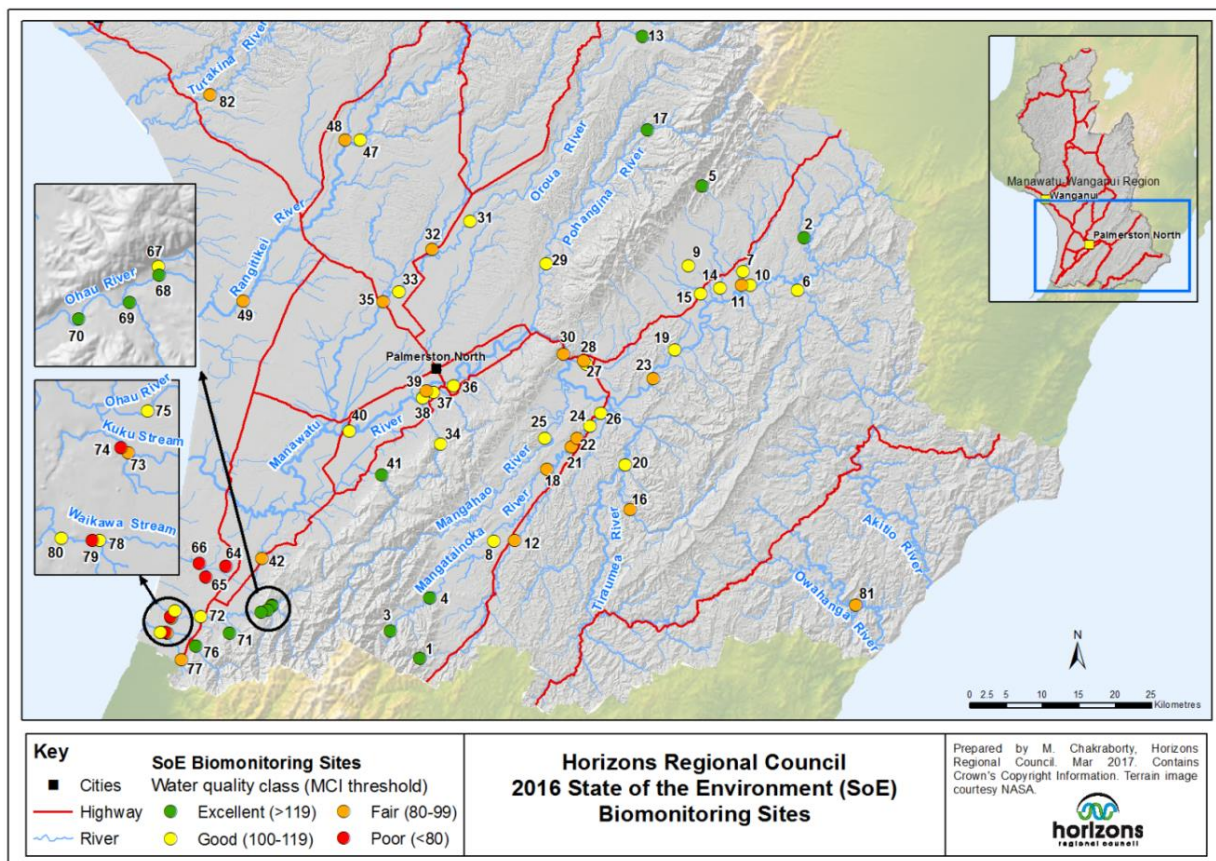


Figure 2: River quality classes based on the MCI for SoE monitoring sites in the southern part of Horizons' Region sampled in 2016. (Stark, 2017).

Trend Analysis

- 1.3.10 In addition to categorization by water quality class, further analysis can be carried out to determine trends in MCI. Of the 82 sites sampled, 47 have been sampled on six or more occasions and can be tested for temporal trends in MCI. An overview of a categorization of the results is provided in Table 3 (below). Only six sites show statistically significant trends, and only three remain significant after the Benjamini-Hochberg FDR analysis is applied. Three sites showed statistically significant positive trends in MCI, but only Te Maire and Pipiriki on the Whanganui River remained after the Benjamini-Hochberg FDR analysis was applied. Tokiahura Stream at Karioi and the Makotuku River at Raetihi show negative trends in MCI. The strongest MCI trend was in the Hautapu River upstream of the Rangitikei confluence where MCI values continue to trend downwards and this trend remained after the Benjamini-Hochberg FDR analysis was applied.

Table 3: Summary of MCI trend results for Horizons Region (calculated for sites sampled on six or more occasions)

Current state (2016 MCI)	Trend (over whole monitoring period)			
	Overall	Positive	Statistically not significant	Negative
Excellent	8	0	8	0
Good	20	2	17	1
Fair	14	1	13	0
Poor	5	0	3	2
Total	47	3	41	3

- 1.3.11 Analysis such as this allows the council to target response through non-regulatory methods (i.e. the Freshwater and Partnerships team), and through regulatory methods (i.e. the Consents Monitoring team) and allows broad scale policy effectiveness monitoring to occur. Results from this report suggest that the highest priorities for remedial action in the Region are the Hautapu River upstream of the Rangitikei confluence, the Tokiahura Stream at Karioi, Makotuku River near Raetihi, and several lowland streams in the Horowhenua area.
- 1.3.12 Horizons' Natural Resources and Partnerships staff are currently investigating drivers in terms of both declining MCI and degrading trend in periphyton in the Hautapu Stream. Recent investigation has included a radon survey to identify groundwater flow paths for contaminant transport. Summer monitoring has included faecal source (DNA) tracking techniques to identify possible sources of bacteria. Further work will be informed by the results of these investigations and Council will be kept updated on progress throughout the next financial year.
- 1.3.13 Horizons recently applied to the Freshwater Improvement Fund to target actions to address water quality in the Rangitikei and Whangaehu catchments. The project aims to halt declines and enhance water quality through a targeted work programme that addresses both point source and diffuse discharges in the Rangitikei catchment. The project also aims to increase both community and cultural connection with the Awa. Irrespective of the outcome of the funding application, further investigation of the Makotuku River and Tokiahura Stream will be scoped as part of our catchment characterisation work programme.
- 1.3.14 An extensive work programme to address water quality issues in the Horowhenua catchment has previously been proposed as part of the Lake Horowhenua Accord Action Plan. Progress is reported in the Freshwater and Partnerships section of this report.

Monitoring in 2016-17

- 1.3.15 During the 2016 – 2017 year, some 90 sites (8 more than last year) were selected for macroinvertebrate monitoring. There have been significant difficulties associated with monitoring during this summer. A stand down time of two weeks since the last flood flow (3 times median flow) applies for our monitoring sites, and timing this window of opportunity with our inclement summer weather this year has been challenging. As such, monitoring has occurred far later into 2017 than would normally be desired. Whilst technical advice suggests that this is acceptable (pers. comm. John Stark), there is a strong drive to finish out the remaining sites as soon as favorable conditions apply. This is a similar concern as experienced by some other regional councils. Despite these challenges, the team has worked hard to complete as much of the monitoring as possible. At time of writing in mid-May, only one catchment (Whangaehu River) is still to be surveyed.

1.4 Activity Progress Report

Project	Key Deliverables	Progress to Date
Water Allocation and Groundwater Monitoring	<ul style="list-style-type: none"> Surface water allocation 	<ul style="list-style-type: none"> Monitoring is ongoing. Validation and quality checking of consented allocation volume was carried out during the reporting year.
	<ul style="list-style-type: none"> Groundwater quantity, quality and seawater intrusion 	<ul style="list-style-type: none"> Monitoring is ongoing.
	<ul style="list-style-type: none"> National monitoring programmes 	<ul style="list-style-type: none"> Monitoring is ongoing.
	<ul style="list-style-type: none"> Water metering and national regulations 	<ul style="list-style-type: none"> Water metering programme continues. Internal system updates in progress.
Water Quality and Discharge Monitoring	<ul style="list-style-type: none"> Monthly SoE and discharge monitoring undertaken Automated QC software is running on the data Laboratory tender is completed Water quality statistics course held Hilltop software training for new staff 	<ul style="list-style-type: none"> Monitoring is ongoing. Work is continuing with the Catchment Information Team to improve the automated software developed for checking the water quality data. Work is currently underway writing the request for proposal for the laboratory tender. The water quality statistics course (part funded by Envirolink) was held on 10-11 November. The course was attended by 12 staff from Horizons (across the science, catchment information, catchment data and consent monitoring teams) and two staff from Taranaki Regional Council. Hilltop training was scheduled for March but postponed due to flood events.
	<ul style="list-style-type: none"> Sediment monitoring data processed and on the archive as agreed with Catchment Information Team 	<ul style="list-style-type: none"> Monitoring is ongoing. Preparation of data for the report on the Tiraumea investigation is underway. This project has been deferred to 2017-18 due to reprioritisation of staff time within the Catchment Data team.
	<ul style="list-style-type: none"> Continuous physico-chemical monitoring (such as temperature and dissolved oxygen) data processed and on the archive as agreed with Catchment Information Team 	<ul style="list-style-type: none"> Continuous monitoring is ongoing.
	<ul style="list-style-type: none"> Continuous nitrate sensor trial 	<ul style="list-style-type: none"> The continuous nitrate sensor trial is now complete. Analysis and write up of the results of the trial will be completed by Massey.
	<ul style="list-style-type: none"> External (contract) monitoring completed as per contract 	<ul style="list-style-type: none"> This monitoring is ongoing as required.
Biological Monitoring	<ul style="list-style-type: none"> Monthly periphyton monitoring 	<ul style="list-style-type: none"> Monthly monitoring for periphyton is ongoing.
	<ul style="list-style-type: none"> Annual macroinvertebrate monitoring 	<ul style="list-style-type: none"> Invertebrate monitoring was delayed due to bad weather though is now underway with around 10% of sites remaining to be done
	<ul style="list-style-type: none"> Didymo monitoring undertaken in all quarters except winter 	<ul style="list-style-type: none"> Didymo monitoring was completed in Nov and Feb. The next round to be undertaken in May
	<ul style="list-style-type: none"> Fish monitoring programme, including brown mudfish monitoring, undertaken Sites of Significance Aquatic (SOS A/SOE) monitoring undertaken 	<ul style="list-style-type: none"> Brown mudfish monitoring has been undertaken at seven sites. State of the Environment fish monitoring underway
	<ul style="list-style-type: none"> Stream walking, fish pass installation and monitoring effectiveness Two fish passes monitored for effectiveness. Report of findings 	<ul style="list-style-type: none"> Monitoring was carried out at the Waterfall Creek fish pass in November. The second fish pass on Waterfall Creek was monitored in early December.
	<ul style="list-style-type: none"> Inanga spawning habitat restoration 	<ul style="list-style-type: none"> Inanga spawning site identification and monitoring. After multiple false starts this was deferred for a year due to weather.
Lake Monitoring	<ul style="list-style-type: none"> Quarterly lakes sampling undertaken Lake Submerged Plant Indicators (SPI) monitoring undertaken Lake nutrient budget report complete Lake bathymetry monitoring undertaken 	<ul style="list-style-type: none"> Quarterly lake sampling is ongoing NIWA completed the lake SPI on 11 sites in late November. A trial of new (potentially more cost-effective) continuous dissolved oxygen and turbidity sensors is being carried out.

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Annex A

Project	Key Deliverables	Progress to Date
Estuarine and Coastal Monitoring	<ul style="list-style-type: none"> Monthly monitoring of coastal and estuary sites 	<ul style="list-style-type: none"> Monthly monitoring of the coastal and estuary monitoring sites is ongoing.
	<ul style="list-style-type: none"> Broad-scale mapping in the Whanganui and fine-scale mapping in the Manawatu undertaken and reported 	<ul style="list-style-type: none"> Field work component of broad- and fine-scale mapping has now been completed by Wriggle Consultants and reporting is underway.
	<ul style="list-style-type: none"> Monthly monitoring of four coastal streams 	<ul style="list-style-type: none"> Monitoring of coastal streams is ongoing.
Contact Recreation	<ul style="list-style-type: none"> Recreational suitability (swim spot) monitoring undertaken during 1 Nov - 30 April Expanded swim spot programme initiated and monitoring undertaken during 1 Dec - 30 April 	<ul style="list-style-type: none"> The expanded weekly monitoring programme commenced on 30 November. Monitoring for the 2016 – 2017 season has finished as of end April 2017
	<ul style="list-style-type: none"> Cyanobacteria monitoring 	<ul style="list-style-type: none"> Monthly monitoring for cyanobacteria is ongoing as part of the periphyton monitoring programme The expanded weekly recreational water quality monitoring programme includes cyanobacteria monitoring.
Monitoring Network Review	<ul style="list-style-type: none"> Water quality monitoring network review 	<ul style="list-style-type: none"> Staff submitted a project proposal to the Maths in Industry New Zealand challenge to explore new and innovative methods for establishing spatial representativeness of our monitoring networks. The challenge involves six organisations and a range of STEM experts working collaboratively to provide innovative solutions to industry challenges.
Data Management	<ul style="list-style-type: none"> Further development of the auto QC process Historical data archiving Improvements to Hilltop and sampler Upgrade CADDIS Develop a system to capture science information requests Improved field data capture to improve efficiency and quality of data collection. 	<ul style="list-style-type: none"> Datatamer has been finalised and is ready to be used. Archiving of historic groundwater level monitoring data continues. Work is underway to connect the CADDIS database to Hilltop so data can be provided externally automatically. A project is being scoped to undertake this work in the next financial year as specific technical assistance is required.
Hydrogeology and Catchment Characterisation	<ul style="list-style-type: none"> Whakarongo groundwater level survey completed Manawatu radon and gauging survey between Ashhurst and upstream of Palmerston North Whakarongo conceptual hydrogeology and water availability study completed 	<ul style="list-style-type: none"> An initial groundwater level survey has been completed. Flow gauging was completed through Manawatu River, though radon was not collected as flows were not low enough
	<ul style="list-style-type: none"> A radon survey in the Rangitikei, including main tributaries to be completed 	<ul style="list-style-type: none"> Radon survey was completed during February-March.
	<ul style="list-style-type: none"> Whanganui conceptual hydrogeology report 	<ul style="list-style-type: none"> PDP has been contracted and data provision is underway.
	<ul style="list-style-type: none"> Santoft 3D model improvements 	<ul style="list-style-type: none"> Peer review of the original 3D model was completed in 2016 by Jacobs Further data and upgrades to the model are underway.
Surface Water / Groundwater Investigations	<ul style="list-style-type: none"> Massey University Collaborative Research Programme 	<ul style="list-style-type: none"> PhD studies are near completion A BSc (Hons) thesis investigating nutrient loss in coastal sand country is now complete 1 new PhD is underway in the Porewa, mapping the geology of the catchment. A MSc project building on the PhD studies in the Mangatainoka is underway. 3 new PhD studies are to be advertised in May.
	<ul style="list-style-type: none"> Ohau and Waikawa stream investigation – water quality component Fortnightly periphyton monitoring and water samples Macroinvertebrate monitoring Dissolved oxygen monitoring Fish monitoring Planning analysis and reporting for the 2017-18 	<ul style="list-style-type: none"> Fortnightly monitoring of periphyton and water quality is ongoing. Macroinvertebrate monitoring is now complete and samples are to be sent for sorting and counting. Fish monitoring has been delayed due to weather conditions . Characterisation of the hydrogeology of the Ohau-Waikawa catchments is ongoing - analysis of radon and isotope results expected in 2017.

Project	Key Deliverables	Progress to Date
	financial year	
	<ul style="list-style-type: none"> Coastal Lakes groundwater capture zones developed 	<ul style="list-style-type: none"> Two contracts have been let – the first will provide a high level characterisation of the coastal lakes and development of a more intensive water balance for Lake Koiitiata and will be delivered by PDP; the second will interpret groundwater/surface water data for Pukepuke Lagoon with a view to developing an approach for further coastal lake monitoring and investigations. The latter project will be completed by Jacobs.
	<ul style="list-style-type: none"> Support for the Accords as required 	<ul style="list-style-type: none"> Staff from NIWA completed weed mapping on Lake Horowhenua at the end of October and reporting is now underway.
	<ul style="list-style-type: none"> Drinking Water 	<ul style="list-style-type: none"> Provision of advice from PDP is now being provided in relation to the outcome of the initial phase of the Havelock North inquiry. A meeting has been held with local Drinking Water Assessors (DWA) Further information will be presented to Council in due course.
Innovative Science and Research	<ul style="list-style-type: none"> Nutrient diffusing substrate monitoring 	<ul style="list-style-type: none"> Unable to be completed due to repeated weather events.
	<ul style="list-style-type: none"> Preferential uptake of ammonia for periphyton growth project is funded and initiated Work undertaken and report produced 	<ul style="list-style-type: none"> Co-funding for this project with TAs and other Regional Councils is now contracted and underway. Preliminary results are in though not yet reported.
	<ul style="list-style-type: none"> Undertake an investigation into the ecological effects of cyanobacteria on macroinvertebrates monitoring 	<ul style="list-style-type: none"> This monitoring investigation is currently underway with four sites surveyed.
	<ul style="list-style-type: none"> Monitoring at reference sites to inform the development of the Stream Ecological Valuation (SEV) calculator 	<ul style="list-style-type: none"> This monitoring has been delayed due to extensive bad weather but is planned for later in the season.
	<ul style="list-style-type: none"> Identify and develop Emerging Research Partnerships Opportunities 	<ul style="list-style-type: none"> Science and Innovation are supporting a number of new MBIE Endeavour Fund bids for 2017.
	<ul style="list-style-type: none"> Monitoring of the Turitea Stream restoration project completed 	<ul style="list-style-type: none"> This monitoring was delayed due to extensive bad weather but has since been completed.
Resource Accounting	<ul style="list-style-type: none"> Flow Relationships, mean annual low flows (MALFs) and minimum flows 	<ul style="list-style-type: none"> Flow relationships, MALFs and minimum flows work continues.
	<ul style="list-style-type: none"> Setting minimum flows in tidal/estuarine environments - determine what type of information is required to ascertain the potential effects of abstraction in tidal zones of rivers. 	<ul style="list-style-type: none"> Envirolink project contracted to NIWA.
	<ul style="list-style-type: none"> Water use accounting and reporting - WaterMatters rebuild 	<ul style="list-style-type: none"> Staff are working with Catchment Information and Consents teams to improve WaterMatters and the quality of our data relating to water allocation.
	<ul style="list-style-type: none"> Contaminant accounting – development of summary reports for target catchments 	<ul style="list-style-type: none"> Work on the Rangitikei Catchment loads is ongoing Massey is currently working on establishing nutrient load calculations at a number of sites across the Region.
	<ul style="list-style-type: none"> Stormwater 	<ul style="list-style-type: none"> Workshop held with HRC staff and consultants Morphum Environmental Ltd. An initial scoping study is now being completed including stocktake of knowledge and information systems, capability and capacity, gap analysis and opportunities.

Item 9

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SENIOR SCIENTIST – WATER ALLOCATION

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SCIENCE AND INNOVATION MANAGER

Jon Roygard

GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS

Annex A

2 Land

2.1 Activity Overview

The Land Management Activity covers Horizons' main land-based initiatives: the **Sustainable Land Use Initiative** (SLUI), the **Whanganui Catchment Strategy** (WCS) and our Regional Land and Coastal Programme. While these programmes are undertaken as part of the Natural Resources and Partnerships Group function and reported to Horizons' Catchment Operations Committee, Horizons' Land and Fluvial Research and Monitoring programmes assist these programmes by informing prioritisation of the work programme and the effectiveness of the work programmes.

The two research programmes in the Land Management Activity are:

- (1) Land research and monitoring, which includes support of the SLUI programme, project work around effluent management and treatment; and
- (2) Fluvial monitoring and research, which completes monitoring and project work around gravel management and sediment movement/storage in the Region's rivers. A major component of this work is carrying out regular surveys of the Region's rivers to measure changes in river channel capacity.

The Land Management Activity is measured against three performance measures:

Measure	1 st	2 nd	3 rd	4 th	5 th	Actual	Target
	Track changes in the health of the Region's land and fluvial resources. *1	33%	33%	16%			
Inform policy and non-regulatory programme development. *1	33%	33%	16%			83%	100%
Assess policy and implementation effectiveness. *1	33%	33%	16%			83%	100%

*1 AP/LTP targets

2.2 Activity Highlights

This report covers the reporting period from 1 March 2017 to 30 April 2017. A summary of the progress made against the targets for the year is in the table at the end of this section.

Fluvial Monitoring and Reporting

Context

The fluvial survey programme provides information on the changes in levels of aggradation or degradation of river channels and berms. This information is important for the management of gravel takes from the Region's rivers and flood protection schemes, and as an indicator of the efficacy of programmes such as SLUI. The work is coordinated by a cross-organisational team involving science, river management, catchment data and survey staff, and includes the processing of gravel use records.

Activity

The third quarter (January to March) fluvial revenues were processed in April 2017. The amount of consented gravel take over this period was about 56,000 m³ (Figure 3).

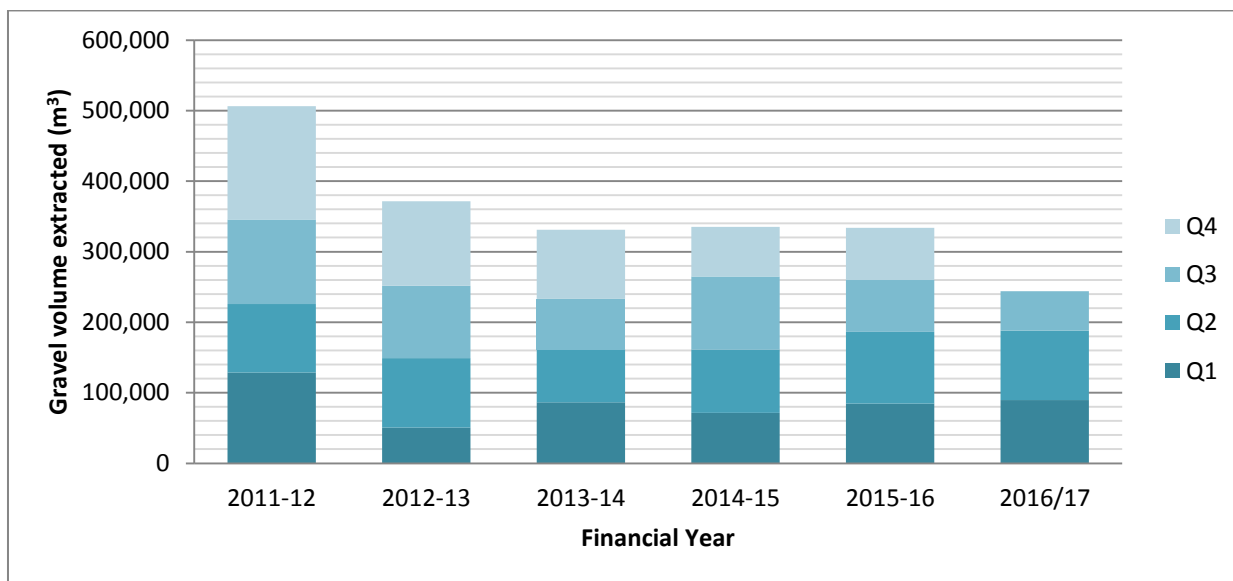


Figure 3: Plot showing amount of gravel taken through consented takes in each quarter during the last five years including the first three quarters of 2016-17 financial year. Q1 = July to September, Q2 = October to December, Q3 = January to March, Q4 = April to June.

Sediment Transport Research Programme

Context

Erosion is one of the most critical issues affecting land productivity in our Region. Loss of nutrient-rich topsoil affects the productivity of our land, while high levels of sediment in rivers and estuaries reduces habitat for fish and invertebrates. Soil-bound nutrients such as phosphorus are transported into our rivers and lakes, feeding algae in some catchments. Sediment deposited throughout catchments also damages infrastructure and reduces the life of flood control schemes.

Activity

2.2.1 A workshop was held with Horizons staff and research partners in March to scope a long term research programme around sediment transport and its effects on flood scheme infrastructure as well as water quality and ecosystem health. A key focus will be to continue our work around the Oroua River investigation, highlighted in the Spotlight On... section below. Further work to document the long-term fluvial research programme will be undertaken in coming months.

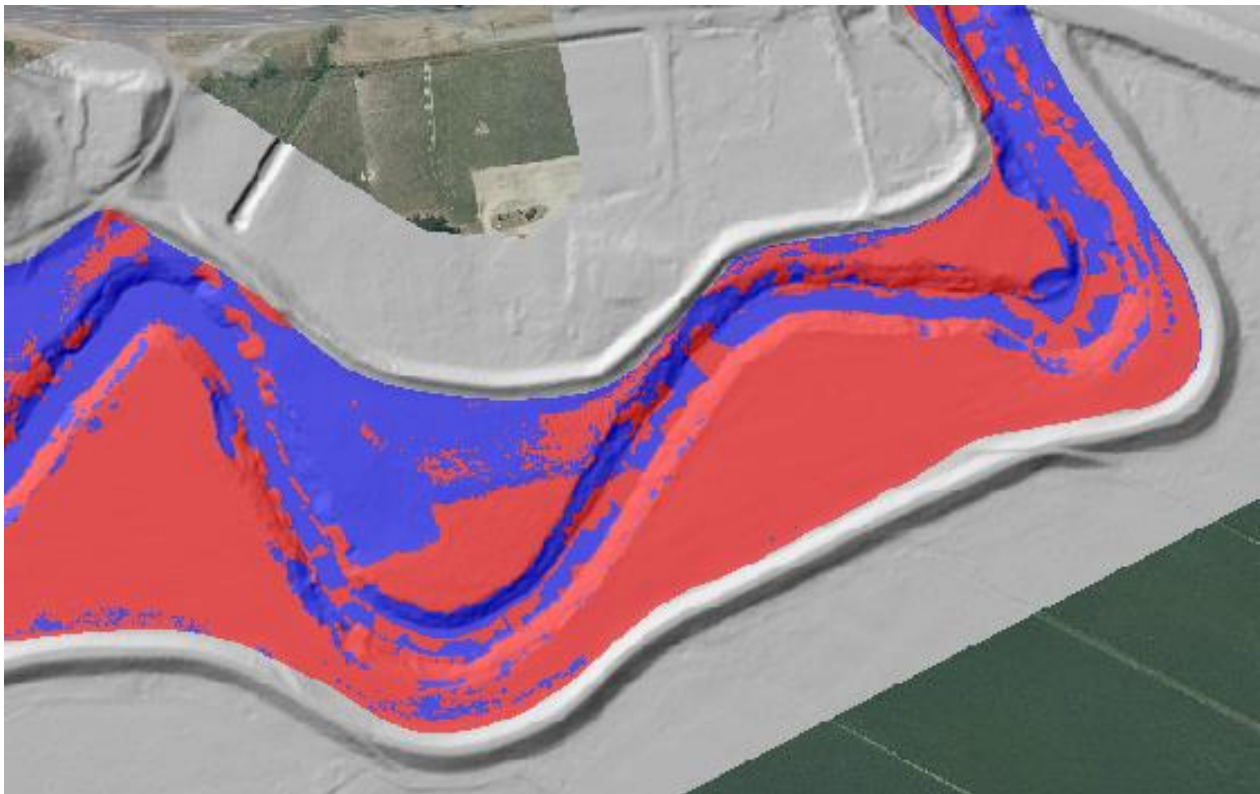
2.3 Spotlight on Oroua River Sedimentation Project

2.3.1 Aerial surveys were completed in both 2006 and 2016 of the lower Oroua River between the confluence with the Kiwitea and the Manawatu. This project aims to compare the two surveys in order to quantify the volume of sediment deposition and what interventions may be required to address the effects of sedimentation in the Oroua River.

2.3.2 LIDAR is a method of producing high resolution images of the earth's surface using a pulsed laser light and in this application, was used to create Digital Elevation Models (DEMs) that could then be used to quantify change (aggradation and degradation) through the Oroua River. A preliminary cut and fill analysis was undertaken by the Catchment Information team to determine the total volume

change in the Oroua River from Feilding to Rangiotu between 2006 and 2016, as well as identifying the areas where material has been deposited and removed during that time. This was done by assessing change in elevation over time.

2.3.3 Preliminary results from a small section of the river suggest widespread deposition of sediment between stopbanks. Figure 4 shows the changes in the Oroua between 2006 and 2016. Red indicates deposition, blue indicates erosion; this suggest erosion in the wetted channel and across an extensive area of berm to the north of the channel, in contrast to otherwise depositional trend in the berm area. Further analysis, including a technique known as terrain masking, is now required and will help resolve the extent to which these changes are genuine and the extent of change over a larger area of the Oroua River.



▪ **Figure 4. Preliminary Cut-Fill Analysis.** Blue area indicates erosion of sediment and red indicates sediment deposition.

2.3.4 Presently the results are preliminary and further work is planned to refine the analysis and ensure the interpretation is robust. Next steps include:

- A more detailed analysis to qualify sediment volumes. For this work validating the result against channel cross-section surveys, determining margins of error and masking terrain not part of the analysis will give greater accuracy.
- Determining how the trend in accumulation and deposition between 2006 and 2016 fits with longer term bed level trends. This will help to provide context around the changes that have occurred in the last ten years.
- Sediment fingerprinting and morphological budgeting has been recommended to determine the likely sources of the accumulated sediment.

2.3.5 The result of this work has application in both river management and flood protection and also provides a knowledge base of how sediment is deposited or lost in this area, particularly with respect to sediment sources and habitat. This work is a combined effort from River Management, Catchment Information and the Science and Innovation teams at Horizons with Ian Fuller from Massey University and Chris Phillips, Les Basher, John Dymond and Simon Vale from Landcare Research.

2.4 Activity Progress Report

Project	Key Deliverables	Progress to Date
Fluvial monitoring and research to inform gravel management	<ul style="list-style-type: none"> ▪ Cross-section field surveys and information to inform gravel management and river management (Rangitikei River) ▪ Gravel use management 	<ul style="list-style-type: none"> ▪ Field surveys of the Oroua River, Makino Stream, Kiwitea Stream and the Waikawa River were completed last year. ▪ Lower Rangitikei River LiDAR survey has now been flown and the cross section survey has been completed. ▪ Gravel extraction data continues to be collected and collated on a quarterly basis. ▪ Workshop held with key stakeholders and external research providers to advance the fluvial research programme.
Application of SedNetNZ using farm-scale LUC mapping	<ul style="list-style-type: none"> ▪ Initial workshop. ▪ Shapefile of the model outputs for existing SLUI farms ▪ LUC works recommendations ▪ Workshop and technical notes 	<ul style="list-style-type: none"> ▪ The contract for the project has been signed. ▪ The initial workshop for this project between Landcare Research and Horizons staff was held in early December ▪ SednetNZ has been applied using farmscale LUC maps.
Our Land and Water National Science Challenge – Cascade of Sediment project	<ul style="list-style-type: none"> ▪ Provision of information and in-kind support 	<ul style="list-style-type: none"> ▪ An initial meeting with Landcare Research has been held. ▪ Data request from Landcare Research for this project has been processed by staff.
The Suitability of Tephra to treat Municipal Wastewater	<ul style="list-style-type: none"> ▪ Research update from Massey ▪ Conclusion of study (June 2018) 	<ul style="list-style-type: none"> ▪ The project is ongoing until June 2018. ▪ The annual research update from Massey was delivered in December.

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3 Biosecurity and Biodiversity

3.1 Activity Overview

Biosecurity and biodiversity management are core functions of Horizons that add significantly to the environmental, economic, social and cultural prosperity of the Region, by enhancing the quality of indigenous ecosystems and reducing the impacts of pest plants and animals. This group of activities includes Horizons' species-led pest plant and pest animal control (Biosecurity function) and the protection of bush and wetlands through site-led approaches, including support of community biodiversity programmes (Living Heritage function).

The Biodiversity Monitoring and Research programme assists these functions by informing prioritisation of biodiversity sites, measuring the effectiveness of biodiversity work programmes and undertaking research to inform pest management under the Regional Pest Management Strategy and Regional Pest Management Plan. The biodiversity and biosecurity monitoring and research activity also maintains functional links to biodiversity and biosecurity research-related activity occurring under the land, water quality and water quantity programmes.

Biodiversity and Biosecurity activity is measured against three performance measures:

Measure	1 st	2 nd	3 rd	4 th	5 th	Actual	Target
	Track changes in the health of the Region's living heritage. *1	33%	33%	16%			
Inform policy, habitat protection, and biosecurity programme development. *1	33%	33%	16%			83%	100%
Assess policy implementation effectiveness. *1	33%	33%	16%			83%	100%

*1 AP/LTP targets

3.2 Activity Highlights

This report covers the reporting period from 1 March 2017 to 30 April 2017. A summary of the progress made against the targets for the year is in the table at the end of this section.

Biodiversity Monitoring Progress Report

- 3.2.1 Work continues on the external peer review of the wetlands and bush remnants monitoring protocols with discussion with the identified contractors underway. Both projects are expected to be complete by June 30th. Reporting on the findings of the wetlands monitoring programme is near completion with a view to including this information in the State of the Environment Report 2018.
- 3.2.2 The contractor who undertook the Totara Reserve Bird Monitoring this year reports that the report is near completion and a draft is expected to arrive in May.
- 3.2.3 A long-awaited report by the Department of Conservation on the Estuarine Systems of the Lower North Island has recently been released. The document brings together a large amount of information on the estuarine ecosystems of the lower North Island and assesses the "current" state and future potential of 48 sites from the Manawatu river mouth on the west coast to the Waimata river mouth on the eastern Wairarapa coast. The authors also present a ranking system that has been developed to guide decision making to prioritise ongoing management.

- 3.2.4 The information within this report was obtained through a combination of site visits (during 2006 and 2009, with some sites revisited in 2015), a literature review and expert/local knowledge. Although the main site visits were undertaken several years prior to the publication of this report, the information is deemed to be current based on expert/local knowledge.
- 3.2.5 The report covers many of the estuaries in the Region and is too detailed to cover a summary of each in this Environment Committee report. It can be downloaded from DOCs website at <http://www.doc.govt.nz/estuarine-systems-lower-north-island>. The report is a valuable addition to the information Horizons is presently collecting on the ecological health of the Region's estuarine systems.

3.3 Spotlight on Bush Remnant Monitoring

- 3.3.1 Indigenous forest cover in lowland areas of our region has largely been reduced to small and isolated patches of habitat as a result of agriculture and urban development since the mid-nineteenth century. These bush remnants, even if small and modified, continue to contribute to terrestrial biodiversity by providing stepping-stones (resting, breeding or cover) and food sources to mobile species (such as, native birds, bats, lizards) across the landscape, and by maintaining seed sources for rare and uncommon species.
- 3.3.2 Under Horizons' Top 200 Bush Remnants programme landowners are provided with advice and funding assistance to undertake management actions such as fencing, planting and pest control measures for enhancement and protection of high value bush remnant sites within their properties. Currently, 130 high value bush remnant sites across the region are managed under Horizons' Top 200 Bush Remnants programme. We have started revisiting some of these managed bush remnants since last year to monitor the biodiversity outcomes from our management initiatives.
- 3.3.3 As part of our bush remnant monitoring, we have developed a quick vegetation plot survey method to obtain data on understorey structure of the forest, which will help us to understand the response of forest floor to our management initiatives such as fencing, weed control and animal pest control. The forest understorey in an unmanaged or poorly managed site can be severely browsed by angulates and mammal pests including, deer, goats, possums and livestock. The understorey can respond quickly to any positive management initiative removing this browsing pressure and hence can be a useful indicator of forest health. Examination of seedlings and saplings of canopy species within understorey can provide indication of current level of regeneration and possible future forest composition. The forest understorey also provides food and habitat for invertebrates as well as protection to forest soils from drought and erosive effects of rainfall.
- 3.3.4 Our vegetation plot survey method is relatively quick and easy to establish and at the same time this method is compatible with the well established 20mX20m forest plot protocol for long term biodiversity monitoring at national level. To undertake vegetation plot assessment we randomly place 3 fixed plots of 20mX2m size in each site using desktop GIS application. In the field we identify and count individual plants in the understorey within each plot in different height categories and plant groups such as seedlings, saplings, ground ferns, tree ferns, vines. While undertaking vegetation plot survey, we also do visual assessment of canopy cover to determine overall forest condition and amount of light reaching the forest floor. We undertake rapid ecological survey (REA) of these managed bush remnants alongside the vegetation plot survey, to examine the overall state of the site such as whether the fence is still functional, weed infestation level, animal pest control, any change in the shape of the site itself.

3.3.5 So far we have visited 20 managed bush remnant sites and collected data from 60 fixed vegetation plots with the aim of revisiting these sites every 5 year on a rolling basis. We have recorded altogether more than 70 different native plant species in the understorey of these bush remnants. On an average we have recorded more than 10 plant species in the understorey of each remnant we monitored. Tikoki, mahoe, thin leaved Coprosma, red mapou, poataniwha, kaikomako, turepo, and pigeonwood were few of the plant species we often came across in most of our vegetation plots. Among the canopy species titoki, tawa, pukatea, totara, matai, and kahikatea were found in several sites. In most of the sites we have noticed an average canopy cover of 65%. In all sites we visited, weed infestation level was quite low with moderate to good understorey regeneration.



(a)



(b)

▪ Figure 5 (a) Bare ground with no understorey vegetation in an unmanaged bush remnant, (b) dense understorey vegetation in a managed bush remnant site we visited this year.

3.4 Activity Progress Report

Project	Key Deliverables	Progress to Date
Wetlands and Bush Remnants	<ul style="list-style-type: none"> 30 actively managed wetlands surveyed 10 actively managed bush remnants surveyed 	<ul style="list-style-type: none"> 40 wetland sites surveyed – of which 26 are actively managed Bush remnant survey (field) work has started
Te Apiti Manawatu Gorge Project	<ul style="list-style-type: none"> Options for long-term biodiversity management 	<ul style="list-style-type: none"> Engagement with DOC and agreement to co-fund the project. Project complete and will be reported via the Biodiversity component of the Environment Committee report.
Totara Reserve	<ul style="list-style-type: none"> Assessment of the trend in native birds 	<ul style="list-style-type: none"> Field assessment is now complete and reporting is underway
Lakes Strategy	<ul style="list-style-type: none"> Draft a Lakes Strategy 	<ul style="list-style-type: none"> Collection of relevant data underway
Pest Plan	<ul style="list-style-type: none"> Amended proposal Final Plan 	<ul style="list-style-type: none"> Supporting documentation is complete Draft amended proposed plan under consultation with key stakeholders Amendments to strategy in final draft ready for internal review
Information and Advice	<ul style="list-style-type: none"> Provide biodiversity information and advice as required 	<ul style="list-style-type: none"> Biodiversity-related data, information, advice requests are presently tracking at just under three inquiries per month
National Engagement	<ul style="list-style-type: none"> Regular contribution to the Biodiversity Working Group (Regional Council Special Interest Group) 	<ul style="list-style-type: none"> Preparation of recommendations for standardised wetland condition monitoring across regional councils

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4 Environmental Reporting and Air Quality Monitoring

4.1 Activity Overview

Effective management of the Region's natural resources depends on accurate and timely information about the environment and its health, ready access to this information, and having this information packaged in a way that is understandable to the intended audience. Reporting provides a summary of the information in a way that can inform decision-making and help to raise the community's awareness of natural resources and their management, including the state of our natural environment, how it is changing and where there might be opportunities for further growth and development.

The State of the Environment reporting programme will continue to focus on sound communication of environmental information as a lynchpin to proactive policy and non-regulatory programme development and implementation.

Policy effectiveness monitoring will continue to focus on assisting the Strategy and Policy Team with policy effectiveness monitoring of the implementation of the One Plan, in addition to supporting implementation programmes across the Natural Resources and Partnerships Group and wider organisation.

The air quality monitoring programme will continue to monitor and report on air quality in Taihape and Taumarunui, the two air-sheds designated under the National Environmental Standard for Air Quality.

Key work programmes for 2016-17 include the continuation of input into the Land, Air, Water Aotearoa (LAWA) website, supporting biosecurity policy development (The Pest Plan as reported via Biodiversity Monitoring and Research), beginning the preparation of the 2018 State of the Environment Report and input into national forums e.g. The Land and Water Forum and the Groundwater Forum.

The Environmental Reporting and Air Quality Monitoring programmes are measured against four performance measures:

Measure	1 st	2 nd	3 rd	4 th	5 th	Actual	Target
	Complete State of the Environment report including reviewing and updating environmental indicators * ¹	33%	33%	16%			
Undertake policy and programme implementation effectiveness monitoring and provide input into programmes and policies that are in development * ¹	33%	33%	16%			83%	100%
Environmental information is made available to the public via Horizons' website, Environment Committee reporting and on request, including contributions to national level reporting * ¹	33%	33%	16%			83%	100%
Monitor and report on air quality * ¹	33%	33%	16%			83%	100%

*¹ AP/LTP targets

Activity Highlights

This report covers the reporting period from 1 March 2017 to 30 April 2017. A summary of the progress made against the targets for the year is in the table at the end of this section.

Air Monitoring

Context

New Zealand's **National Environmental Standards for Air Quality** (NESAQ) require regional councils to monitor and report exceedances of the short-term **World Health Organisation** (WHO) guideline values for outdoor air quality. Monitoring of air quality is undertaken by Horizons in two designated air sheds: Taihape and Taumarunui. At these sites we measure a range of contaminants against these guidelines and standards. We assess fluctuations in these contaminants over time, and report any exceedance of **particulate matter** (PM), a mixture of solid and liquid particles in the air, such as dust and smoke, that can get into the lungs and cause serious health problems. This helps us determine the extent of air quality issues in our Region and informs how we might reduce man-made emissions, where necessary.

Activity

Taihape

- 4.1.1 An item on the NESAQ review that is currently underway will be prepared for the June Strategy and Policy Committee meeting.
- 4.1.2 The BAM monitoring units at Taihape and Taumarunui have had their annual 'independent' calibration checks performed by WaterCare technicians on 11th and 12th April 2017. While the instruments continue to operate effectively they are aging (12-years) and their reliability is not guaranteed.
- 4.1.3 Power to the BAM in Taumarunui is supplied the from power box inside the Baptist Church Hall. In the last few year this supply has become inconsistent - been affected by faults / outages that for some reason flicks off the power switch to the unit. Contact with the Church caretaker has proved to be difficult meaning that the power supply has not been able to be restored for several days resulting in loss of record. Staff are currently pricing options for direct power supply to the monitoring unit for consideration.
- 4.1.4 The daily mean concentrations recorded at Taihape in 2016 were under the Ambient Air Quality Standard for PM₁₀ of 50 µg/m³ value set under National Environmental Standards (NES 2004 Regulations). The highest daily concentration was 37 µg/m³ recorded on 7 June 2016. The annual average value was 10 µg/m³ which is under the NZ Ambient Air Quality Guideline value set at 20 µg/m³. A graph showing the average daily PM₁₀ concentrations for Taihape for the 2016 calendar year is presented below.

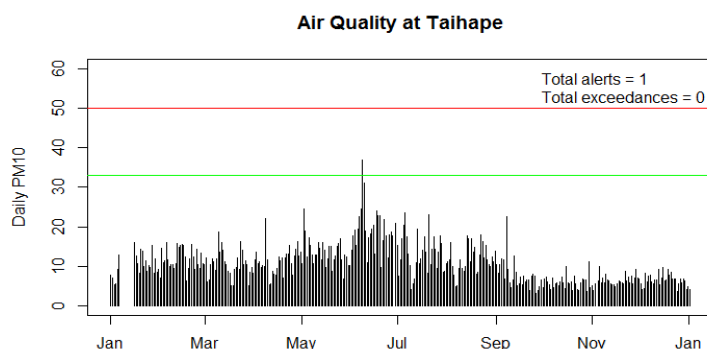
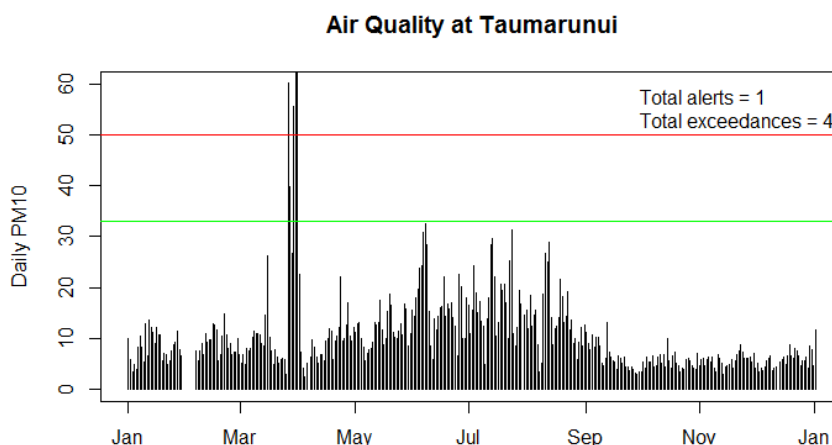


Figure 6: Graph showing the average daily PM10 concentrations for Taihape in 2016

Taumarunui

4.1.5 The daily mean concentrations for 361 days of 2016 recorded at Taumarunui (apart from the Easter holiday period in late March 2016) were also under the Ambient Air Quality standard of 50 $\mu\text{g}/\text{m}^3$. However, over the Easter period there were four exceedances of the NES with daily concentrations of 60.3, 55.7, 104.8 and 82.9 $\mu\text{g}/\text{m}^3$ recorded at Taumarunui. There was no cause identified for these very high PM10 concentrations. Council applied to the Minister for the Environment and was granted an Exception Circumstance dispensation for these exceedances. The annual average PM10 concentration was 10.4 $\mu\text{g}/\text{m}^3$ which is under the NZ Ambient Air Quality Guideline value of 20 $\mu\text{g}/\text{m}^3$. A record of daily PM10 concentrations for Taumarunui for the 2016 calendar year is presented below.



▪ Figure 7: Graph showing the average daily PM₁₀ concentrations for Taumarunui in 2016

4.1.6 A table with a summary of PM₁₀ monitoring to date at Taihape and Taumarunui is presented below: Overall this shows the two airsheds are currently compliant with the NESAQ.

Year	Air Quality at Taihape				Air Quality at Taumarunui			
	Valid data (%)	Annual average	Highest 24 hour average	No of exceedances PM10	Valid data (%)	Annual mean	Highest 24 hour average	No of exceedances PM10
2006	99.9%	15.1	45.5	0				
2007	98.4%	13.4	41.4	0				
2008	99.6%	14.9	46.6	0				
2009	98.1%	14.8	46.9	0	99.3%	10.8	23.5	0
2010	96.8%	12.7	39.8	0	88.0%	15.3	54.7	1
2011	99.1%	14.1	47.8	0	63.9%	NA	NA	2
2012	99.7%	14.9	40.3	0	97.4%	16.7	49.8	0
2013	99.5%	14.6	60.5	1	95.9%	16.7	46.6	0
2014	90.0%	14.3	38.7	0	88.2%	15.5	47.1	0
2015	99.6%	14.4	40.7	0	91.4%	13.2	45.4	0
2016	99.4%	10.6	36.7	0	92.5%	10.7	95.1	3*
2017	98.3%	10.7	36.1	0	92.4%	6.0	16.7	0

* These three exceedances at Taumarunui Over the Easter 2016 period have a Special Circumstance Dispensation from the Minister for the Environment

4.2 Spotlight on the Envirolink Fund

- 4.2.1 The Envirolink Fund provides funding from Ministry of Business, Innovation & Employment - Science and Innovation for regional councils to engage research from the crown research institutes and universities. Much of the administration is completed by regional councils through a jointly funded position based out of Waikato Regional Council. Horizons is one of the more proactive users of the fund, which has been instrumental for adapting management tools and translating environmental science into practical advice. Since Envirolink's inception on 1 December 2005, Horizons has received a total of \$1,760,100 worth of science advice through the funding scheme.
- 4.2.2 Horizons has eight active projects funded from Envirolink this financial year, totaling nearly \$137,000 for research. Projects include:
1. Water quality statistics workshop to train staff in standard and new concepts for water quality data statistical analysis and reporting (\$5,000);
 2. Advice on sample collection for high resolution (intensive sampling) for radon to compliment research into groundwater / surface water interactions (\$5,000);
 3. The use and relevance of *E. coli* as an indicator or point source discharge quality (\$17,068);
 4. The trial and analysis of data from a high resolution (frequent *in situ* automated sampling) nutrient sensor (\$10,000);
 5. A method for establishing minimum flows for tidal and soft bottomed rivers (\$20,000);
 6. National protocol for consistent site naming and numbering (a project relevant to all regional councils and NIWA) (\$20,000);
 7. Survey of all regional councils to gain an overview of the methods and data collected for soil conservation planting, riparian work, and farm plans to determine consistency and differences (a project relevant to all regional councils) (\$40,000); and
 8. National Environmental Monitoring Standards (NEMS) for discrete (single sample) water quality sampling (a project relevant to all collectors of water quality samples) (\$19,890).
- 4.2.3 All of the projects are underway and are on track to meeting their June 30th completion dates with the exception of the water quality statistics workshop which was undertaken late last year.

4.4 Activity Progress Report

Project	Key Deliverables	Progress to Date
Air Monitoring and Reporting	<ul style="list-style-type: none"> Air quality monitoring and reporting. 	<ul style="list-style-type: none"> Air quality monitoring continues in the Taihape and Taumarunui airsheds. Letter from the Minister received confirming he has accepted the exceedance recorded early in the year as an exceptional circumstance and beyond the control of Horizons. A camera installed at Taumarunui to provide remote observation of visual signs of air quality exceedances has been moved to a more suitable location. Annual calibration of monitoring equipment completed.
	<ul style="list-style-type: none"> Air quality public education campaign – cleaner heating. 	<ul style="list-style-type: none"> Education material on encouraging healthier heating is being promoted and our website has been updated.
Pest Management Support	<ul style="list-style-type: none"> Contribute to the development of the Pest Plan 	<ul style="list-style-type: none"> Pest Plan supporting documentation is complete as reported in the Biodiversity Monitoring and Research Report.
Envirolink	<ul style="list-style-type: none"> Secure Envirolink-funded science relevant to Horizons. 	<ul style="list-style-type: none"> Eight Envirolink-funded projects underway.
LAWA website	<ul style="list-style-type: none"> Supply information as required. 	<ul style="list-style-type: none"> The annual update of water quality information for the LAWA website was completed in September. The Can I swim here module on LAWA was launched on 19 December 2016. Incorporating the sites from our expanded monitoring programme. A data request for the 2017 LAWA module refresh has been received and staff are actively working on the provision of data.
	<ul style="list-style-type: none"> Support for other councils as required. 	<ul style="list-style-type: none"> The annual update of water quality information for the LAWA website was completed in September.
State of Environment Reporting	<ul style="list-style-type: none"> Project plan for delivery of the 2018 SoE report 	<ul style="list-style-type: none"> Scoping of the 2018 SoE report is in the initial stages. A presentation of the proposed report will be delivered to Council via a workshop in June.
Catchment Summaries and Report Cards	<ul style="list-style-type: none"> Key catchment information identified Reporting framework developed 	<ul style="list-style-type: none"> Freshwater workshop held with staff across Horizons to identify key messages and information gaps for each catchment (FMU) A catchment summary document for the Upper Manawatu is now being compiled to provide technical support to Horizons' Regulatory Group.
Public Information and RMA Advice	<ul style="list-style-type: none"> Information provision to the public and external agencies. 	<ul style="list-style-type: none"> Information provision to external organisations has continued.
Community Engagement	<ul style="list-style-type: none"> Information provision via websites, public engagement and documentation 	<ul style="list-style-type: none"> The Air Matters and Water Matters websites continue to provide up to date information on a daily basis. Public information on bore consents has been drafted and is currently under review. Staff presented on water quality at Dairy NZ and Fonterra farmer workshops around the Region Staff presented on regional water quality to Federated Farmers council meeting in February An opinion piece "Injecting Applied Science back into the Freshwater Debate" by Science and Innovation Manager was published by the Whanganui Chronicle and Herald in January. Staff participated in radio promotions of Horizons Swim Spot campaign, attending ZM promotions and providing radio interviews. Public information on freshwater was developed for 'Bung the Bore' protests and is now available on Horizons website An annual series of Massey University lectures by Horizons staff are scheduled for May.

Item 9

Project	Key Deliverables	Progress to Date
		<ul style="list-style-type: none"> ▪ Staff upgraded our Swim Spot website to incorporate the additional monitoring sites ▪ Science and Innovation Manager Abby Matthews is contributing to a new column in Lifestyle Block magazine around freshwater management. The first column was published in the May.
National Engagement	<ul style="list-style-type: none"> ▪ Contribution to national forums. 	<ul style="list-style-type: none"> ▪ Staff continue to lead and participate in regional council special interest groups and national working groups. ▪ Staff are involved in the development of the National Environmental Monitoring Standard for Discrete Water Quality, Periphyton and Macroinvertebrates.

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Annex A

Report No.	17-117
Information Only - No Decision Required	

BIODIVERSITY AND BIOSECURITY PROGRESS REPORT

1. PURPOSE

- 1.1. The purpose of this item is update members of Council's Environment Committee on the progress made in the Biosecurity and Biodiversity activity over the period 1 March to 30 April 2017.

2. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 17-117 and Annexes.

3. FINANCIAL IMPACT

- 3.1. There is no financial impact associated with recommendations in this paper.

4. COMMUNITY ENGAGEMENT

- 4.1. This is a public item and therefore Council may deem this sufficient to inform the public.

5. SUMMARY AND HIGHLIGHTS

- 5.1. Rod Smillie has been appointed to the role of Biodiversity, Biosecurity & Partnerships Manager and started with Horizons on 26th April. Further recruitment is underway for the vacant Regional Response Coordinator and staff may be able to provide a verbal update on the day around this appointment. One Regional Response Officer resigned during the reporting period and the reappointment of this position is on hold until the Annual Plan process is finalised.
- 5.2. The third quarter has been a busy one for the Biodiversity and Biosecurity activity of Horizons Regional Council. Progress has been made across the range of projects including possum control, the pest plan review, management of plant pests and work to enhance biodiversity in the region. Some of the highlights are briefly described below and further detail is provided in the attached reports.
- 5.3. Biodiversity staff have been involved in site maintenance and audits. During a site audit staff check for evidence and impact of stock or pest animals; new pest plant infestations; fence integrity; any other damage (e.g. unexplained tree death, spray damage). The number of high priority wetland sites under active management has increased by one this quarter to 61, with the addition of Ngaruru Lakes in the Rangitikei District. The number of high priority bush remnant sites under active management has increased by two this quarter to 121; Te One Bush in the Rangitikei District, and Moxham's Bush in the Horowhenua District. Staff have continued to work on a number of collaborative projects with 17 community based biodiversity improvement projects being supported so far this year for a target of 10. The Totara Reserve campground has been enjoyed by over 2000 campers this season.

- 5.4. The Biosecurity Animals team have continued to deliver progress in the **Possum Control Operation** (PCO) work for the year, completing 74% of the planned PCO programme by the end of the third quarter. The monitoring completed so far this year of the ex OSPRI PCO's has shown an average result of 1.6% RTCI against a target of <5% RTCI. In the maintenance PCO's which have a target of <10%, the result to date is 1.9% RTCI. Council received a briefing on the withdrawal of OSPRI from possum control in the region at a workshop on 1 March 2017, which included a presentation from Dr Stu Hutchings of OSPRI. The 1 March workshop also updated Council on the proposed work programme for the possum control programme in 2017-18 and on work to review the current possum programme, update the monitoring programme and to develop options for future possum control by Horizons Regional Council in the areas that OSPRI are exiting.
- 5.5. The Biosecurity plants team has continued to input into the Pest Plan development, by providing advice and feedback. Horizons has managed the Central North Island Wilding Conifer Programme and all of the scheduled milestones have been met by Horizons and the other partners. A highlight of the period was the use of a weed sniffer dog from Southland to locate velvetleaf plants in known sites from last year, with six sites presenting plants. Staff were also kept busy in May responding to the Myrtle Rust issue, further reporting on this will be provided at the next Environment Committee meeting.
- 5.6. Work on the amended proposal for the Regional Pest Management plan has continued including a workshop and council item presented to the Strategy and Policy Committee (14 March). Council received the amended proposed plan (prior to the workshop) following work to incorporate feedback from the submissions. At the Strategy and Policy Committee meeting (14 March 2017), Council completed the determination required by the Biosecurity Act in relation to updated the Regional Pest management plans following the release of the National Policy Direction and this resolution has subsequently been communicated to the Ministry for Primary Industries. Further Council directed staff to undertake further consultation with Key Stakeholders and to update all submitters on the process for plan formation. This further consultation was undertaken and a report will be presented to Council on June 7 to update on this.

6. SIGNIFICANCE

- 6.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Rod Smillie

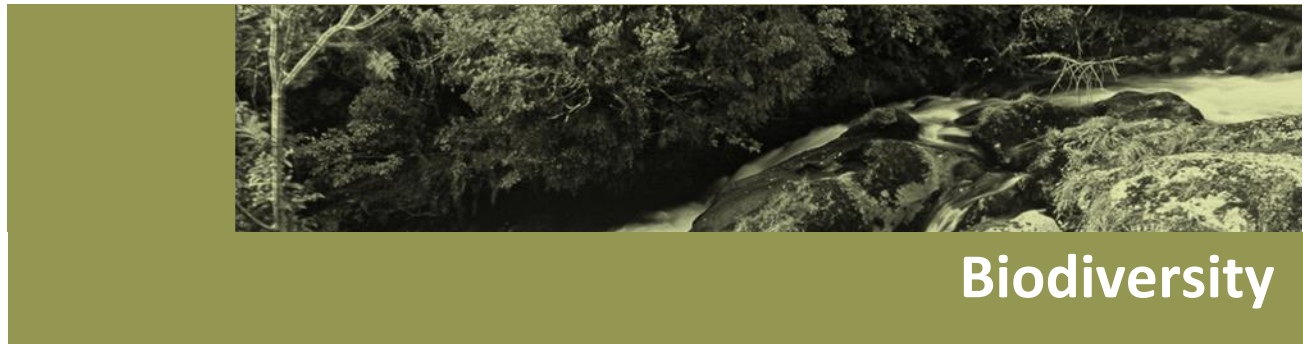
BIODIVERSITY, BIOSECURITY & PARTNERSHIPS MANAGER

Jon Roygard

GROUP MANAGER NATURAL RESOURCES & PARTNERSHIPS

ANNEXES

- A Biodiversity Progress Report
- B Biosecurity - Animals Progress Report
- C Biosecurity - Plants Progress Report



1 Biodiversity Protection Programme

1.1 Activity Overview

This programme aims to have 100 of the Region's best wetlands and 200 of the best bush remnants under active management by 2028-29. Active management means that the site is being protected from livestock, pest animals and pest plants that threaten it, and that necessary enhancement work (e.g. planting) is undertaken.

1.2 Targets – Year to Date Progress

Measure	Reporting Period				YTD Actual	Allocated	Target *1	% complete	% allocated
	1 st	2 nd	3 rd	4 th					
Additional top 100 wetlands actively managed *2	0	1	1		2	NA	3	67%	NA
New high priority wetlands under partial management	0	0	0		0	NA	NA	NA	NA
Additional top 200 bush remnants actively managed *2	0	1	2		3	NA	6	50%	NA
New high priority bush remnants under partial management	0	0	0		0	NA	NA	NA	NA
Environmental Grants supported *2	2	15	6		23	30	30	77%	100%
Continue to support existing community-based biodiversity improvement projects	16	1	0		17	NA	10	170%	NA

1.3 Targets – Life to Date Progress

Measure	Reporting Period				LTD Actual	LTD Target* ³	%
	1 st	2 nd	3 rd	4 th			
Total high priority wetlands under active management * ²	0	1	1		61	62	98%
Total high priority wetlands under partial management	0	0	0		24	NA	NA
Total high priority bush remnants under active management * ²	0	1	2		121	124	98%
Total high priority bush remnants under partial management	0	0	0		28	NA	NA

*¹ Annual target, *² AP/LTP targets, *³ LTD target at end of year

1.4 Activity Highlights

General

1.4.1 Staff have been involved in site maintenance and audits. During a site audit, staff check for evidence and impact of stock or pest animals; new pest plant infestations; fence integrity; and any other damage (e.g. unexplained tree death, spray damage). Please note that the table is incomplete; the information for the northern part of the Region will be included in the next report.

Biodiversity Site	Visit Month	Pest Plants Treated	Audit	Assesments/ Monitoring
Bishop Five Hour Bush (Rua 79B)	March	-	-	REA* and monitoring plots done
Mangawhero River Bush (Rua43)	March	-	-	REA and monitoring plots done
Bishop River Queen Bush (Rua 79C)	March	-	-	REA and monitoring plots done
Makotuku River Bush (Rua44)	March	-	-	REA and monitoring plots done
Bishop Mill Bush (Rua 79A)	March	-	-	REA and monitoring plots done
Fahey Bush (Rua78)	March	-	-	REA and monitoring plots done
Lindeman Bush (Rua 86)	March	-	-	REA and monitoring plots done
Otawhao Station (Tara86)	March	OMB	-	-
Dougherty Wetlands	March	-	Yes	REA done
Morrison Hinau Bush (Tara196)	April	-	Yes	Monitoring plots done
Mangapapa Bush	April	OMB	-	-
Rolston Bush	April	-	Yes	-
Cousins' Bush (Man219)	April	pampas, blackberry	-	-
Moxham's Bush	April	OMB	-	-
Legg Estate Bush	April	-	Yes	-
Te One Bush	April	-	Yes	-
Fullerton-Smith Bush (Rang146)	April	cathedral bells, banana passionfruit, karaka	-	-

Biodiversity Site	Visit Month	Pest Plants Treated	Audit	Assesments/ Monitoring
Priest's Bush (Man125)	April	banana passionfruit, cathedral bells, karaka	-	-
Fault Fen Wetland	April	Broom	Yes	-

*⁴ *Rapid Ecological Assessment*

1.4.2 Tradescantia beetle establishment received a boost this period with releases at five sites in three different districts – Manawatu, Horowhenua and Taranaki. At each site, the beetles have been placed in a cloche to prevent immediate dispersal and to encourage breeding.

High priority wetlands

1.4.3 One new site, Ngaruru Lakes in the Rangitikei District, was added this reporting period. The number of high priority wetlands under active management is now 61. This is one site behind the life-to-date target and we are planning to add one more site before the end of the financial year.

High priority bush remnants

1.4.4 Two new sites, Te One Bush in the Rangitikei District and Moxham's Bush in the Horowhenua District, were added in this reporting period. The number of high priority bush remnants under active management is now 121. This is three behind the life-to-date target of 124 and we will be adding three more sites from work undertaken in the Ruapehu District before the end of the financial year.

2 Community Biodiversity

2.1 Activity Overview

The community biodiversity activity encompasses the work completed in collaboration with others to deliver biodiversity and recreational benefits to the Region via projects such as Te Apiti Manawatu Gorge and Pukaha Mount Bruce, and projects to support community-led initiatives such as the Rangitikei Environment Group's efforts to control old man's beard.

2.2 Targets – Year to Date Progress

Progress on Specific Projects	Reporting Period				YTD Actual	Target* ⁵
	1 st	2 nd	3 rd	4 th		
Support community involvement in biodiversity protection						
Continue to support existing community-based biodiversity improvement projects* ¹	16 in part	17 in part	17 in part		17	10
Totara Reserve Regional Park						
Operate a regional park and camping facility that is appreciated by the community, responding to all enquiries and complaints within 48 hours. Track and report the number of campers to the park and the number of complaints/queries as a % of this figure * ¹	100% response	100% response	100% response		100%	100% response

*⁵ AP/LTP targets

2.3 Community Biodiversity Projects Supported – Year to Date

	Community Projects Supported YTD	Partners in Project
1	Te Apiti Manawatu Gorge (Palmerston North, Tararua and Manawatu)	DOC, PNCC, TDC, MDC, Iwi
2	Pukaha/Mt Bruce (Tararua)	DOC, Pukaha Mt Bruce Trust
3	Kia Wharite (Ruapehu)	DOC
4	Manawatu Estuary (Horowhenua)	DOC, HDC, Iwi, MET, WECA, Landcare Trust
5	Massey Hill (Palmerston North)	PNCC, Massey University, PEP Trust
6	PN Weedbusters (Palmerston North and Manawatu)	PNCC
7	Rangitikei Environment Group (Rangitikei)	REG, RDC
8	Waitarere Beach (Horowhenua)	WBPRA
9	Bushy Park (Whanganui)	Bushy Park Trust
10	Tawata Mainland Island (Ruapehu)	Tawata Trust, Te Amo Taiao
11	Awahuri Forest Kitchener Park (Manawatu)	AFKP Trust, MDC
12	Save Our River Trust / Wildlife Foxton Trust (Horowhenua)	SORT, WFT
13	Turitea Reserve (Palmerston North)	PNCC
14	Te Potae o Awarua (Rangitikei)	Aorangi Awarua Trust, DOC
15	Lower Kahuterawa Stream (Palmerston North)	Massey University, NZDF, Spotless
16	Friends of Waitoetoe Park (Palmerston North)	Friends of Waitoetoe Park, PNCC
17	Gate Pa Bush Restoration (Manawatu)	NZDF, Spotless

2.4 Activity Highlights

Totara Reserve Regional Park (Manawatu)

2.4.1 The campgrounds have had more than 2,000 campers (number to be confirmed in next report) this season. In spite of the terrible weather following the New Year peak, campground income has exceeded expectations. Ex-tropical cyclone Debbie caused three large poplar trees to fall over within the campground and all other large trees will be assessed and removed if deemed necessary. This work is programmed to occur prior to the next camping season with preliminary work planned in July.

Waitoetoe Park (Palmerston North)

2.4.2 Approximately 80 people turned out for Earth Day at Waitoetoe Park. They planted 700 native plants and spread mulch around those and previous plantings.

Manawatu Walking Festival (Manawatu)

2.4.3 The Biodiversity team hosted a group at Totara Reserve Regional Park's Fern Walk in early March. It was a great opportunity to showcase the new signage and improvements to the track, although the weather did its best to dampen the enthusiasm.

Foxton Beach Clean-up (Horowhenua)

2.4.4 Horizons' Biodiversity and Communications teams worked together to organise a community beach clean-up event at Foxton Beach for Seaweed 2017. The event was well supported by OMV New Zealand Ltd, Horowhenua District Council and the Department of Conservation (DOC). Two schools were involved in a marine litter survey following the collection of rubbish that filled 30 bags as well as items that were too large to fit in a rubbish bag.

Central Districts Field Days

2.4.5 The Biodiversity team had two staff members at the Central Districts Field Days at Manfield in March.

Awahuri Forest Kitchener Park (Manawatu)

2.4.6 **Awahuri Forest Kitchener Park (AFKP)** Trust managed to attract Prime Minister Bill English to do the honours at the ceremony that doubled as the formal opening of the new boardwalk and the belated 100-year anniversary of the naming of the park, south east of Feilding. One of the aims of the Trust is to raise awareness of the increased severity and frequency of flooding events and to promote actions that will reduce the adverse effects of these events on this valuable biodiversity site. As the crowd waited for the Prime Minister to arrive, floodwater overtopped the banks of the Makino Stream and began to flow through the forest and fill the western side of the car park.



Photo 1 Prime Minister Bill English being welcomed by Awahuri Forest Kitchener Park Trust chairman Geoff Lovegrove with other Trustees and Cr Gordon McKellar in the background.

Aaron Madden
ENVIRONMENTAL COORDINATOR – BIODIVERSITY

Jon Roygard
GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS

3 Collaboration Projects – Horizons / Department of Conservation (DOC)

3.1 Activity Overview

This report captures some of Horizons' and DOC's collaborative projects that are not covered elsewhere in Environment Committee reports.

3.2 Activity Highlights

Kia Whārite (Tongariro/ Whanganui)

3.2.1 Kia Whārite biodiversity project is a collaborative partnership between the Department of Conservation, Horizons Regional Council, landowners and Iwi. The project area (180,000 ha) is a mixture of public, private and Māori land with its aim to protect some of our most precious taonga in one of the most stunning and least visited areas of the North Island in the Upper Whanganui catchment.

3.2.2 Possums: Planning is continuing for the 2017 aerial pest operation in the 52,000 ha Matemateāonga and Waitotara blocks. This operation is planned for July-August.

3.2.3 Stoats: Maintenance of all stoat traps in the Manganui o te Ao - Retaruke Whio Security Site continued as planned through the whio breeding season. A total of 85 km of waterway is under protection through this network of traps. Trap checks and cat control continued fortnightly starting in August instead of September. Currently there are monthly checks being carried out and annual maintenance over May is to be completed.

3.2.4 Whio: A total of 39 pairs were identified during the surveys, with a further 11 adult single birds seen. Twenty-four pairs were found on the Manganui o te Ao and 12 on the Upper Retaruke with three on the associated streams. This indicates an overall increase in pairs over the last year, with 34 pairs sighted over the course of surveys in 2015-16. There was no sign of a second breeding attempt being made and no significant flooding during the breeding season. It was noted that several pairs attempted to breed late in the season. Of the pairs seen, there were three new pairs on the Manganui o te Ao and two new pairs on the Upper Retaruke. Several ducklings were sighted during surveys. Twenty-two ducklings were seen on the Manganui o te Ao and 20 on the Retaruke/Kaiwhakauka and Morinui streams early in the season. A further nine ducklings (not included in the total above) were seen flying upstream from Geoff Owen's, into the lowest area monitored for the Security Site (Monitored Area III). In total 16 fledglings were seen on the Manganui o te Ao and 13 fledglings on the Retaruke and associated streams. Captive releases occurred this season in several locations on the Manganui o te Ao and on the Kaiwhakauka Stream. For the Manganui o te Ao, this included one pair at the Ram paddock (in the Ruatiti gap), two females and one male at the Ruatiti Domain, two females at Doug's camp in Monitored Area III (bottom of the Security site), and two females at Deadman's camp at the top of the Security Site. Twelve birds were released at the waterfall on the Kaiwhakauka.

Air New Zealand Great Walk Biodiversity Partnership

3.2.5 The Whanganui District was successful in securing funding for the "Restoring the Whanganui River Forest Corridor" project. The aims of the project are to: Improve forest condition, enhance biodiversity values and understand the growth of the kiwi population along the Whanganui Journey. This will allow for additional pest control and monitoring along the river corridor.

Whanganui Journey campsite rat and possum control

- 3.2.6 Currently being undertaken using A12 and A24 Good Nature traps. These traps have been placed at each of the camping and hut sites on the Whanganui River. They will continue to be monitored and maintained on a regular basis throughout the year.

Weed control

- 3.2.7 A contract for the upper Whanganui River has been agreed to and this work is due to start in the next two weeks. The control work covers the trench from Whakahoro to John Coull Hut. This contract will be targeting control of blackberry, Japanese walnut and spindleberry.

Goat control

- 3.2.8 This work commenced on May 1 and is being managed by Nga Whenua Rahui in conjunction with DOC. This includes ground control in the river trench from the banks of the river to the skyline in areas that are accessible. This also includes areas around the campsite and hut site on the river. The area controlled so far has been between the Whitianga Trust block to the Whangamomona River. This includes trust, conservation and private land. An estimated 200 goats have been killed to date. Two weeks of work are planned for the end of May and towards the end of June. The Mangapurua block is currently being hunted by contract hunters. The Te Mata north block has been completed. The Te Mata south block will be started in mid-May.

Kiwi survey

- 3.2.9 An initial kiwi survey in the Whitianga block and the Mangapurua valley was completed between 20-23 April. Two kiwi dog handlers were used, one at each site. Two kiwi (one male and one female) were captured and transmitters placed in the Whitianga block. No kiwi were able to be found and transmitted in the Mangapurua, though three males were heard a fair distance apart. A second trip is planned for the next two weeks. This will involve telemetry work to locate kiwi and build up a picture of territory size. The dog handlers will also continue searching for other individual kiwi on which to place transmitters and track.

DOC Community Fund Updates

- 3.2.10 We have been advised that the Minister will soon be announcing the fourth round of the **DOC Community Fund** (DOCCF). Its purpose is to inspire and enable community-led conservation growth
- 3.2.11 The third round of the DOCCF resulted in many projects in the Horizons Region receiving funding. Examples of current DOCCF funded projects in the Horizons Region are listed below:
- 3.2.12 Whanganui – The Mt Hiwi Trust obtained \$70,000 for the Moumahaki Kiwi restoration Project through the 2016 DOCCF process. This work will benefit kiwi in the area through establishment of predator control and kiwi monitoring.
- 3.2.13 Whanganui Bushy Park and Castlecliff Coastcare were recipients of 2015 DOCCF funding and are making excellent progress with their projects. Six-monthly progress reporting confirms both groups are on track with meeting key objectives and milestones relating to their projects.

- 3.3** Tararua – Te Runanga o Rangitāne o Tamaki nui-ā-rua received \$20,000 for ‘Haukopuapua Whakaora’ to support weed planning and work at Haukopua Scenic Reserve near Woodville.
- 3.3.1 Horowhenua plains – A lake on private iwi land has received \$20,000 through the DOCCF. The primary purpose of the project is freshwater ecosystem protection. The funding is targeting weed and predator control. Horizons is an existing partner in the project.
- 3.3.2 Ruahine Ranges – the Ruahine Whio Trust was awarded \$10,000 to undertaken monitoring for whio and kiwi in the Ruahine Range. The Trust supports the work of more than seven volunteer groups that provided trapping across the range. The funding will increase knowledge of kiwi and whio in the Ruahines and inform further management plans and programmes.
- 3.3.3 Rangitikei – Recipients of the 2015 DOCCF funding for OMB control in the Rangitikei have continued with their second season of work over this summer weed season.
- 3.3.4 Palmerston North / Manawatu Gorge – Milson Scout Group. The Milson Scout Group has been awarded \$5,000 towards establishing an education and trapping programme on the northern side of the Manawatu Gorge. This connects with a Palmerston North project. In addition to delivering additional predator control, the project will increase awareness and skills in biodiversity management.

Pukaha Mt Bruce

- 3.3.5 The restoration and animal pest management work in and around the reserve is now led by the Pukaha Mount Bruce Board and the Department of Conservation provides support to this project by giving on going advice and contributing to the Technical Advisory Group meetings.
- 3.3.6 Animal pest management within the reserve continues to benefit from the strong buffer control provided by both Horizons Regional Council and Greater Wellington Regional Council.
- 3.3.7 As reported last meeting, the 1080 application in December was successful and rounds out three consecutive years of 1080 control within the reserve. The Technical Advisory Group, of which both DOC and Horizons staff are members, has determined it is now necessary to have a season using a different method in order to avoid bait shyness (or similar) in order to retain its effectiveness. The alternative control method for rodents this coming spring is to use a substantive number of self-resetting ‘goodnature traps’ within the reserve. The Pukaha Mount Bruce Board will purchase these traps and undertake the installation work between now and spring. Areas of the reserve known to support North Island kokako will be given priority when installation commences.

Manawatu Estuary

- 3.3.8 A ground control operation has been completed for the management of spartina, the main plant pest which we aim to eradicate from this site. Control work included a compartment search on the south side of the estuary (3 plants located and sprayed), survey of the historic sites on the north side (5 plants located and sprayed) and a compartment search around the Boat Club (2 plants located and sprayed). Numbers of plants found are lower than last year.

Te Apiti Manawatu Gorge Biodiversity Project

- 3.3.9 The Biodiversity Project is still on track to achieve pest and plant management work plans set for the 2016-17 summer.

- 3.3.10 Visitor numbers expected to increase in the coming months with the Minister of Conservation opening the east to west Manawatu Gorge Track on 16 May; this track is now 11.2km.
- 3.3.11 Volunteers continue to make a significant contribution to biodiversity work in the Gorge. Ashhurst Volunteer Stoat Trapping Group clears and rebaits the mustelid traps each month and a team of Forest and Bird Manawatu members spent a morning cutting and pasting broom and releasing rata from Japanese honeysuckle in March.
- 3.3.12 Contractors have begun work upgrading the Te Ara o Mahurangi Mountain Bike Trail to a Grade 3 trail. Capital development projects on the northern side, southern side and mountain bike track are all progressing. A full verbal report can be provided at the Committee meeting on request.



Photo 2 Minister of Conservation Maggie Barry addressing the crowd on a bitterly cold morning while Horizons Chairman Bruce Gordon, MP Gordon McKelvie and Cr Wiremu Te Awe Awe look on.

Allanah Irvine
DOC OPERATIONS MANAGER, MANAWATU

Jon Roygard
GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS



Biosecurity Activity (Animals)

1 Possums (Possum Control Operations - PCOs)

1.1 Activity Overview

This report summarises the operational and management work involved in the 2016-17 **Possum Control Operation** (PCO). A more detailed overview of the PCO is provided in the Combined Regional Pest Management Operational Plan 2016-17.

1.2 Targets – Year to Date Progress

Measure	Reporting Period				Completed to date	Target	%
	1 st	2 nd	3 rd	4 th			
Maintenance PCOs (by count)	10	27	18		55	84	65%
Initial operational areas (by count)	0	0	1		1	5	20%
Overall programme control (by count) *1	10	37	56		56	89	63%
Control maintenance operational areas (by area)	229,728	275,674	151,670		657,072	885,537	74%
Control initial operational areas (by area) *1	0	6,245	33,993		40,238	55,941	72%
Overall programme control (by area)	229,728	281,919	185,663		697,310	941,478	74%

*1 AP/LTP targets

1.3 Activity Highlights

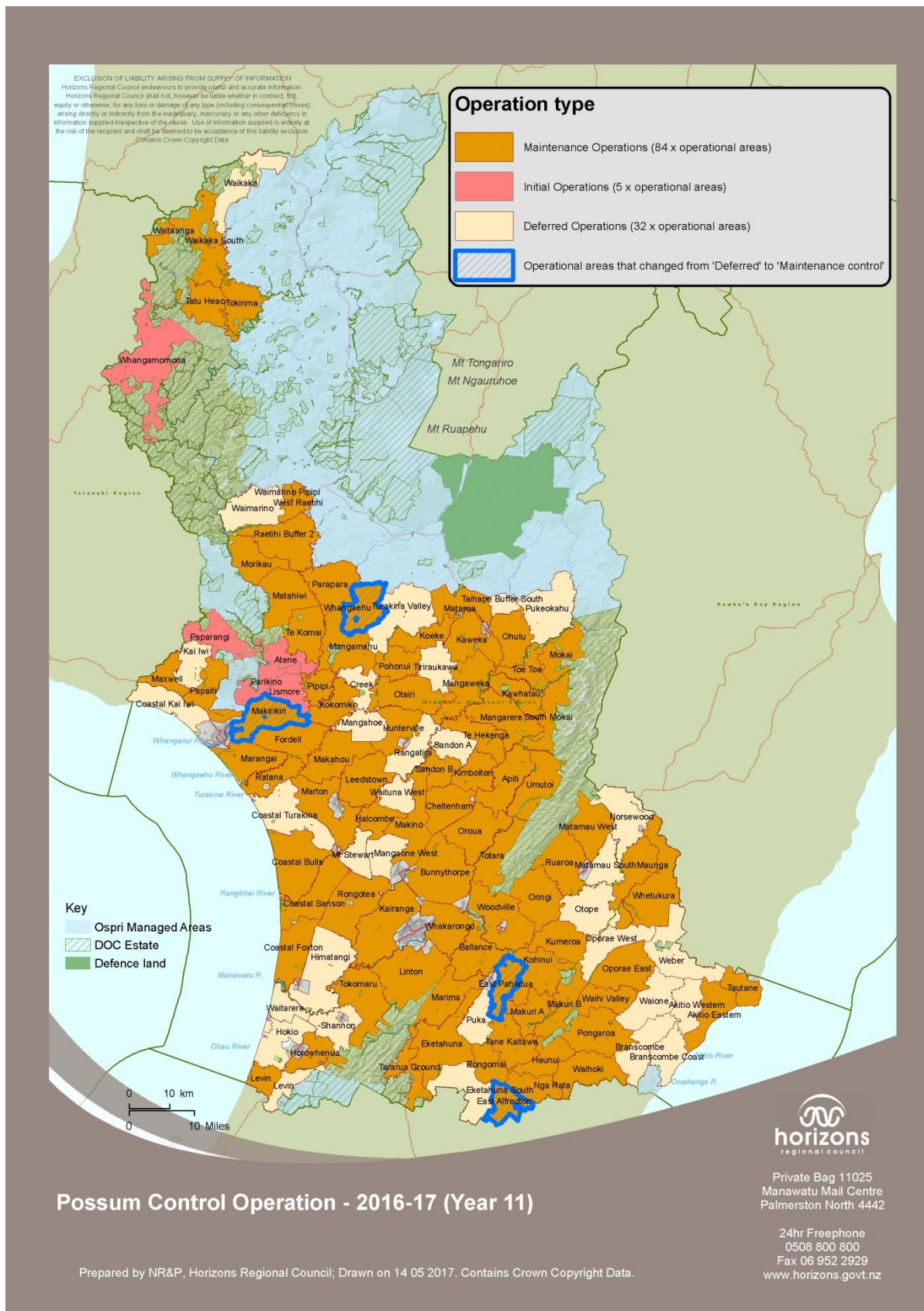
- 1.3.1 Operational work in the 2016-17 PCO has progressed well with 74% of the programme completed.
- 1.3.2 Control work has been completed in 55 of the 84 maintenance operations and is underway on another 15 jobs. One of the initial operations, at Atenehas been completed and work is underway in the four remaining operations.
- 1.3.3 The tender process for PCO aerial 1080 at Paparangi, , work is underway and we expect to know the successful tenderer by mid- June. If weather permits, the aerial pre-feed will take place by

the end of June. This job has been delayed and will likely proceed in the next financial year. The toxic application will be undertaken 2-3 weeks following the pre-feed.

- 1.3.4 As a result of the high number of landowners ‘opting out’ in this year’s initial PCO programmes, and the correspondingly higher than budgeted underspend (in part due to staff vacancies), it was decided that four maintenance operations originally scheduled to be deferred this year be reopened. The operations involved are: Makirikiri; East Alfredton; East Pahiatua and Whangaehu. All of these operations will be worked by external contractors and will be completed by the end of the financial year.
- 1.3.5 As mentioned in the last report, a review was undertaken of the operational areas that are currently being worked by the Regional Response Team (RRT) and it was decided that the RRT be reassigned the operational areas closer to their respective service centres from next year onwards. The reallocation resulted in 17 operational areas changing from the RRT to external contractors.
- 1.3.6 We recently tendered 14 of these operational areas in readiness for next year’s work programme. We had a good response to the tenders with all contracts being well contested. The table below shows the successful tenderers.

Operation Name	District	Successful Tenderer
Eketahuna	Tararua	Central Districts Pest Control Ltd
Koeke	Rangitikei	KB Environmental Services Ltd
Mangahoe	Rangitikei	KB Environmental Services Ltd
Mangamahu	Whanganui	KB Environmental Services Ltd
Mataroa	Rangitikei	KB Environmental Services Ltd
Maunga	Tararua	CC Pest Control Ltd
Norsewood	Tararua	Central Districts Pest Control Ltd
Otairi	Rangitikei	Xpest Ltd
Paparangi	Whanganui	Xpest Ltd
Pukeokahu	Rangitikei	KB Environmental Services Ltd
South Mokai	Rangitikei	Xpest Ltd
Taihape Buffer South	Rangitikei	Baytrap Ltd
Tiriraukawa	Rangitikei	KB Environmental Services Ltd
Whetukura	Tararua	CC Pest Control Ltd

- 1.3.7 Two of the three remaining PCOs (Weber and Tararua Ground) will be tendered later in the year. The last area (Ohutu) will be deferred next year.
- 1.3.8 During May a recruitment process to appoint the coordinator of the Regional Response Team was undertaken and an announcement is imminent.



Map 1 Map of the Possum Control Operation for 2016-17 (Year 11).

2 Monitoring

2.1 Activity Overview

This report summarises the operational and management work involved in the 2016-17 Regional Animal Pest Monitoring programme. A more detailed overview of the programme is provided in the Combined Regional Pest Management Operational Plan 2016-17.

2.2 Targets – Year to Date Progress

Measure	Reporting Period				YTD Actual	Target	%
	1 st Jul to Oct	2 nd	3 rd	4 th			
Possum densities are maintained at/below 10% residual trap-catch (RTC) in existing /new possum control operation areas. This is to enhance production, biodiversity, disease protection and amenity values.*1	0	6	0		1.9%	<10% RTC	
Possum densities are maintained at/below 5% RTC for all maintenance control programmes *1	0	3	1		1.57%	<5% RTC	
Record all inputs associated with the management and control of possums in the PCOs including inputs (maps); input/habitat ratio; inputs (labour & consumables); medical officer of health approvals	✓	✓	✓				
Undertake RTC monitors (by count)	0	9	1		10	18 monitors	56%
Undertake operational audits to ensure compliance with operational and contract standards	0	4	1		5	10% (8-9 operations)	
Rabbit night counts	0	0	0			No counts this year	

*1 AP/LTP targets

2.3 Activity Highlights

Possum monitoring

- 1.1.1 Monitoring has been completed in 10 PCOs this year and the average results from this work indicate very low possum numbers post-control.
- 1.1.2 The Raetihi Buffer Stage 2 PCO was monitored during the reporting period, returning a result of 1.8% RTC against a target of 5 % RTC. A summary of the year to date monitoring results are in shown the targets above. These are grouped into the areas that were periods in OSPRI

management (ex OSPRI) which have a target of 5 % RTC (to maintain the gains). At this point in the year, the results over the four operations monitored to date average 1.6 % RTC.

- 1.1.3 The year to date results for Horizons-initiated PCOs (those with a target of 10 % RTC) are also good with the six operations monitored averaging 1.92 % RTC.

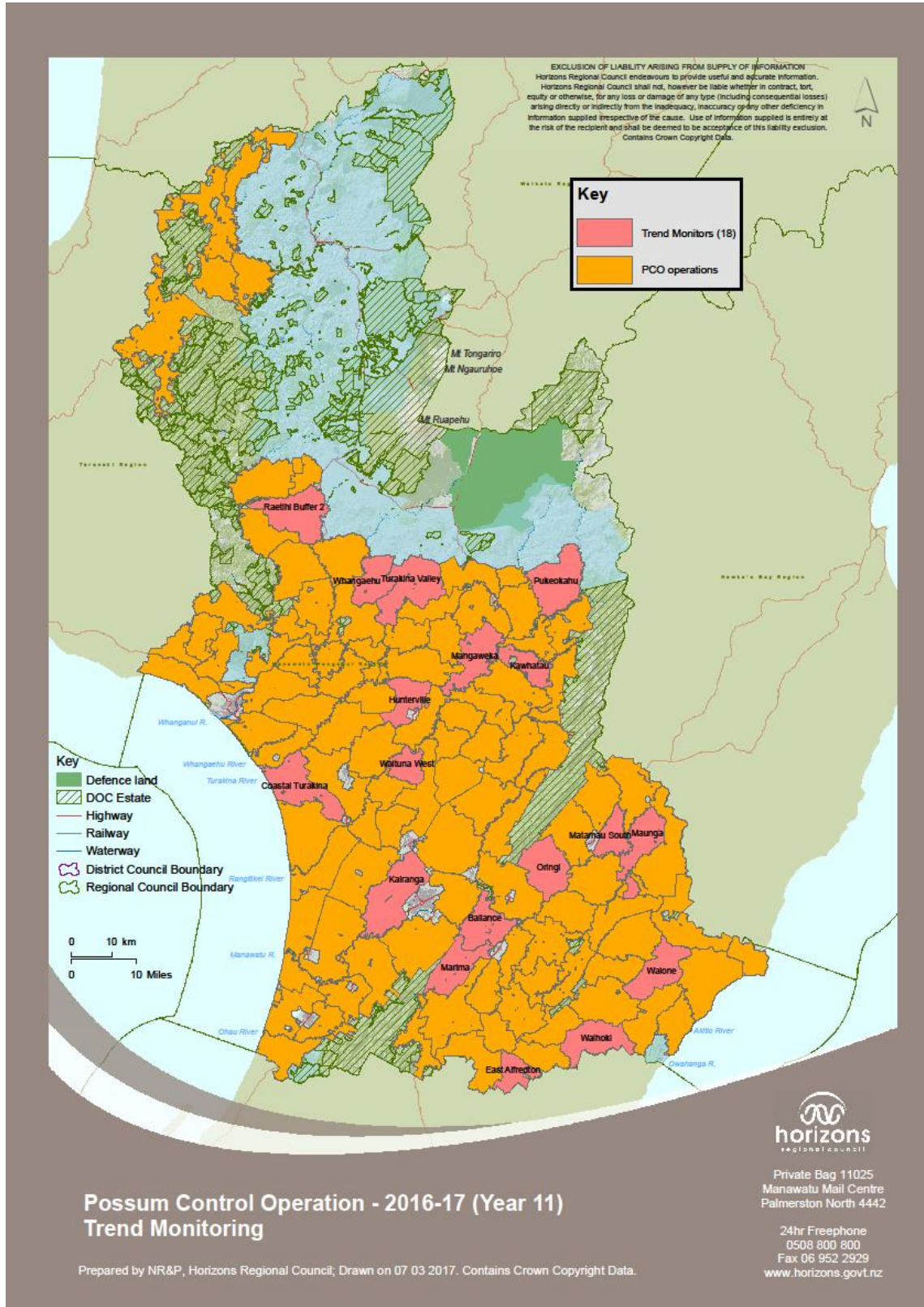
Table 1 Monitoring results 2016-17.

Summary of PCO results 2016-17			
PCO Name	Operational Type	Target RTC result	Result
Ballance	Maintenance (ex Initial)	<10%	0.6%
Coastal Turakina	Maintenance (ex Ospri)	< 5%	3.3%
East Alfredton	Maintenance (ex Ospri)	< 5%	1.2%
Kawhatau	Maintenance (ex Initial)	<10%	5.3%
Mangaweka	Maintenance (ex Initial)	<10%	2.2%
Matamau South	Maintenance (ex Initial)	<10%	1.8%
Oringi	Maintenance (ex Initial)	<10%	1.5%
Waione	Maintenance (ex Ospri)	< 5%	0%
Waituna West	Maintenance (ex Initial)	<10%	0.1%
Raetihi Buffer Stage 2	Maintenance (ex Ospri)	< 5%	1.8%

- 2.3.1 Monitors are currently underway in two PCOs (Whangaehu and Turakina Valley) and the remaining six operations are scheduled to commence in the next 2-4 weeks. All monitors will be completed by the end of the financial year.
- 2.3.2 In late April we had discussions with Landcare Research scientists to scope out the future of our monitoring programme. Landcare has been tasked with reviewing our current monitoring programme and assessing the impacts of the Ospri cessation, along with a number of other related issues. Landcare is currently working on the project and we anticipate a report from them in the near future. We intend to use the recommendations from the Landcare Research report to inform the scope and structure of our monitoring plan for the Possum Control Operations. We hope this research will be able to be incorporated into the next financial year's monitoring operations.
- 2.3.3 Since the inception of the Possum Control Operation in 2006-07, a total of 105 operations have been monitored. To date, more than 90 % of the monitoring results have met the pre-determined operational targets. Given the size of the programme and the high percentage of possum habitat that has been worked through, this is a very good result. The table below provides the average RTC results to date.

Table 2 Average results for the monitoring completed to date as a part of the possum control operation.

Monitor results for the life of the Possum Control Operation	
Ex-OSPRi operations 5% target	Initial operations 10% target
2.04% average (39 monitors)	4.53% average (66 monitors)
Overall average 3.62% (105 monitors)	



Map 2 2016-17 PCO monitoring map.

3 Rooks

3.1 Activity Overview

This report summarises the operational and management work involved in the 2016-17 regional rook programme. A more detailed overview of the rook programme is provided in the Combined Regional Pest Management Operational Plan 2016-17.

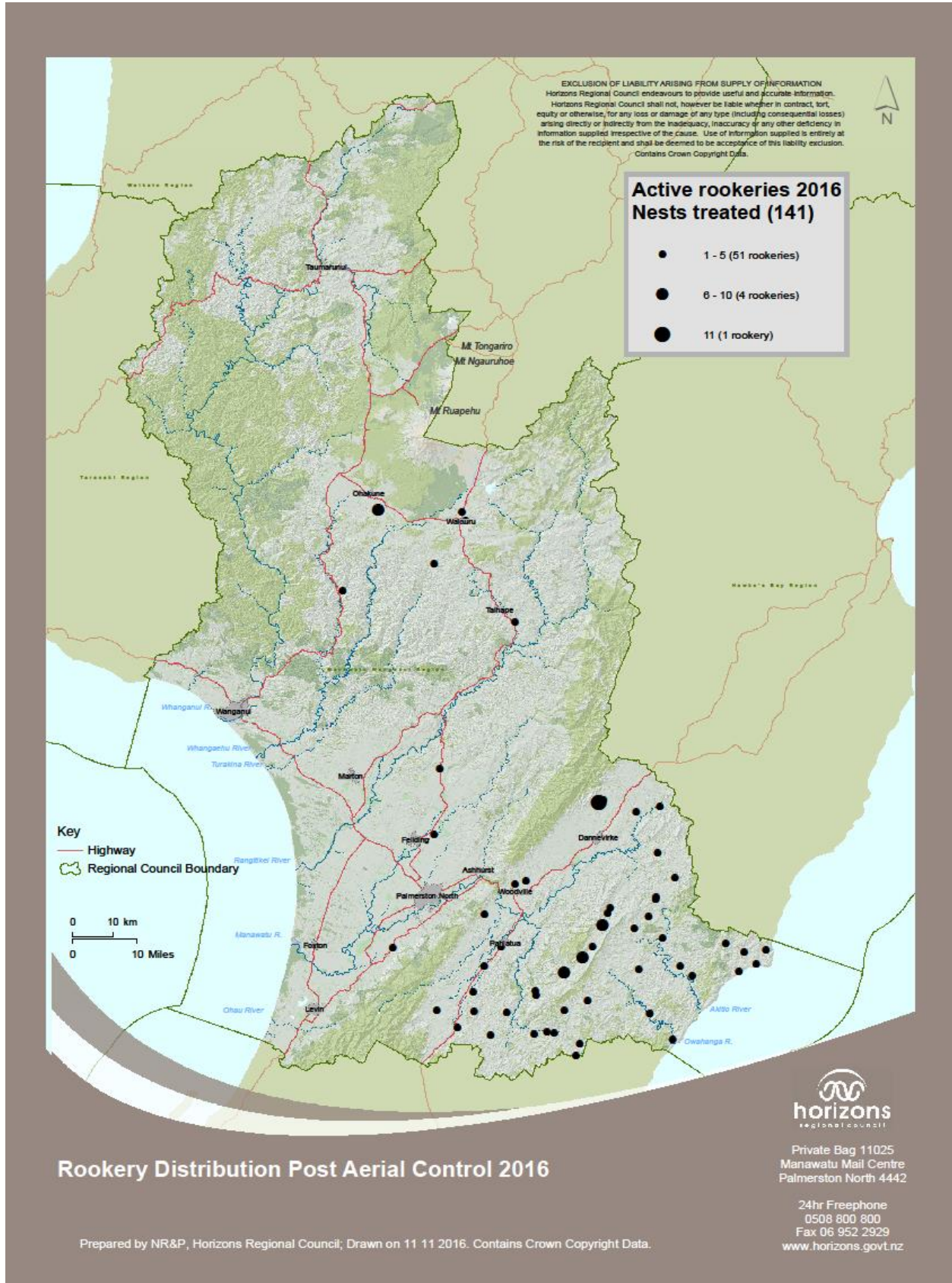
3.2 Targets – Year to Date Progress

Measure	Reporting Period				YTD Actual	Target	%
	1 st	2 nd	3 rd	4 th			
Existing rook colonies (rookeries) (a)	43				Complete	Record	100%
New sites (b)	13				Complete	Record	100%
Total rook colonies (rookeries) (a + b)	56				56	Record	100%
All known rookeries are treated annually to reduce crop losses and damage * ¹	100%				100%	100%	100%
	(56 rookeries)						
Ground poisoning operations	0	1	0		Completed	All	N/A
Report ground control efficacy (% estimated kill)	N/A				Completed	80%	N/A
Breeding rookery database updated by January 2017	Completed				Completed	Record	100%

*¹ AP/LTP targets

3.3 Activity Highlights

- 1.1.4 Rook control was undertaken earlier this year. A total 141 active breeding nests were treated. The assessment is the number of active rookeries were reduced from 84 last year to 69 this year.
- 1.1.5 Prior to this reporting period there were reports of rooks in the Waituna West and Tararua area and staff have followed these up.
- 1.1.6 No operational work was undertaken during the reporting period.
- 1.1.7 Preliminary work has been undertaken to arrange a meeting of pest animal personnel from Horizons, Greater Wellington, Hawkes Bay, Waikato and Bay of Plenty regional councils. The aim will be to share the learnings from their recent rook operational programmes and to discuss/develop strategies for future work.



Map 3 Rook distribution post control November 2016

4 Amenity Pests

4.1 Activity Overview

This report summarises the operational and management work involved in the 2016-17 Amenity Pest programme. A more detailed overview of the programme is provided in the Combined Regional Pest Management Operational Plan 2016-17.

4.2 Targets – Year to Date Progress

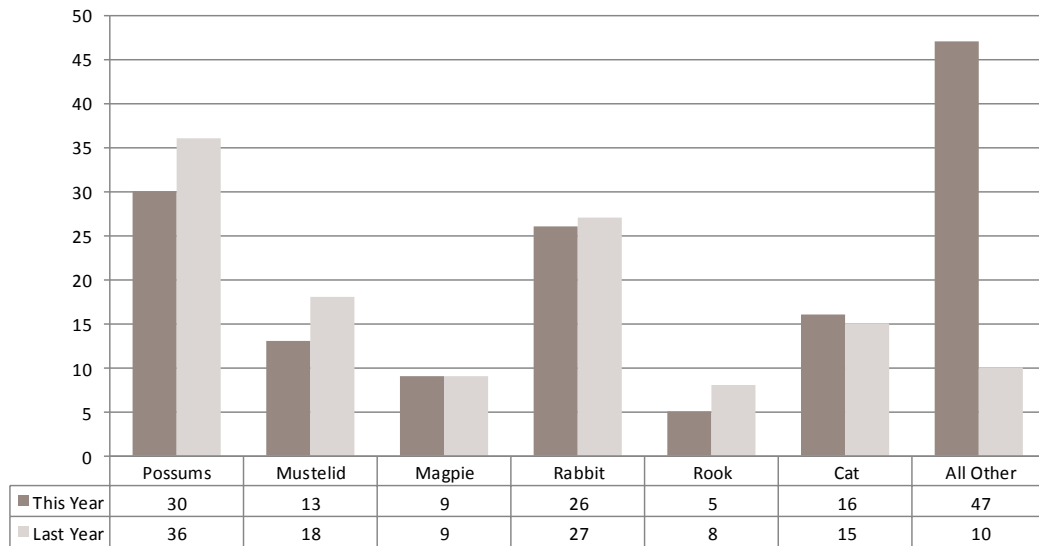
Measure	Reporting Period				YTD Actual	Target	%
	1 st	2 nd	3 rd	4 th			
Provide an urban/peri-urban animal pest management service to assist urban ratepayers with specialist advice and equipment *1	233	263	146		642	>300 responses/year	
Animal pest control assistance / enquiries are responded to with 48 hours *1	100% (233)	100% (263)	146		100% (642 responses)	100%	100%
Close out or action all enquiries within 5 working days of receipt	233	263	146		642	100%	100%

*1 AP/LTP targets

4.3 Activity Highlights

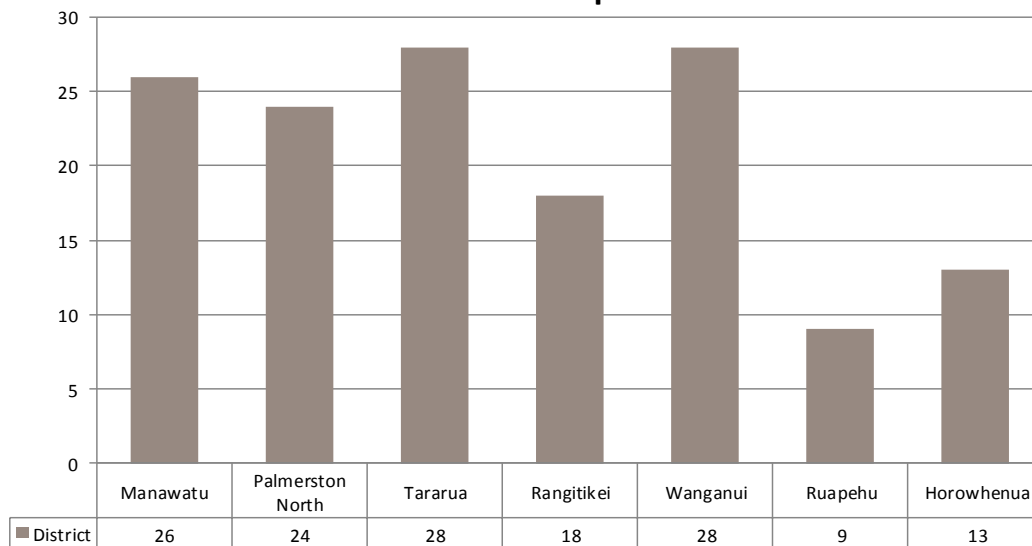
- 1.1.8 A total of 146 enquiries were received during the reporting period. All landowners making enquiries were contacted / visited within the prescribed timeframes and provided with advice, equipment (traps etc) or small amounts of toxins to help them deal with their particular pest issue.

**Pest Animal Enquiry Summary by Pest Type
for Period 1st March 2017 to 30th April 2017**



Graph 1: Pest Animal Enquiry Summary – by Pest Type

**Pest Animal Enquiry Summary by District
for Period 1st March 2017 to 30th April 2017**



Graph 2: Pest Animal Enquiry Summary – by District

5 Activity Progress Report

Project	Key Deliverables	Progress to Date
Possum Control Operation	Operational implementation	<ul style="list-style-type: none"> 2016-17 operational work is approx 74% complete. The Vertebrate Toxic Agents (VTA) permits have been obtained for the majority of the 2016-17 programmes. Planning work for the 2017-18 PCO has commenced.
	Success indicators	<ul style="list-style-type: none"> Ten post-operational monitors have been completed with all results under the pre-determined targets.
	Data management	<ul style="list-style-type: none"> Post-operational reports have been received and GPS data uploaded into the GIS database
Rook Management	Aerial nest baiting	<ul style="list-style-type: none"> The 2016-17 aerial programme has been completed.
	Ground control	<ul style="list-style-type: none"> Some ground control attempted with limited success.
	Rook database	<ul style="list-style-type: none"> Reviewed and updated.
Amenity Pest Programme	Respond to enquiries/complaints within agreed timeframes	<ul style="list-style-type: none"> Frontline database reviewed daily. 642 enquiries received to date this year. Individual 'enquiries' actioned Database updated regularly
	Assist landowners with advice on appropriate pest control techniques	<ul style="list-style-type: none"> Ongoing – advice provided as appropriate Loan trap and other equipment supplied
	Initiate appropriate enforcement action against land occupiers who do not comply with strategy rules.	<ul style="list-style-type: none"> No action required to date
	Ensure that information on control methods for amenity pests is available at www.horizons.govt.nz	<ul style="list-style-type: none"> Ongoing (updated as required)
Animal Pest Monitoring Programme	Possum Control Operation	<ul style="list-style-type: none"> Ten of the 18 monitors have been completed. Planning work for the 2017-18 PCO monitors has yet to commence.

Eric Dodd

ENVIRONMENTAL PROGRAMME COORDINATOR (ANIMALS)

Jon Roygard

GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS



Biosecurity Activity (Plants)

1 Biosecurity Plants

1.1 Overview

1.1.1 This activity is arranged in six sections: zero density, production species, biological control, non-ratable land and Crown agencies, surveillance and awareness and promotion.

1.1.2 The target of 6 at zero-density is currently not being met as the only location of alligator weed in the Region experienced a large population increase and as such cannot be classified as zero-density. We have planned activity in the short term to reduce the large population, as well as future controls and interventions to bring the infestation back under control. The other species classed as reaching the zero-density target are: Californian bulrush, blue-leaved wattle, grey willow, knot weed and climbing spindleberry.

1.1.3 The public continue to view Horizons as a source of information about a range of pest issues. These range from traditional boundary enquiries to the latest biosecurity topic highlighted in the media. Our ability to meet all requests for assistance within a rapid timeframe is occasionally stretched but more often than not staff provide the best information or support to resolve the matter.

1.2 Targets

Measure	Reporting Period					Year to date actual	Target	% complete
	1. 1 st to Oct	2. 2 nd to Oct	3. 3 rd to Oct	4. 4 th to Oct	5. 5 th to Oct			
Number of listed pest plants controlled to zero density/containment increases as per Regional Pest Plant Management Strategy (RPPMS)	6.	6	7.	8.	9.	10. 5	11.	12. 24%
No new listed pest plants established in the Region	13.	0	14.	15.	16.	17. 0	18.	19. 75%
Financially support the national bio-control agent development programme	20.	1	21.	22.	23.	24. 3	25.	26. 75%
Frontline enquiries for plant pest control assistance are responded to within 48 hours	27.	74 %	28. 2%	29. 5%	30.	31. 7%	32. 00%	33. 75%

- 1.2.1 The number of listed pest plants controlled to zero density are those plants where site numbers of adult plants are not increasing and the plant population is expiring. The target of 6 species at zero-density is the Annual Plan target and it is noted that the aspirational goal from Horizons Regional Pest Plant Management Strategy (2007) is for 21 species to be managed to zero-density either across the Region or within Control areas and although many species are well managed with historic site populations decreasing, surveillance activity continues to find new sites.
- 1.2.2 We continue to have freedom from any of the Exclusion plants in our Strategy that have not previously been found in the Region.
- 1.2.3 Horizons financially supports the New Zealand Biocontrol Collective and its many projects aimed at developing bio-agents for a range of plant targets, and methodologies and systems for monitoring the success of these projects.
- 1.2.4 Our goal to respond promptly to all enquires received from the public and is in the main achieved within 48 hours. The occasional delay due to staff being on leave or workload pressure has meant that 100% achievement has not been reached this year.

2 Zero Density/Containment Species

2.1 Activity Overview

- 2.1.1 Control work against the following species was carried out during this reporting period: banana passionfruit, cathedral bells, Chilean rhubarb, climbing spindle berry, old man's beard, and *Pinus contorta*. Programmes are winding down against most species, except for the likes of climbing spindleberry and the pinus species which can be controlled year-round.

2.2 Activity Highlights

Central North Island Regional Steering Group – National Wilding Conifer Control Programme

- 2.2.1 Work has now finished for all the programme milestones scheduled within the Horizons Region. We spent a total of \$135,881, of which the national programme contributed \$93,881. The other partners have either completed or very nearly completed their programmes. Despite the poor conditions in early summer the Central North Island should have the majority of the forecast area controlled and the budget spent this financial year.
- 2.2.2 The last block to be worked was one that highlighted the collaborative approach to funding these operations. The Oruamatua Kaimanawa IV Trust land of 2,500 ha was treated by helicopter aerial basal bark application, aerial spot spraying and ground basal bark application. This work is financially supported by the Trust, Horizons and **Ministry for Primary Industries** (MPI) funding.
- 2.2.3 When the work started more than 10 years ago we treated 2,178 trees including 289 adult coning trees. These trees were large and chainsaws were used, which we now know left us with a big legacy of seedling trees to control in future years.
- 2.2.4 We now poison standing trees and subsequently get a lot fewer seedlings. This year we found and controlled 826 trees of which only 6 were coning. This total included 6 *Pinus sylvestris* of which one was coning and one large *Pinus nigra* that was not coning. The other trees were *Pinus contorta*.



Photo 1 A hotspot showing the vulnerable landscape requiring control by ground based basal bark application. This small area had 106 *Pinus contorta* trees with none were coning. (M. Matthewson)

Pinus contorta

- 2.2.5 Not all work staff conduct against the pest pines is confined to the National programme or to smallish trees. The photo below shows two large and one small contorta needing to come down that are along SH4 South of Raetihi. We have raised the matter with the road managers and will progress through to removal as soon as possible.



Photo 2 *Pinus contorta* south of Raetihi. (R. Bashford)

Banana Passionfruit

2.2.6 Another one of the smothering vine that staff target through late summer can be hard to find, especially when it is a planted food source. A new site on Mangatuna Road in the Tararua District was identified and the photos show the well-worn story of garden plant to wild infestation. We controlled banana passionfruit at Pohangina, Kaituna, Kawakawa, Norsewood, the Mara, Tiratu, and Akitio.



Photo 3 Banana passionfruit at Mangatuna Road. Garden site and wilding site in trees across farm from homestead. (J. Keast)

3 Production Species

3.1 Activity Overview

- 3.1.1 Control work against the production species was limited to woolly nightshade during this reporting period.
- 3.1.2 A small number of complaints and enquires were received regarding boundary species. Staff noted a late season flush of yellow bristle grass in some, but not all, of the historic locations.

3.2 Activity Highlights

Yellow bristle grass (YBG)

- 3.2.1 We received a handful of enquires about suspected YBG on roadsides and within neighboring paddocks but Fortuitously the pasture invaders have been found to not be YBG but a close relative such as knot root bristle grass or rough bristle grass. However, a follow up in Ruapehu District found a roadside infestation to be worse than ever and we have evidence of an infected maize crop in Taumarunui and a likely find at Matiere.



Photo 4 Ohura roadside with YBG ‘targeted’ spraying. (D. Alker)

- 3.2.2 Though current good practice to prevent spread and control infestations is to promote a smothering vegetation canopy, a dairy farmer sprayed the adjacent roadside in an attempt to tackle the weed head on. Horizons advised this is not necessarily the right option given removing competition can encourage late season growth and seed set. However, the farmer said they are

going to spray often and before seed heads appear. We will monitor the effectiveness of this approach as a couple of other farmers in the district are planning to do the same.

- 3.2.3 Horizons staff noted that in the Waikato region, farmer management of the adjacent road reserve against YBG has been an accepted solution at a property by property level. We have not seen effective control of YBG by any spraying regime; however, we have seen very effective suppression when mowing was undertaken by farmers.



Photo 5 Waikato farmer controlled vegetation with minimal mowing width to suppress YBG and prevent roadside to paddock transfer. (C. Davey)

4 Biological Control

4.1 Activity Overview

- 4.1.1 A small number of thistle agent transfers were made this period and checks were conducted on broom and buddleja host plants.

4.2 Targets – Year to Date Progress

Measure	Reporting Period						YTD Actual	
	1 st		2 nd		3 rd		4 th	
Monitor and report on bio-agent release sites - sites inspected	34.	12	35.	10	36.	8	37.	12
Monitor and report on bio-agent release sites - new releases/transfers	38.		39.	18	40.	2	41.	20

4.3 Activity Highlights

Green thistle beetle

- 4.3.1 Staff have finished green thistle beetle assessments and will feed information through to the national study.
- 4.3.2 Through the assessment process we have undertaken many more observations of Californian thistle populations and this anecdotal information is promising. We have had reports from farmers who have seen damage at recently released beetle sites, and also visited a farmer who was unsure of establishment. After the staff member found damage and insects the farmer was over the moon, and couldn't stop shaking the staff members hand such was his delight at the prospect Californian thistles may be on the way out.
- 4.3.3 A 2009 beetle release site at Waimiha had approximately six thistles in 2017. When quizzing whether the farmer had given up and sprayed the paddock he revealed there was no other intervention so we assume the green thistle beetle had to be the only reason for its demise.

Buddleja

- 4.3.4 Staff have finished with the distribution programme against buddleja. The SCION-introduced weevil has now reached a population that will naturally disperse through the Region. Staff are noticing major damage occurring and in some cases the death of large plants has occurred.



Photo 6 A typical buddleja bush within the region. (J. Keast)

Old Man's Beard new agent update

- 4.3.5 Landcare research has stopped host range testing with the old man's beard bark beetle (*Xylocleptes bispinus*) on potted New Zealand clematis species in the Lincoln containment facility. The results of the adult beetle damage trial on native clematis is likely to discount this beetle as a potential bio-control against Old Man's Beard in New Zealand. It attacks a number of native clematis species (eg. *C. foetida*, *C. quadribracteolata*, *C. marata*) to, in many cases, a similar level as *C. vitalba*. Even though the 'new' species may have narrower stem diameters it is severely damaging stems and in many instances totally severing stems, laterals and petioles.
- 4.3.6 Landcare Research has therefore advised a cessation to further work on the bark beetle. This outcome is disappointing as the beetle does look quite damaging to Old Man's Beard, but given the significant collateral damage seen in the laboratory environment there would be no chance of approval to release being granted.
- 4.3.7 Work on other agents continues, with a request for release to the **Environmental Protection Agency** (EPA) of the leaf-galling mite (*Aceria vitalbae*) progressing well. A shipment of these mites is due into containment in July, along with some OMB sawfly (*Monophadnus spinole*) to bolster the small populations found in Nelson in 2015. Horizons is acting as the lead or nominating agency to the EPA for the mite and we will be keenly interested in obtaining populations of previously released sawfly.

- 4.3.8 The sawfly was introduced in the early 2000s and until January last year was thought to have died out at all known release sites, in Horizons Region and across NZ. The small population discovered in Nelson gave the biocontrol community hope that a re-introduction project using a wider genetic base would be more successful. Sawflies are notoriously difficult to mass rear in laboratories and this may have been one of the reasons why the first releases were so unsuccessful. Direct release from overseas sourced certified clean populations is a new successful approach trialed with Japanese honeysuckle sawfly and will be attempted this time around.
- 4.3.9 There are no other known biological control options available to us. Landcare Research undertook a review of work to date, which revealed that full surveys have never been undertaken to look for potential pathogen agents in Europe. The fungus released in New Zealand some time ago, which is thought to have failed to establish, was collected in the United States. A European pathogen survey has been recommended with an indicative cost of \$90,000.

5 Non-rateable Land and Crown Agencies

5.1 Activity Overview

5.1.1 Liaison with all agencies was completed during this period. The discussions centered on the implications of the Regional Pest Management Plan (RPMP) and how the new approaches to pest management within non-rateable land will change the requirements on agencies, the relationship between Horizons and the agencies, and the impact on pest populations and management.

5.2 Targets – Year to Date Progress

Measure	Reporting Period								YTD Actual		Target		%
	1 st		2 nd		3 rd		4 th						
MOU/Liaison progress	42.	4	43.	2	44.	5	45.		46.	11	47.	11	100

6 Surveillance

6.1 Activity Overview

6.1.1 The work in our Surveillance programme focused on control of spartina and Senegal tea, along with farmer liaison and crop inspections for velvetleaf. We have also placed Biosecurity and Biodiversity staff on response standby and they are conducting incidental surveillance for Myrtle rust since the New Zealand incursion was discovered in Northland and subsequently in Taranaki and Waikato.

6.2 Targets – Year to Date Progress

Measure	Reporting Period								YTD Actual		%	
	1 st		2 nd		3 rd		4 th					
Survey and inspect all nurseries for National Pest Plant Accord (NPPA) listed weeds	0		0		0				0		0%	
Report all discoveries and action taken	Reported below											
Survey and record status of all known and new Surveillance species sites	48.	27	49.	27	50.	27			51.	27	52.	100%
New sites	53.	0	54.	0	55.	0			56.	0	57.	
Total sites	58.	27	59.	27	60.	27			61.	27	62.	
Zero Density progress (cumulative sites at Zero Density)	63.	18	64.	18	65.	18			66.	18	67.	66%

6.3 Activity Highlights

Senegal tea

6.3.1 The Horowhenua pest plant team member sprayed the only known Senegal tea site, along the Kuku stream, with a knapsack this year. This is a wonderful result and shows that persistence with the correct technique eventually gets on top of these hard to remove plants. When the area was first sprayed 10 years ago we used 600 litres of chemical, and only one knapsack was required this year. We forecast this infestation to continue to decline, though monitoring will be required for sometime.

Velvetleaf

6.3.2 Inspections of crops and pasture for Velvetleaf were completed by staff or farmers, and with the help of John Taylor and Rusty (the collie dog) from Invercargill. Of the 19 known and potentially infected paddocks within our Region, six have presented with velvetleaf. Two of these paddocks were pasture and the other four had been sown with kale, fodder beet and one was a weedy failed grass crop. The use of broadleaf sprays may have cleaned up any seedlings in the pasture or growth may have been removed by topping etc.



Photo 7 John Taylor with Rusty indicating a velvetleaf plant, one of 8 found in this paddock. (R.Sicely)

6.3.3 The decision to bring in John and his dog to assist with surveillance was based on his recent successful work in the Waikato and because the vegetative nature of some of our potential infestations making effective surveillance by staff very difficult. Rusty locates velvetleaf by scent

from the leaves and works best with a positive wind direction less than 20 km/h. He has been known to pick up the scent from 80 m away when the conditions are good. Our experience of two days of rain did mean the track widths were much reduced but we were able to cover more area than planned and still find plants with very small amounts of leaves.

6.3.4 Despite the lateness of the season Rusty discovered a range of plant maturity across the infestations and added to our tally of known infected paddocks. One interesting point was noted by John and related to Rusty's ability to notice the location of last year's plants. Given we had accurate GPS locations of all the plants discovered last year we could monitor Rusty's behavior against these historic points and invariably, when the behavior changed, he was onto a previous plant location. We know velvetleaf to be strongly alleopathic, preventing the germination of other plants seeds in the vicinity of the parent plant, and it may be the strong exuded chemicals that Rusty was scenting.

6.3.5 When comparing the location of this year's plants to those we had previously discovered it seems only short distance dispersal occurs within paddocks. All but one new plant found was within a couple of metres from the parent plant – as identified by GPS. This finding gives us hope that if we can control human- and machine-assisted spread between paddocks or farms then contained infestations will decline through yearly surveillance and control actions.

Velvetleaf Infestation on Kauangaroa Farm 2016 and 2017

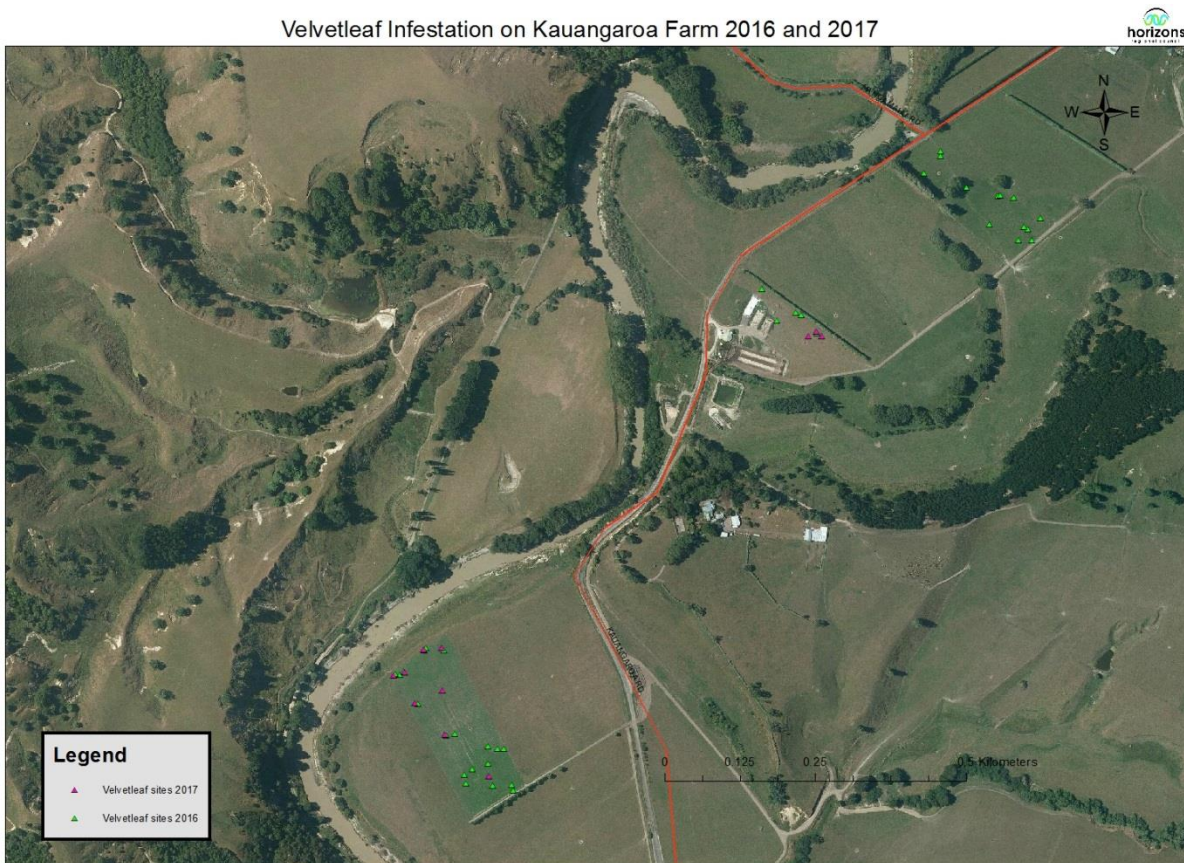


Figure 8 Farm map showing positions of parent plants in green and subsequent plants' location.

Myrtle rust

- 6.3.6 Myrtle rust is a serious fungal disease that affects plants in the myrtle family. The first detection of the disease in mainland New Zealand was at a Northland nursery in early May 2017 and it has since been found in Waitara, Taranaki; Te Kuiti, Waikato; and Kaikohe, Northland. It is also widespread on Raoul Island in the Kermadec group, about 1,100 km north-east of New Zealand. It is found in many parts of the world including New Caledonia and all along Australia's eastern seaboard.
- 6.3.7 The impact of myrtle rust has been particularly severe in Australia, where it affects more than 200 plant species. The disease is likely to affect some of our iconic native plants as well as commercially-grown species. New Zealand has a number of species in the myrtle family considered to be at risk, among them natives such as pōhutukawa, ramarama, rata and mānuka, and also feijoa, plantation and amenity eucalypts, and numerous ornamental plants.
- 6.3.8 Myrtle rust spores are microscopic and can easily spread across large distances by wind or via insects, birds, people, or machinery. The spores are thought to be capable of crossing the Tasman Sea from Australia to New Zealand on wind currents. It generally attacks soft new growth, including leaf surfaces, shoots, buds, flowers, and fruit. Symptoms to look out for on myrtle plants are:
1. Bright yellow powdery eruptions appearing on the underside of the leaf (young infection)
 2. Bright yellow powdery eruptions on both sides of the leaf (mature infection)
 3. Brown/grey rust pustules (older spores) on older lesions.
 4. Some leaves may become buckled or twisted and die off.



Photo 8 Yellow bumps and brown patches typical of myrtle rust. (MPI)

- 6.3.9 MPI is working with the Department of Conservation (DOC), iwi, industry, scientists, and local authorities on addressing the myrtle rust incursions in Northland and Taranaki. The affected nurseries are in lock-down. Restrictions are in place on the movement of people and plants in and out of the properties. Fungicide is being used as a treatment. Work has begun to determine the scale of the incursion and to trace where materials and products from the respective nurseries have gone. De-limiting inspections currently extend in a 500 m radius from the infected properties.
- 6.3.10 Horizons staff have been requested to assist with the response and a team of three are to assist in Taranaki.
- 6.3.11 There are two main reasons why the rust has been seen first in nurseries.
1. Growing conditions in nurseries are ideal for the fungus, with many vulnerable young plants in sheltered, warm and damp environments.
 2. Much information has been given to the nursery industry and growers have been particularly vigilant in checking their plants.

7 Awareness and Promotion

7.1 Activity Overview

7.1.1 During this reporting period the team received 82 pest plant enquires, of which 75% were attended to within 48 hours. The predominant enquiry related to Old Man's beard, driven by the Weedbusters and Rangitkei Environment Group programmes. We continue to receive steady numbers of enquires about general weed issues that we are happy to answer. There was a spike in numbers due to the Privet Attack programme in Taumarunui, which had local print and radio publicity. Central Districts Field Days occurred during this period and as always, provided a valuable opportunity to engage with a wide range of interested people. We received about a dozen enquiries for follow up and were surprised about a lack of interest in velvetleaf, the new weed to the Region.

7.2 Activity Table

ACTIVITY	WHAT
Field Days	Central Districts Field Days – staff provided information about all pest plants with a particular emphasis on agricultural weeds including velvetleaf and field horsetail.
Talks to groups	<ul style="list-style-type: none"> • River Scheme Meeting in Tararua District • Talk to Pukepoto farm tour regarding tutsan and other pests • Marae visit in Tararua District regarding priority pest plant control

8 Activity Progress Report

Project	Key Deliverables	Progress to Date
Nature Central (NC) Wilding Conifer Implementation Plan	Work with NC partners and other stakeholders to: 1. Form plan 2. Activity planning and tracking sheet 3. Annual meeting scheduled.	Planning meeting held 4 April to set out requirements for Tongariro Management Unit.
Waimarino TNP Darwin's barberry control programme	Organise joint work programme alongside DOC.	Programme finished for 2016-17. We have good cooperation and alignment with DOC.
Rangitikei Horsetail Group	Assist group financially and with actions as required.	Successful application to second round of MPI's Sustainable Farming Fund (SFF) funding to improve breeding of weevil in the lab.
Tutsan Action Group	Assist group financially and with actions as required.	Release of two insect species against tutsan.
Desert Road Invasive Legume Control Group	<ul style="list-style-type: none"> ▪ Relationship between parties maintained. ▪ MOU completed ▪ Coordinated action in priority areas is undertaken against the target species. 	Aerial photography completed December 2017. Broom distribution and density map is being created post-flight by Landcare Research. This will allow the group to measure success of previous 5 years' control and assess whether the current approach should be continued.
Check, Clean, Dry (CCD) advocacy programme	Establish season plan and post-season report.	Advocacy all but wound up for the season with attendance at events and advocacy on social media through businesses and water and campsite visits.

Craig Davey
ENVIRONMENTAL COORDINATOR – PLANTS

Jon Roygard
GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS

Report No.	17-119
Information Only - No Decision Required	

REGULATORY MANAGEMENT AND RURAL ADVICE ACTIVITY REPORT - APRIL TO MAY 2017

1. PURPOSE

- 1.1. This report updates Members on regulatory activity for the period April to May 2017. This report follows the revised format that was detailed to Council at the previous meeting and focuses on the industrial and wastewater programmes that sit within the regulatory team.

2. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 17-119 and Annex.

3. FINANCIAL IMPACT

- 3.1. As identified to the Audit and Risk Committee, there are significant costs being incurred by Council as a result of the appeals on several large consents, the volume of consenting work, and on-going prosecution proceedings. These costs will be regularly updated to the Audit and Risk Committee. It is expected that the end of year position will see over expenditure of budgets in the regulatory area.

4. COMMUNITY ENGAGEMENT

- 4.1. This is a public item and therefore Council may deem this sufficient to inform the public.

5. SIGNIFICANT BUSINESS RISK IMPACT

- 5.1. There is no significant business risk associated with this item.

6. OVERVIEW

- 6.1. Since the beginning of the financial year Horizons has received a total of 364 consent applications. This has resulted in continued high demand on consent and compliance resources. In addition to the high numbers of resource consents being lodged for various activities, Horizons is continuing to progress a number significant applications including the Whakapapa, Paihatua, Eketahuna and Foxton **Wastewater Treatment Plants (WWTP's)**.
- 6.2. In relation to the major applications the following provides a summary of their current status:
- The **Department of Conservation (DOC)** Whakapapa WWTP applications have been notified;
 - The **Horowhenua District Council (HDC)** appeal in relation to the Levin water supply was resolved prior to a hearing before the court;
 - The hearing for the Foxton direct referral has been deferred until 31 July 2017, to allow HDC and the iwi to have further discussions in an attempt to resolve outstanding matters.

- iv. The hearing for the Pahiatua WWTP re-convened during late May.
- v. The hearing for the Eketahuna WWTP has been deferred until November 2017 to allow the applicant time to apply for consents associated with their proposed wetland design; and
- vi. Resource consents relating to **Palmerston North City Council (PNCC)** – Pedestrian Bridge project were granted. No appeals have been received.
- vii. Appeals relating to the New Zealand Energy hydro-scheme, Lake Horowhenua consents and the AFFCO Feilding processing plant are still before the Court. In relation to the Lake Horowhenua appeal this matter was heard by the High Court on 23 May. At the time of writing this report a decision had not been made.

- 6.3. We are still attempting to recruit for a Planner due to a staff vacancy. Council has been asked to consider three additional FTEs across consents, compliance and the administration of these programmes as part of its Annual Plan deliberations. In preparation for the Long Term Plan an assessment of capacity and capability across the next 10 years has been completed.
- 6.4. Given work volumes it is likely that a number of performance measures across the regulatory business will not be met. It is expected that approximately 50% of measures will be met.
- 6.5. As a result of the recent Environment Court decision on the implementation of the One Plan, staff are now focussed on reviewing current consent processes, including application documentation, guidance material, decision documents and associated conditions. The focus of the review is to ensure that future applications and decision documents address the matters raised by the court. This work is resulting in staff time being diverted away from other core business functions such as the actual processing of resource consents.

7. INDUSTRIAL AND WASTEWATER PROGRAMMES

This is a new item for Environment Committee report. The intention of this section is to focus on one key part of the regulatory business. The focus for this report is on the industry/wastewater treatment component of the regulatory business. This programme spans a raft of activities, which vary considerably in public profile, complexity, scale and environment effect.

7.1. Consents Processing

- 7.1.1. The consents processed in this programme of work vary from those at the lower end of the scale (e.g. cleanfill, fibre glassing, minor earthworks and crematorium activities) to the complex, contentious and significant activities such as wastewater treatment plants, large road re-alignments, wind farms and major industrial activities (e.g. Fonterra and WPI discharges). It is important to note that from a consents processing perspective the lower level activities make up most of the consents processed, however, it is the more complex and contentious applications that take most of the time.
- 7.1.2. Assuming the appropriate statutory tests are met around environmental effects, the majority of the lower level consents are processed on a non-notified, no affected party basis. Council endeavors to process these applications within the 20 working day timeframe specified by the Resource Management Act 1991 (RMA). Where effects on people are identified which are considered to be minor and written approval is not provided, then these consents are processed on a limited notification basis.
- 7.1.3. As Council is aware applications for significant, complex and high profile activities are generally processed on a fully notified basis. This is because the environmental effects (both actual and potential) associated with these activities are considered to be more than

minor. Accordingly, these applications are typically subject to submissions from members of the public, interest groups, iwi and government departments, facilitated pre-hearing meetings and then hearings before a panel of commissioners. Also these activities are typically at a higher risk of appeal. All of this means these applications are costly and can take a significant amount of time to process.

7.2. Compliance Monitoring

7.2.1. Horizons has a statutory obligation to monitor resource consents within its region. Section 35 of the **Resource Management Act (RMA)** states;

(2) Every local authority shall monitor—...

(d) the exercise of the resource consents that have effect in its region or district, as the case may be; and...

7.2.2. A risk based approach to structuring this compliance monitoring programme has been adopted with sites being categorised on a 1-5 basis, with category 1 sites being the highest priority. This then determines the frequency by which these sites are monitored. The categorisation is based on a number of factors including risk to the environment, compliance history, complexity of consent and public interest. This risk based approach to compliance monitoring is consistent with the strategic compliance monitoring framework, which has been adopted by Regional Councils.

7.2.3. When actually assessing compliance a site based approach has been adopted for this programme because industrial sites can have a number of resource consents, which ultimately allow it to undertake its activity. At one extreme, Genesis energy has 32 consents associated with its operation, whilst a simple cleanfill operation may have two consents. Figures 1 to 4 below show some of the activities monitored as part of this programme.



Figure 1. Temporary diversion of water for an earthworks operation



Figure 2. Timber treatment operation



Figure 3. Irrigation of wastewater to land



Figure 4. Landfill operation

- 7.2.4. Compliance in this programme is typically undertaken by three main mechanisms, namely:
- i. Proactive site inspections, which generally focus on those conditions that can be assessed during the inspection (e.g. odour, colour of discharge, adequacy of erosion and sediment controls etc);

- ii. Assessing information provided by the applicant. This is an important component to the programme and can, depending on the nature and scale of the operation, take a significant amount of time. It generally involves reviewing information (including telemetry and water quality information), management plans, and quarterly/annual reports provided by the consent holder. Figure 5 is an example of the type of flow information provided by a WWTP; and
- iii. Responding to complaints received regarding the operation (e.g. odour, sediment discharge etc).

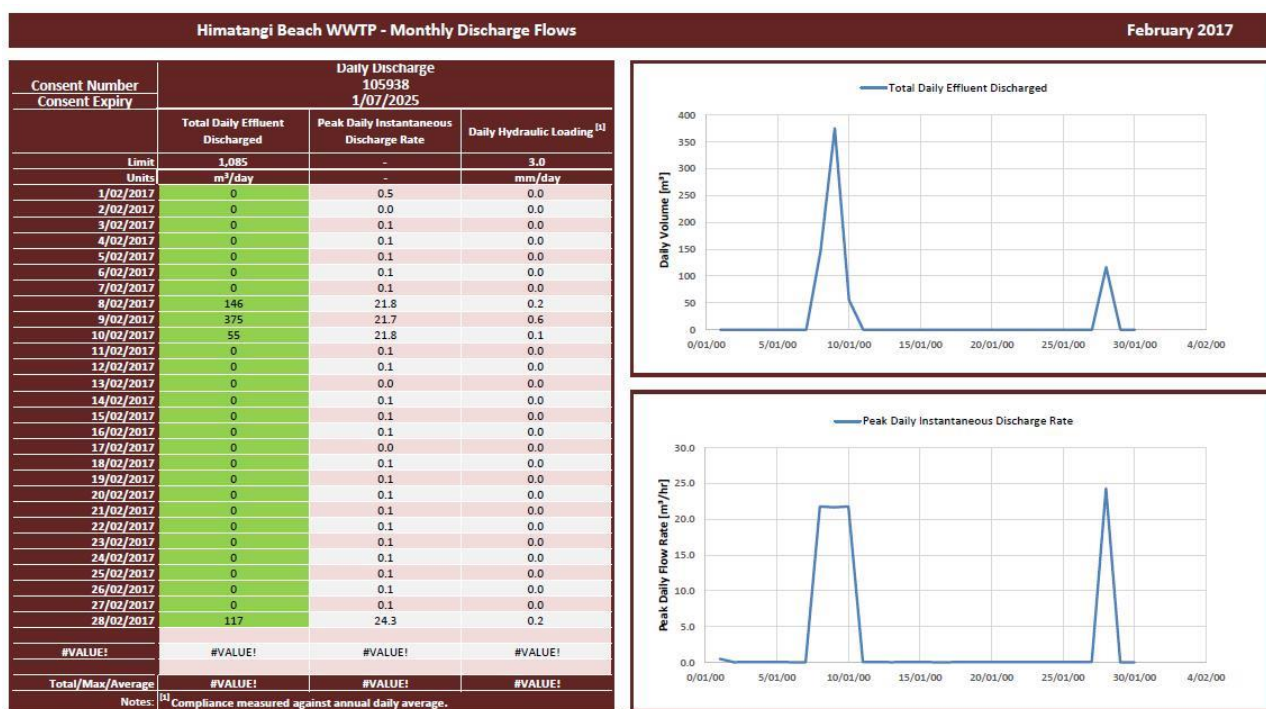


Figure 5 Flow Information

- 7.3. The nature and scale of annual reports provided by consents holders varies and is largely determined by the risk factors detailed above and the conditions of consent. Some are reasonably straight forward, whilst others can be substantial and can take a significant amount of time to assess and require input from a number of experts. These can range from documents spanning several pages to the likes of Genesis Energy whose annual 2016 annual report was over 200 pages.
- 7.4. A trend over recent years is that for the larger activities, such as WWTP and major earthworks operations, must provide management plans that have to be certified by Horizons. Typically these management plans are required prior to works commencing or within a certain period of time of the consent being granted. The purpose of these management plans is for the consent holder to detail how they will comply with resource consent. An example of such an activity is the Fielding WWTP, where the resource consent requires the provision four (4) management plans, all of which have to be certified by Horizons. A copy of such a condition from the recent Fielding WWTP consent is detailed below;

*Within two months of the commencement of this permit, the permit holder shall submit to the Regulatory Manager for technical certification an **Odour Management Plan (OMP)**. The purpose of the OMP shall be to detail the measures the permit holder intends to take to avoid and mitigate the potential for odour from the wastewater treatment plant, land irrigation and sludge disposal activities. The OMP shall include, but not be limited to, the following:*

- a. *operational management of the wastewater treatment plant, sludge drying operation and land irrigation;*
- b. *the responsibilities of on-site staff;*
- c. *details of how the treatment, storage and disposal systems will be operated and maintained to meet the requirements of the conditions of this permit;*
- d. *monitoring procedures;*
- e. *contingency measures in the event of equipment failures;*
- f. *a complaints procedure including:*
 - i. *provision of a 24-hour telephone contact number;*
 - ii. *a stated commitment by the permit holder to respond to odour complaints within a specified time period;*
 - iii. *actions to be taken by the permit holder to verify odour complaints;*
 - iv. *provision for recording the responses made by the permit holder to complaints;*
 - v. *provision for the keeping of 'odour diaries' by nearby residents;*
 - vi. *records of actions taken by the permit holder to address the sources of any verified odour;*
 - vii. *measures proposed to address the requirements of condition A11 where a complaint concerns odour associated with the spray irrigation as determined by the Manawatu Wanganui Regional Council.*
- g. *the information to be recorded when complaints are received; and*
- h. *Follow up actions to respond to a complaint.*

No changes shall be made to the OMP without the prior written approval of the Regulatory Manager

Advice Note: Where matters are dealt with in a separate management plan (such as the Land Application Management Plan) the permit holder can reference that document rather than repeat the material.

- 7.5. It is important to note Horizons can only certify a plan within its area of expertise. For example management plans that have Health and Safety aspects to them are not part of or subject to the certification process. If possible and where Horizons has the requisite expertise, staff will provide the technical input into the certification process, otherwise, external expertise has to be engaged. Depending on the nature of the activity and complexity of the management plan, the certification process can take sometime. The actual and reasonable costs associated with the certification process are passed onto the consent holder.
- 7.6. In addition to the core business of assessing compliance with conditions of consent, this programme has assisted various parts of the sector to improve environmental performance and/or comply with conditions of consent. For example guidance material has been developed to assist timber treatment operations to assess the environmental performance of their sites (figure 6) and workshops have been held for contractors and consultants around erosion and sediment control (figure 7). However, given current work pressures, the ability to undertake is currently compromised.

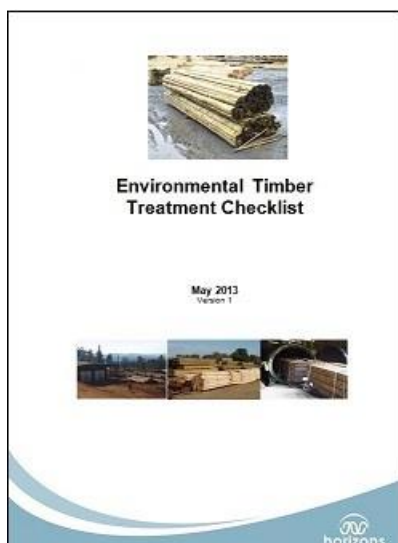


Figure 6. Checklist provided to timber treatment operations



Figure 7. Erosion and sediment control training

- 7.7. Annexure 1 provides a summary of the current compliance status of municipal WWTP in the region.

- 7.8. In relation to the four significant non-compliances identified, three are being addressed via the current resource consent renewal process, whilst Hato Paroa is being monitored and may, subject to funding approval, be piped to the Fielding WWTP. The only non-compliance relates to the Norsewood WWTP failing to comply with its discharge volumes. **Tararua District Council (TDC)** have been requested to provide an explanation for the non-compliance and steps its taking to ensure resolve the issue.
- 7.9. In relation to the Marton WWTP, it was complying with its resource consent during the reporting period. Nonetheless a draft enforcement has been prepared in the event further regulatory action is required.
- 7.10. In relation to the Taihape WWTP staff are currently drafting up a **Memorandum of Understanding (MOU)** to ensure there is a public commitment by **Rangitikei District Council (RDC)** to ensure the WWTP is compliant and has an updated operational resource consent. The MOU will also outline the enforcement actions that will be taken if key milestones are not met.

8. COMPLIANCE AND NON-COMPLIANCE

- 8.1. There were 135 compliance monitoring interactions during the reporting period. Of these six (6) non-compliances and ten (10) significant non-compliances were detected. This equates to an 88% compliance rate across the entire programme.
- 8.2. Below is a breakdown of the non-compliances by consent area for the reporting period:
Industry: One non-compliance and two significant non-compliances.
Rural: Five non-compliances and eight significant non-compliances
- 8.3. In relation to the above non-compliances, Horizons issued seven Abatement Notices and one infringement notices. The other non-compliances were either resolved by the time a follow-up inspection was undertaken or the consent holder is working towards resolving the non-compliances within specified timeframes.

9. INCIDENTS

- 9.1. Over the reporting period a total of 123 complaints were received. The majority of these complaints (68) related to discharges to air. The remainder of the complaints related to discharges to land (20) and water (35). During the reporting period, Horizons have commenced one formal investigation into an incident that occurred and have issued three (3) Abatement Notices.

10. REGULATORY ACTION

10.1. Table 1 below, provides details of the regulatory action taken during the reporting period. Please note those matters which are currently within the appeal period are not included in the list below

Person	Regulatory Action taken	District	RMA section breached	Action required
Woodhaven Gardens Limited	AN	Horowhenua	15(2A)	Engage an asbestos removal firm to remove and dispose of asbestos legally
Woodhaven Gardens Limited	AN	Horowhenua	15(2A)	Cease all open burning of prohibited materials.
Land Meat NZ Ltd	AN	Whanganui	15(1)(b)	Cease the discharge of meat processing wastewater to land and water.
Le Fabuleux Poulet Ltd	AN	Horowhenua	15(1)(b)	Cease discharge of chicken effluent to land where it may enter water.
Aokautere Land Holdings Limited	AN	Palmerston North	9(2)	Cease all earthworks unless authorised by resource consent .
Leslie William Fugle	AN	Palmerston North	9(2)	Cease all earthworks unless authorised by resource consent
Tamatarau Farms Limited	AN	Horowhenua	15(1)(b)	Cease discharge of dairy effluent where it may enter water
Nguituroa Farm Limited	AN & IN	Palmerston North	15(1)(b)	Cease silage leachate discharge where it may enter water. An infringement also issued for offence
J and D Gloyn	AN	Manawatu	15(1)(b)	Cease discharge of dairy effluent where it may enter water
Kaleb Houlihan-Fugle	AN	Palmerston North	9(2)	Cease all earthworks unless authorised by resource consent.

11. SIGNIFICANCE

11.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Greg Bevin
REGULATORY MANAGER

Nic Peet
GROUP MANAGER STRATEGY & REGULATION

ANNEXES

A Wastewater Reporting

Wastewater Reporting

Rangitikei District Council	Category	Type of Assessment	Compliance Status	Description of non compliance	Action
Taihape	1	Site inspection	Comply	NA	No action
Marton	1	Site inspection	Comply	NA	No action
Huntermville	2	Site inspection	Comply	NA	No action
Bulls	2	Site inspection	Comply	NA	No action
Ratana	2	Site inspection	Comply	NA	No action
Mangaweka	3	Site inspection	Comply	NA	No action
Koitiata	3	Site inspection	Comply	NA	No action
Horowhenua District Council					
Shannon WWTP	1	Site inspection and data assessment	Comply	NA	No action
Waitarere	3	Site inspection and data assessment	Comply	NA	No action
Levin Pot	2	Site inspection	Comply	NA	No action

Levin WWTP		Site inspection	Comply	NA	No action
Foxton	1	Data assessment	Significant Non-Comply	On-going failure to comply with daily discharge volumes.	Being addressed as part of the consent renewal process.
Tokomaru	2	Site inspection	Comply	NA	No action
Foxton Beach	3	Site inspection	Comply	NA	No action
Palmerston North					
Palmerston North	1	Site inspection and data assessment	Comply	NA	No action
Whanganui District Council					
Marybank	4	Site inspection	Comply	NA	No action
Mowhanau	3	Site inspection and data assessment	Comply	NA	No action
Whanganui District Council	1	Data assessment	Comply	NA	No action
Manawatu District Council					
Feilding	1	Site inspection	Comply	NA	No action
Himatangi Beach	3	Site inspection	Comply	NA	No action
Halcombe	3	Site inspection	Comply	NA	No action
Cheltenham	3	Site inspection	Comply	NA	No action

Sanson	3	Site inspection	Comply	NA	No action
Rongotea	3	Site inspection	Comply	NA	No action
Kimbolton	3	Site inspection	Comply	NA	No action
Awahuri	3	Site inspection	Comply	NA	No action
Ruapehu District Council					
Taumaranui	2	Site inspection	Comply	NA	No action
National Park	2	Site inspection	Comply	NA	No action
Rangataua	3	Site inspection	Comply	NA	No action
Pipiriki	4	Site inspection	Comply	NA	No action
Raetihi	1	Site inspection	Comply	NA	No action
Ohakune	2	Site inspection	Comply	NA	No action
Ruatiti	4	Site inspection	Comply	NA	No action
Tararua District Council					
Pahiatua	2	Site inspection and data assessment	Comply	NA	No action

Eketahuna	1	Site	Significant Non Comply	Failure to undertake upgrades, which did not occur due to the prioritisation of the upgrades at Dannevirke, Woodville, Norsewood and Pahiatua WWTPs.	To be addressed as part of the consent renewal process
Woodville	2	Site	Comply	NA	No action
Norsewood	3	Site	Non Comply	Failure to comply with daily discharge volumes	No action
Pongaroa	3	Site	Comply	NA	No action
Ormondville	3	Site and data	Comply	NA	No action
Dannevirke	1	site	Comply	NA	No action
Non TA					
Whakapapa	1	Site	Comply	NA	No action
NZDF Ohakea	3		Comply	NA	No action
Whanganui Prison	2		Significant Non Comply	Infiltration bed failures	To be addressed as part of the consent renewal process
NZDF Waiouru	1		Comply	NA	No action
Hato Paora College	4	Site	Significant non Comply	No monitoring, seepage of effluent to waterway	Waiting on outcome from central government funding (1 Aug 2017)

Report No.	17-118
Information Only - No Decision Required	

UPDATE ON LAKE HOROWHENUA FRESHWATER CLEAN-UP FUND PROJECT WITH THE TARARUA GROWERS ASSOCIATION

1. PURPOSE

- 1.1. This item is to introduce a presentation that is to be provided by Dan Bloomer from Landwise on the work that has been undertaken within the Lake Horowhenua Catchment in relation to reducing sediment losses from horticultural land. This project is one of eight projects that are being undertaken as a part of the Lake Horowhenua Clean-Up Fund project.

2. EXECUTIVE SUMMARY

- 2.1. As a part of the Lake Horowhenua Accord there are two main central government and local government funded implementation projects to restore Lake Horowhenua. The first of these is the Lake Horowhenua Clean-Up Fund that has been underway since 2014. The second is the Te Mana O Te Wai project that was announced in November 2015. Both projects are progressing well and this item focuses on the work with the Tararua Growers Association to reduce sediment loss from horticultural farms.
- 2.2. Much focus within the Lake Horowhenua Clean-Up Fund has been on the three projects that required resources consents that were publicly notified (fish pass, sediment trap and weed harvesting). However, many projects have continued in the background that seek improvements in the health of the lake. One of these projects is reducing the amount of sediment that leaves land and makes its way into Lake Horowhenua. Horizons has engaged Dan Bloomer of Landwise to work alongside horticultural landowners within the catchment. The project has completed sediment and erosion control plans for approximately 400 hectares of horticultural farms. While the original intent of the project was only to work in the Arawhata sub-catchment of Lake Horowhenua, the project has been able to utilise the available resources to complete work across the catchment. The project has resulted in a range of changes in land management practices that will reduce the amount of sediment that leaves the farm and makes it into the lake. A further component of the Clean-Up Fund is an additional mitigation for reduction of sediment and phosphorus going into the lake in the form of a sediment trap. The sediment trap is predicted by NIWA to reduce sediment loads from the Arawhata Stream by approximately 50 percent which equates to about 25 percent less sediment going into the lake from all streams flowing into Lake Horowhenua and arguably and more importantly a reduction of phosphorus inputs from all streams of approximately 30 percent. This presentation intends to briefly outline the work undertaken to date and some of the changes that are being seen on the land and to briefly update on the sediment trap.

3. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 17-118.

4. FINANCIAL IMPACT

- 4.1. There is no financial impact associated with recommendations in this paper.

5. COMMUNITY ENGAGEMENT

- 5.1. Community engagement has occurred throughout the Lake Horowhenua Clean-Up Fund with engagement ranging from meetings with key partners, community planting days through to public notification and the associated resource consents processes for three of the projects. Significant engagement and resources have been contributed by the Horticulture Growers as part of the project being presented today.

6. SIGNIFICANT BUSINESS RISK IMPACT

- 6.1. There is no immediate financial impact associated with this report.

7. BACKGROUND

- 7.1. The Lake Horowhenua Accord was signed in August 2013 and has four objectives:
- Return Lake Horowhenua as a source of pride for all people of Horowhenua;
 - Enhance the social, recreational, cultural and environmental aspects of Lake Horowhenua in a fiscally responsible manner that will be acceptable to the community of Horowhenua;
 - Rehabilitate and protect the health of Lake Horowhenua for future generations; and
 - Consider how to respond to the key issues, management goals and fifteen guiding action point.
- 7.2. Based on the foundations of the Lake Horowhenua Accord an application was made to the Central Governments Fresh Start for Freshwater Clean-Up Fund which was successful and officially announced by Minister Amy Adams on 25th February 2014.
- 7.3. The Freshwater Clean-Up Fund included eight projects of which two are integral to the presentation today.

8. DISCUSSION

- 8.1. One of the projects within the Lake Horowhenua Clean Up was an Integrated Stormwater Management Plan for the Arawhata Catchment. Although technically a separate project within the Clean-Up the Arawhata sediment trap has received the most publicity around reducing sediment loads into the lake. This has been due to the need to obtain resource consents for its construction and also its proximity and visibility from the road.
- 8.2. Throughout the consenting process for the sediment trap and more recently during Horizons Annual Plan process there has been a range of criticism that the focus should be at stopping the sediment at the source rather than dealing with it at the bottom of the catchment. The lesser known Integrated Stormwater Management Plan project was designed to address reductions of sediment at source. The project has been underway since 2014 and has worked closely with the Tararua Growers Association and delivered on farm change to reduce sediment loads. The project is coming to a close in 2017. Dan Bloomer from Landwise who has worked closely with the Horticulture Growers will present to Council on the overall project and the outcomes. One of the main learnings from the project was that regardless of how good on farm practices were the inability to control the volumes of water that was arriving at a property through the drainage network (not falling

from the sky) resulted in overflows from the drainage network resulting in significant scouring of cultivation land.

- 8.3. Based on this information a review of the Arawhata Drainage network resulted in approximately \$300,000 being allocated in the LTP for drainage network upgrades with this work commencing in July 2016.
- 8.4. The presentation will provide an outline of the work that has been taken to date and some of the land use practices that are being undertaken as a result of this collaborative approach.



Photo 1: Example of erosion resulting from run-off from the road network.



Photo 2: Re-grassing (taken out of production) of the area in photo 1 to prevent loss of soil from the run-off created from the road.



Photo 3: Example of bare headlands to allow tractors to turn around on between the rows.



Photo 4: Implementation of vegetated headlands for tractors to turn around on between the rows.

9. CONSULTATION

- 9.1. Consultation with various parties has occurred throughout the life of the Clean-Up Fund project.

10. TIMELINE / NEXT STEPS

- 10.1. The Horowhenua Clean – Up Fund project has a completion date of the 30th June 2017. The lessons learnt from this project will endure and become a part of normal on farm practices.

11. SIGNIFICANCE

- 11.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Jon Roygard

GROUP MANAGER NATURAL RESOURCES & PARTNERSHIPS

ANNEXES

There are no attachments for this report.