



Operational Plan 2019-20

Natural Resources & Partnerships

August 2019

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EXECUTIVE SUMMARY

This document sets out the operational plan for the Natural Resources and Partnerships (NRP) group of Horizons that is tasked with delivery of the non-regulatory programmes for land, water, biosecurity and biodiversity domains and delivering Horizons' core science programme. The group also administers the regulatory functions for biosecurity and works closely with the other groups within Horizons, including providing support for the Strategy and Regulatory Group's functions around policy, consents and compliance, as well as cross organisational work on issues like climate change and the impact of sedimentation in rivers impacting on levels of service for flood protection.

The group's activity is driven by the decisions of Council through the Annual Plan that sets the targets and budgets for the year. Additional activity is achieved through partnerships with others, including additional funding and effort from central government, other agencies, landowners, iwi/hapū and community groups. This operational plan provides additional detail to the Annual Plan document for the group's activity over the 2019-20 year, including the targets and budgets, how these link with legislative requirements and organisational goals, as well as how the outputs of the programme link to outcomes in the region. This single operational plan replaces eight operational plans produced in 2018-19 and is part of the commitment to ensure Council and our community have visibility of our programmes, and to support Council to have effective oversight of the \$24.5 million allocated to the NRP work programme over the year through the Annual Plan and other funding sources.

The 2019-20 year is the second year of the Long-term Plan, with some increased investment of rate-payer funds and a range of additional funding and targets through the external funding that has been secured to accelerate the programme's delivery of outcomes. The additional operational workload assists with meeting the increasing demand for work with communities and landowners. This increased workload also influences the delivery and focus of the programme and will require changes to some programmes. The external funding also increases reporting and auditing requirements and information management projects to support this and other reporting are planned.

The context for the year also includes a changing policy environment, including changes to central government policies such as the National Policy Statement for Freshwater Management (NPS-FM) and signalled changes to a range of policies across freshwater, biodiversity, biosecurity, drinking water and climate change. Similarly, the regional policy context is changing with Horizons progressing freshwater plan changes and the development of a Climate Change Strategy.

Emerging issues are a further driver of change for the programme. In recent years, responding to biosecurity incursions, findings of contamination from firefighting foams and other items that have arisen during the year have required an agile approach to delivery over the year.

In summary, the programme has an additional workload for the year, and our operating environment requires us to respond to both external and organisational drivers. The response to this is a continued drive to deliver organisational efficiencies, develop and maintain effective partnerships and lead integrated approaches in the way we work.

The key themes for the work programme for the 2018-19 year are:

1. Integrated Catchment Management – further enabling alignment within the group and organisation as well as with externals to deliver on the goals within catchments.
2. Responding to and informing policy change – assessing and implementing responses to new policy and organising and gathering information to inform policy and strategy processes.
3. Operational Delivery – ensuring the Annual Plan and external funding targets are met.
4. Information Management – improving information management systems and practices.
5. Communication and reporting – woven into the above, this theme is to ensure the work is transparently presented to Council and the community.

The group's activity

The scale and scope of the work is large, with 40% of the region's rate income being spent on the activity, a total of \$24.5 million per year. The programmes are also accelerated through additional external funding, and the programme has secured over \$30 million of central government funding since 2012 and further funding from a range of other sources. This combined investment delivers large programmes, including:

- The land management programme has goals around hill country erosion management to increase the region's resilience to storm events, enabling sustainable land use, improving water quality and reducing the impact of sedimentation on levels of service for flood control infrastructure. The Sustainable Land Use Initiative (SLUI) is likely the largest hill country erosion management programme in the country encompassing over 550,000 ha of farm plans engaging over 700 farmers, in a region that has the highest amount of highly erodible land in pasture on private land, nationally. The programme is accelerated with additional funding from central government via the Hill Country Erosion Fund (HCEF) in 2019-20 and will also seek to fund work via government's 1 billion trees programme and other sources.
- The freshwater and partnerships programme has goals around improving water quality and aquatic habitat as well as iwi/hapū and community engagement. The scale of the region's water resources are significant, with 35,000 km of streams and rivers, 226 lakes greater than a hectare in size, 40 estuaries and 310,000 hectares of coastal water. The programme is expanded through additional funding, including from central government, through the Freshwater Improvement Fund.
- The biosecurity plants programme works to deliver control of 66 species identified in the Regional Pest Management Plan (RPMP) and has active work on 29 species across nearly 6,000 managed sites and some areas where control is not provided (progressive containment areas). The programme also responds to new incursions and invests in biological control to find and trial new solutions for pest plant issues. This programme includes a range of partnerships, and Horizons is the lead agency for management of the central government investment in wilding conifer management in the Kaimanawa management unit.
- The biosecurity animals programme is primarily focussed on the possum control programme that covers over 1.4 million hectares of the 2.2 million hectares of the region (most of the farmed land in the region is in the programme). The programme is growing as OSPRI (the agency who have completed pest management to manage risk of tuberculosis) exits the region having achieved their goals. Within the programme, possum populations are currently around 3 to 4 % residual trap catch, well below the target of 10%. This provides protection of production and biodiversity values within the managed area. Rooks are also controlled via a regional programme to protect production values and an amenity pests programme supports mainly peri urban ratepayers with issues around pests like possums, rabbits, mustelids etc.
- The biodiversity programme has a goal to protect biodiversity sites that are representative of the natural biodiversity in the region and a goal to support biodiversity partnerships and community involvement. The priority sites programme currently includes over 200 sites of the more than 1,000 sites identified regionally, and work is underway to further prioritise the region's biodiversity management. The biodiversity collaborations include large landscape scale programmes like Kia Wharite, that protect, among other things, kiwi and whio (blue duck), as well as smaller scale projects, including community projects with schools or volunteer groups. Management of the Regional Park at Tōtara Reserve is another activity.
- The science and innovation programme is largely based around collection of monitoring information, with a strong emphasis on monitoring and reporting on water quantity and quality of both surface and groundwater. The programme works across the Long-term Plan activities of land & water management and biosecurity & biodiversity management as well as environmental reporting. The work includes drinking water research, climate change research and supports the regulatory and non-regulatory activity of Horizons.

Key metrics overview

The key deliverables for the 2019-20 year are outlined below and include all LTP targets being met (noting not all of these are shown below). Progress on these deliverables will be reported to Council.

1. Integrated Catchment Management – further enabling alignment within the group and organisation as well as with externals to deliver on the goals within catchments.
 - a. Further targeting of the freshwater and land programmes in relation to new information from the science programme through the State of Environment report and other science activity.
 - b. Improving protection of priority biodiversity sites (terrestrial and aquatic) through the land, freshwater and biosecurity animals programme.
2. Responding to and informing policy change – Assessing and implementing responses to new policy and organising and gathering information to inform policy and strategy processes.
 - a. A monitoring network review to respond to changes to the National Policy Statement for Freshwater Management and to prepare for upcoming regional catchment policy processes.
 - b. Preparing and delivering a work plan to inform the upcoming plan change processes.
 - c. Completing climate change research to inform Council's climate change strategy.
 - d. Completing drinking water research to inform protection of drinking water supplies.
3. Operational Delivery – Ensuring the Annual Plan and external funding targets are met.
 - a. **Land** – 22,500 ha of new farm plans, 1000 ha of paddock maps, 3,440 ha of erosion control works, 5 industry partnerships supported, 30,000 poplar poles planted.
 - b. **Freshwater and Partnerships** – Complete 79 km of stream fencing, plant 63,333 riparian plants, fix 7 fish barriers, and enable 14 community involvement projects, 6 annual reports.
 - c. **Biosecurity Animals** – 57,441 ha of new (ex OSPRI) or previously “opted out” area added to the programme, overall average possum densities below 10% residual trap catch, a review of the possum control operation set ups with consideration to opt out of areas and non-rateable land.
 - d. **Biosecurity Plants** – Follow up on any incursions, investigate monitoring programme for exclusion species, options assessment for old man’s beard control, review of aquatic weed management in the region and an annual report on biological control activity.
 - e. **Biodiversity** – 100 rapid ecological assessments, add four wetlands and seven bush remnants to the managed sites list, support 10 biodiversity collaborations, review of biodiversity collaborations project. Tōtara Reserve management, including capital upgrades.
 - f. **Science** – Contributions to the items listed above and below, deliver monitoring programmes (including swim spots), provide data to the LAWA website, complete an annual summary of the science programme.
4. Information Management – Improving information management systems and practices.
 - a. Complete data management plans for key group datasets, upgrade information management for the land, biosecurity animals, biosecurity plants and other programmes as resources allow.
5. Communication and reporting
 - a. Produce a single operational plan for the group.
 - b. Complete annual state of environment reporting based on catchment summaries.
 - c. Review Council reporting.
 - d. Complete a catchment based activity report to Council.
 - e. Present to Council the 14 annual reports required by Annual Plan targets.
 - f. Working with iwi/hapū, landowners, community groups, Advisory and Governance Groups.

OVERVIEW OF THE YEAR AHEAD

DR JON ROYGARD
GROUP MANAGER, NATURAL RESOURCES AND PARTNERSHIPS

The Natural Resources and Partnerships (NRP) group completes a range of programmes that contribute to community outcomes across sustainable land use, water quality and biodiversity enhancement, biosecurity management, as well as monitoring and increasing knowledge of the region's natural resources.

The work programme of the group has gone through significant review and change over recent years, including through the Long-term Plan process, preparing a regional pest management plan, securing external funding and a drive to better align and link activity with desired outcomes. These changes to the programme have drawn on the recent State of Environment report and other science reporting that has identified the scale of, and progress on, natural resource management issues and how the current level of activity feeds into this.

The scale of the natural resource management activity that the group is contributing to is significant. This encompasses 40% of Horizons' ratepayer funding, in a group that has 25% of the organisation's staff. To increase the efficacy of the programmes in achieving outcomes, the programme has sought to find efficiencies and increase resourcing through partnerships and securing additional funds. Programmes have been considerably accelerated through recent years with increased rate funding and over \$30 million of central government money secured since 2012. Around a quarter of this is secured for future spend, including this year. The programmes main driver for increased efficacy this year is through increased alignment across the group, within Horizons and through external partnerships. The operational plan identifies a range of opportunities for this alignment. Having a single operational plan for the group in place of the eight individual operational plans produced in previous years is a first step to this increased alignment.

A further focus for the group this year is responding to and informing policy change. This includes responding to changes to the National Policy Statement for Freshwater Management in 2014 & 2017 and other policy processes by central government that are still underway (freshwater, biodiversity, biosecurity, three waters¹, climate change etc). Horizons is also underway with further policy development around freshwater management and climate change that will require input from the NRP group and several key deliverables of the operational plan are included to contribute to these processes.

A genuine challenge for the group over the year is delivering the programmes that are enlarged by external funding, with the existing staff resource. The additional funding comes with additional deliverables and often, significant reporting. The demand on the team's time is also increasing through increased requests to respond to new policy development (nationally and regionally), emerging issues and increasing demand for contact with iwi/hapū and landowners, community groups and catchment care groups. The operational plan outlines a few mechanisms by which efficiency gains for the team can be made (including more streamlined reporting and information management upgrades). However, more will be needed to ensure we manage the balance between delivering on the programme and responding to emerging issues and the increasing demand on the teams time over the year.

¹ Drinking water, wastewater and stormwater management.

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1. OPERATIONAL PLAN FOR THE NATURAL RESOURCES AND PARTNERSHIPS GROUP

1.1. Purpose

This document provides the operational plan for the Natural Resource and Partnership group's activity in the 2019-20 year. This year the group is completing a single operational plan with a focus on further aligning the efforts within the group, Horizons and externally, to provide an integrated catchment management approach to delivering on outcomes. The operational plan outlines the policy context for the activity, the targets and budgets and how the activity fits into the size of the issue being managed and the proposed projects for the 2019-20 year.

1.2. Introduction

This document sets out the operational plan for the Natural Resource and Partnership (NRP) group's activity in the 2019-20 year. The operational plan provides additional detail to the work programme that is outlined in the Annual Plan document, through which Council has set the targets and budgets for the group. This single operational plan for the group replaces the eight operational plans produced in the 2018-19 year to provide Council and the community further insight of the activity by the group. The move to a single operational plan is purposeful to provide further transparency around the current alignment of the programmes and the work to increase alignment to deliver on outcomes. A further focus of the operational plan, is to present the operating context for the group activities over the year and how programmes are being shaped and adjusted to that context. The single operational plan also provides information on how the programmes fit into the national and regional policy and strategies and how the outputs from the programme are linked to the outcomes for the programme.

To present this information the operational plan is arranged in sections; this introduction section, and further sections representing one section for each of the major areas of delivery by the group (Land Management, Freshwater & Partnerships, Biodiversity, Biosecurity & Partnerships and Science & Innovation).

This introduction chapter overviews the activity of the group, including the context for the year's activity, how the activities link with national and regional policy and strategies, as well as outcomes. A further section discusses the key themes and key deliverables for the programme for the year, and a final section overviews the budgets for the activities. The other chapters provide more detail of the individual activities, including deliverables, targets and budgets.

Overview

The work programmes in each of these areas are overviewed in the context of the national and regional policy context in Figure 1 below.

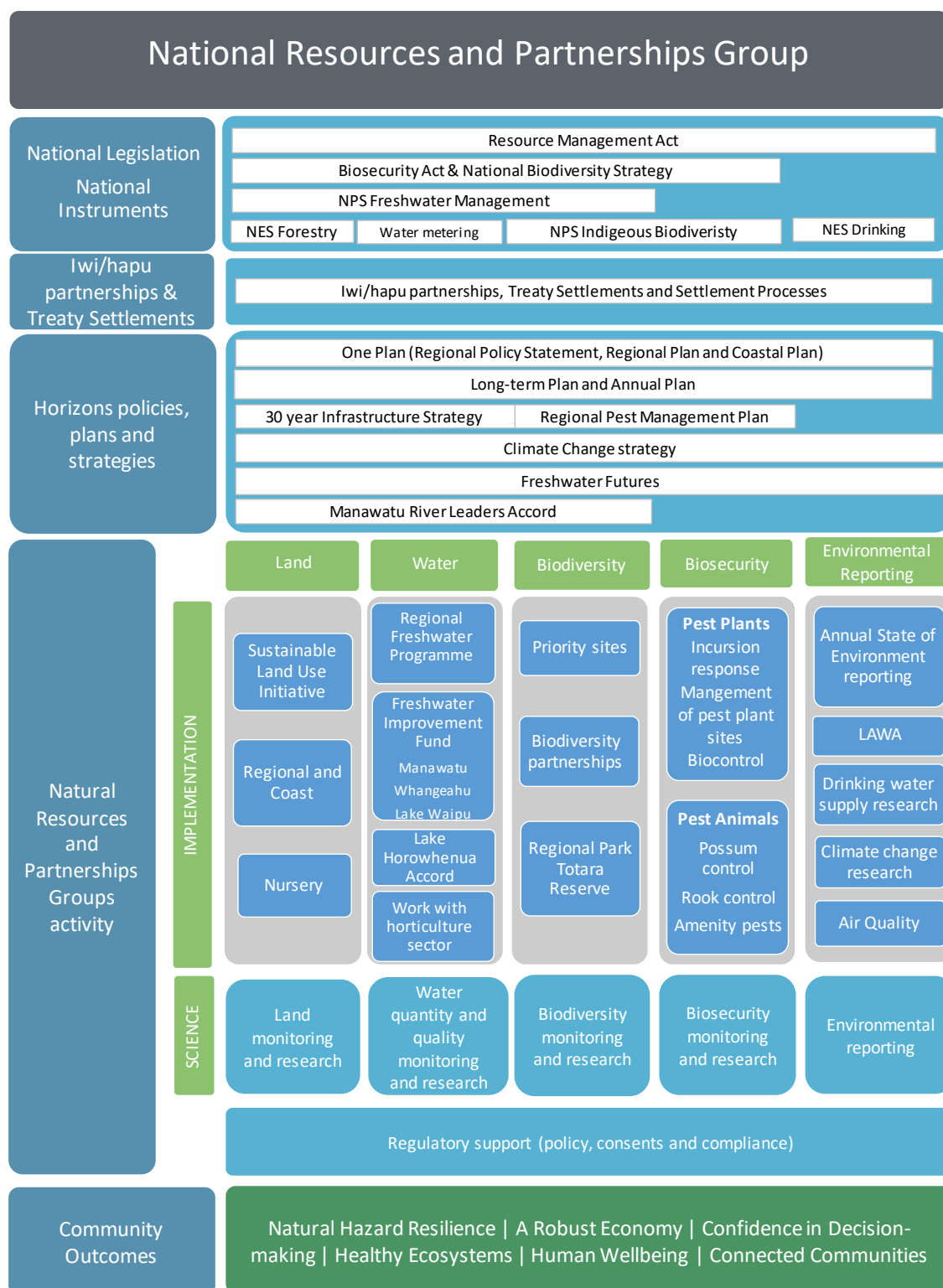


Figure 1: Broad overview of the Natural Resources and Partnerships programme and how it fits into national and regional policies and strategies and the community outcomes defined in the Long-term Plan.

Land Management

The land management programme's primary activity is to reduce hill country erosion to increase the resilience of the region to storm events and improve water quality. The Sustainable Land Use Initiative (SLUI) is the main component of the programme and has over 550,000 ha of farm plans across over 745 farms and aims to complete approximately 3,440 ha of erosion control works and 22,500 ha of new farm plans in the 2019-20 year.

The programme is one of, if not, the largest erosion control programme in the country which aligns with Horizons' Region having the most highly erodible land in pasture in private land of any region nationally. With 10 joint venture forests to manage and the planting of over 18 million trees in the region over a period of 12 years, the programme also contributes to carbon sequestration and estimates indicate 1.6 million tonnes of carbon have been sequestered to date, rising to 11.5 million tonnes when these trees mature (at an annual rate of sequestration this is the equivalent to the carbon emissions from 183 sheep and beef farms or 22,300 New Zealanders).

The SLUI programme links to Horizons' policies as a non-regulatory method of the One Plan. The activity of SLUI has been linked to outcomes via Horizons' science and land teams cooperating with Landcare Research over many years to enable prediction of outcomes from activity on farms to be predicted in terms of changes in annual sediment loads in rivers. The results show that improvements in the order of 27% overall may be achieved by 2043, however, this may reduce to a 5% improvement under some climate change scenarios. Over the longer term to 2090, the modelling suggests that SLUI, which is one of, if not New Zealand's largest hill country erosion management programme, may not be sufficient to offset the impacts of climate change on increased sedimentation of rivers². This is of concern for a range of reasons, including the potential impact on levels of service for flood control infrastructure³.

As a response, Horizons has sought to increase the scale and scope of the SLUI programme. The land programme for 2018-19 has been reshaped following securing a 59% increase in central government funding via the new Hill Country Erosion Fund contract that started in July 2019⁴. This will require a large upscaling of activity to ensure sufficient work is completed to meet the additional targets associated with the new funding. The activity will also involve work with central government's 1 Billion Trees programme. The programme also has Council approval to utilise reserves to further accelerate activity.

Beyond hill country erosion control, the land programme also supports industry partnerships, including the Ballance Farm awards and events that enable discussion among industry professionals and farmers around land management activity. The land management team also provides support to the regulatory teams around the implementation of the National Environmental Standard for Plantation Forestry and the implementation of the One Plan policies and rules around land disturbance and vegetation clearance.

The final component of the land activity is the management of poplar and willow nurseries in order to provide the necessary materials for the hill country erosion work. In 2019-20 the upgrades to Horizons' Woodville nursery will continue. The programme aims to produce and plant over 30,000 poplar poles.

² <http://www.horizons.govt.nz/HRC/media/Media/Publication/2019-State-of-the-Environment.pdf?ext=.pdf>

³ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Strategy-Policy-Committee-2019-11-06/1993%20Hill%20Country%20Erosion%20and%20Sediment%20Management%20in%20the%20Manawatu%20Whanganui%20Region.pdf>

⁴ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Strategy-Policy-Committee-2019-11-06/1994%20Sustainable%20Land%20Use%20Initiative%20Funding.pdf>

Freshwater

The Freshwater & Partnerships team work with a range of partners to improve water quality and aquatic habitat outcomes, including supporting and facilitating community involvement. The programme includes the Manawātū River Leaders' Accord⁵, Lake Horowhenua Accord⁶ and has three Freshwater Improvement Fund projects underway. The primary mechanism of delivery is to work directly with landowners on fencing and planting, however, this also includes work with territorial authorities around wastewater treatment plant upgrades and work with iwi/hapū, non-government organisations and community groups.

The freshwater programme links to Horizons' policy as a mechanism to deliver on some of the non-regulatory methods of the One Plan and to contribute to the broader policy objectives of the One Plan. The programme will again operate at an increased scale and scope in the 2019-20 year drawing on the additional funding from central government via the Freshwater Improvement Fund.

While the activity is primarily targeted to fencing, planting and fish passes, it is also supporting the transition for the Tokomaru and Rātana community wastewater discharges to water, to move to land discharge. Community involvement will be again elevated in 2018-19, with increased funding via Freshwater Improvement Fund and Manawātū District Council. A further component of the work includes preparation of iwi management plans in the Manawātū Catchment, an urban streams project with Palmerston North City Council and work with the Whanganui River Enhancement Trust (WRET) and Taranaki Fish and Game with Farmers in the Oroutoha Catchment. Work in the Lake Horowhenua Catchment will continue with the horticulture growers as a part of a Sustainable Farming Fund project and also to continue to progress weed harvesting in Lake Horowhenua.

The Freshwater & Partnerships team's outputs link to outcomes through increasing capacity within the community and also through the physical interventions improving water quality. The context for the programme is that the water resources of the region include 35,000 km of streams, 226 lakes, 40 estuaries and 310,000 hectares of coastal waters. The scale of the non-regulatory water quality programme efforts is currently accelerated through external funding and efforts are directed to localised impact rather than regional scale impact. For example, the level of activity of around 100 km of fencing per year sits in the context of the 35,000 km of streams within the Region. Directing the stream fencing to localised areas (where possible for the voluntary programme) seeks to maximise the benefits above what would be achieved compared to a less focussed approach. The targeting of work in the Whanganui coastal streams⁷ to improve swimmability at popular swims spots is an example of this.

Increasing the suitability of the region's rivers for swimming is one driver of the work, and regional improvement in this has been demonstrated over recent years, however, Council have acknowledged that to achieve the targets Council have set for swimmability, further effort over and above the current programme will be needed⁸. Another driver of the programme is improving aquatic habitat, and this year the team will work with other teams in the group to gather information on the level of protection of the priority aquatic biodiversity sites identified in the One Plan and to increase the level of protection of these.

⁵ www.manawaturiver.co.nz

⁶ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Regional-Council-Meeting-2018-25-09/18157%20Lake%20Horowhenua%20Update.pdf>

⁷ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2018-11-12/18233%20Whanganui%20Coastal%20Streams.pdf>

⁸ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Strategy-Policy-Committee-2018-13-11/18201%20Final%20Regional%20Targets%20for%20Swimmable%20Lakes%20%20Rivers.pdf>

Biosecurity Plants

The biosecurity activity includes delivery of the Regional Pest Management Plan (RPMP) regulatory functions and non-regulatory activity to control pest animals and plants to deliver on the goals of the RPMP.

The RPMP includes 66 species, and all of these form part of the programme for biosecurity plants. The main efforts of the biosecurity plants team is concentrated on 29 species, managing close to 6000 sites and 66% of these are at zero levels. Investigating, establishing and monitoring biocontrol options is a part of the programme in collaboration with the New Zealand Biocontrol Collective.

The activity of the programme over the 2019-20 year will focus on meeting the Annual Plan targets that relate to responding to any incursions, increasing the percentage of eradication and progressive containment pest plant sites that are at zero levels, supporting and monitoring biological control and responding to pest plant enquiries.

Council have increased funding for control of old man's beard for 2019-20, and this will support additional work on the ground. Old man's beard is the pest plant that receives the greatest level of investment by the programme, and the team will produce a short summary (Council item) on the current work programmes and the goals of these, as well as a set of options around control into the future. Other activity on old man's beard will include delivering and monitoring the release of a newly approved biological control agent (the old man's beard bud gall forming mite). Further investment in biological control agents for old man's beard will also be progressed.

Other planned work for the 2019-20 year include reviewing monitoring of the exclusion species listed in the RPMP to provide further transparency around the current monitoring and level of detection provided and options for consideration around improving monitoring of exclusion species. Aquatic weeds will be a further focus to report on the current known extent and activity to monitor for, and control and prevent further spread. An outcome sought from this project is a framework for decisions around where Horizons would intervene in the control of these plants.

Biosecurity Animals

The biosecurity animals programme is primarily around management of possums, rooks and amenity pests.

The possum programme aims to provide protection of production and biodiversity values and is the major component of delivering on the RPMP's sustained control of possum populations⁹. The programme covers over 1.489 million ha of the 2.2 million ha region. The programme is large compared to many programmes of other regions, covering an area close to the entire area of both the Wellington and Taranaki regions combined (1.53 million ha).

⁹ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20B%20Biosecurity%20Animals%20Activity.pdf>

The possum programme grew by over 180,000 ha last year and is forecast to take on a further 50,000 ha in the 2019-20 year. This expansion is in response to the national programme delivered by OSPRI exiting the region and the Regional Council deciding to continue possum control in this area. The expansion of the programme has some additional funding associated with it (10.5%). However, the expansion is primarily being funded via an increased amount of resting areas for control where possum densities are low. This is managed through an expanded monitoring programme and modelling of possum populations. The possum programme this year will be reviewing the possum control operations to consolidate the bait station set ups and reviewing areas that are not currently receiving control e.g. non rateable land and areas where landowners have opted out of the voluntary programme. This year the programme will change its policy and actively seek areas currently opted out of the programme to join the programme and will complete some follow up bait station fills in parts of PCOs, providing for a more agile approach to the work. Work to further understand and align with the Department of Conservation's pest control will also be undertaken.

The link from the possum activity to outcomes is via the possum population densities. Horizons' Long-term Plan and the RPMP targets are for residual trap catch (RTC) results below 10%, which is associated with protection of production land from economic impacts and some biodiversity benefit. Populations that are below 5% RTC are associated with a greater level of biodiversity protection due to the reduced possum population allowing more indigenous regeneration and fruit production, along with lessened impact on nesting wildlife. The populations estimates via the new, more thorough monitoring programme introduced last year, estimates populations are currently in the order of 3 to 4% although some areas are greater than 10% (which will be a focus for control this year). A change in the programme this year will be to work with the biodiversity team to increase the number of priority habitats that are receiving possum control and reporting on this statistic.

Horizons rook control programme is the main component of delivering on the eradication goal of the RPMP that aims to have no breeding of the population in the region. This activity will continue in the 2019-20 and will include the regular surveillance and control programme and meeting with neighbouring councils to coordinate work, as well as working with landowners who report rooks present.

The amenity pest programme, which provides advice around peri-urban pest management issues, will continue. Enquiries for this programme predominately relate to possums, rabbits, and mustelids.

Biodiversity

Biodiversity activity is spread across three main activities, priority habitat protection, biodiversity collaborations and management of the Tōtara Reserve Regional Park.

The priority habitats programme (approximately 35% of the budget) is to deliver, in part, on the goals of the One Plan, in particular, one method around protection of bush remnants and wetlands. The programme has been through a review over the past 18 months and changes introduced to provide further information on the 213 sites in the programme include greater clarity around the level of management they are receiving¹⁰. In summary, 62 sites are at a level where they have a management plan and all priority works are being completed. Alongside the work on the sites in the programme, the science programme has reported on the broader set of wetlands and bush remnants in the region via Horizons' 2019 State of Environment report¹¹. This shows there are over 1109 known bush remnant and wetland sites that have a total area of 52,660 ha, and Horizons has assessed 500 (45%) of these that represent an area of 20,757 ha (39%).

¹⁰ The management level of the sites in the programme was reported in the August 2019 Environment Committee report. 213 sites are level 2 or above i.e. have a rapid ecological assessment and have received some contribution from Horizons toward management. 62 sites are management level 3 and met the criteria for management level 2 and receive a contribution to their ongoing management from HRC. <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20D%20Biodiversity%20Activity.pdf>

¹¹ Horizons 2019 State of Environment report page 42. <http://www.horizons.govt.nz/HRC/media/Media/Publication/2019-State-of-the-Environment.pdf?ext=.pdf>

The science programme refreshed the prioritisation of biodiversity sites in the region in the 2018-19 year using a more nationally consistent method, broadening from just bush remnants and wetlands. This has identified over 740 sites in the top ten percent of priority sites in the region through a methodology based on existing databases. This prioritisation requires some ground truthing and it is expected that numbers will change. To assist with this, 100 rapid ecological assessments are planned in the 2019-20 year. A further task is for the biodiversity team working with other teams in the group (e.g. land and biosecurity-animals) to gather and report more information on the sites identified and to increase the protection of these.

Biodiversity collaborations are the focus of over 50% of the biodiversity budget and range from large landscape scale projects such as Kia Wharite (which provides habitat protection for whio and kiwi) through to small community group based activity such as the Milson Scouts providing predator trapping in Te Āpiti Manawatū Gorge. This programme delivered 30 collaborations in the 2018-19 year and has a similar number planned for the 2019-20 year. With many of these projects having received funding from Horizons over a number of years, it is timely to review the programme and report on the biodiversity and community engagement/involvement outcomes. This broad level review is planned to occur prior to the Annual Plan process and will involve an opportunity for the recipients of the funding to have input.

The Tōtara Reserve programme links with the organisational vision to make the region a great place to live, work and play. Activity at Tōtara Reserve includes biodiversity protection and the management of a camping facility. Much of the work over the 2018-19 year was focussed on recovery from a flood event that damaged the park. In the 2019-20 year, further work on this recovery is planned and will be aided by additional capital expenditure provided by Council through the Annual Plan process. The capital upgrades will also include improvements to health and safety in the park and upgrades to pest control infrastructure.

Science and Innovation

The Science and Innovation Team complete a range of monitoring, science work and environmental reporting across the topics of water allocation, surface and groundwater quality, land, biodiversity, air quality, drinking water and climate change¹². The monitoring, research and reporting functions provide support to NRP group programmes listed above and inform decision-making across the wider organisation and nationally. Communicating science to our community and stakeholders is also a key function of the team. To achieve these goals, the team works in partnership with other Horizons' staff, iwi/hapū, local and central government, science and research providers, stakeholders and our community.

The majority of the work within the programme is monitoring related, with water quality and quantity monitoring being the major component of the monitoring programme (65%). A major project for the science team and wider organisation will be a freshwater and coastal monitoring review. The network was majorly reviewed in 2007 and has had a range of other monitoring programme upgrades since then¹³. New monitoring and reporting requirements have been introduced over time, including water metering regulations, and through the National Policy Statement for Freshwater Management (2011, 2014 & 2017). The needs of Horizons' upcoming plan change and catchment planning processes are also a consideration of the network review. The analysis of the monitoring data prepared for the 2019 State of Environment report has identified the value of upgrades to the various monitoring programmes made over time, and also provided more information on the representativeness of the networks and how the monitoring programmes compare to some of the new regulatory requirements. The monitoring network review will be a significant undertaking, and the aim is to inform decision making for the Long-term Plan process that will start in 2020.

¹² <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20D%20Science%20%20Innovation%20Activity.pdf>

¹³ For more detail on monitoring programme upgrades refer to the State of Environment report pages 6 and 78-79. <http://www.horizons.govt.nz/HRC/media/Media/Publication/2019-State-of-the-Environment.pdf?ext=.pdf>

The other focus of the water quantity and quality science programme is the preparation and delivery of a clear science workplan, to inform the upcoming policy processes. This will build on existing work and outline the approach to providing information for the various planning processes over the coming years, noting that this plan may need to evolve overtime.

The key land monitoring and research project will be to develop, with the river management and land management team, an action plan around the issue of sedimentation in rivers. The focus for this will be the Oroua and Lower Manawātū building on work completed in 2019¹⁴.

The biodiversity science programme will continue the efforts to support the biodiversity implementation programme, which are outlined above. A further component will be to review the monitoring of the region's biodiversity and to investigate options for upgrades to the information management of biodiversity data.

The environmental reporting programme includes climate change & drinking water research, air quality monitoring and annual State of Environment reporting. Climate change research will include a regional stocktake of emissions, and provide support for a regional vulnerability assessment that is being undertaken to inform the development of a regional Climate Change strategy. The drinking water research will include finalisation of the source protection zones and updated reporting for the Council-operated supplies for more than 500 people. The State of Environment reporting for the year will build on the 2019 State of Environment report and present broad scale catchment level summaries of the information in those reports. A further task is the preparation of a catchment based activity report to demonstrate the range of work within a catchment, to be delivered in place of one of the current activity-based regional reports to Council later in the reporting year.

1.3. Key themes and deliverables

The context for the year's work is that the programmes are in the second year of the Long-term Plan, with some increased investment of rate-paying funds and a range of additional funding and targets through the external funding that has been secured to accelerate the programme's delivery of outcomes. The additional operational workload assists with meeting the increasing demand for work with communities and landowners. This workload also influences the delivery and focus of the programme and will require changes to some programmes over the year. The external funding also increases reporting, and auditing requirements and information management projects to support this and other reporting, are planned.

The context for the year also includes a changing policy environment, including changes to central government policies such as the National Policy Statement for Freshwater Management (NPS-FM) and signalled changes to a range of policies across freshwater, biodiversity, biosecurity, drinking water and climate change. Similarly, the regional policy context is changing with Horizons progressing Freshwater Plan changes and the development of a Climate Change Strategy.

Emerging issues are a further driver of change for the programme. In recent years, responding to biosecurity incursions, findings of contamination from firefighting foams and other items that have arisen have required an agile approach to delivery.

In summary, the programme has an additional workload for the year and our operating environment requires us to respond to both external and organisational drivers. The response to this is a continued drive to deliver organisational efficiencies, develop and maintain effective partnerships and lead integrated approaches in the way we work.

¹⁴ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Strategy-Policy-Committee-2019-11-06/1993%20Hill%20Country%20Erosion%20and%20Sediment%20Management%20in%20the%20Manawatu%20Whanganui%20Region.pdf>

The key themes for the work programme for the 2019-20 year are:

1. Integrated Catchment Management – further enabling alignment within the group and organisation as well as with externals to deliver on the goals within catchments.
2. Responding to and informing policy change – assessing and implementing responses to new policy and organising and gathering information to inform policy and strategy processes.
3. Operational Delivery – ensuring the Annual Plan and external funding targets are met.
4. Information Management – improving information management systems and practices.
5. Communication and reporting – woven into the above, this theme is to ensure the work is transparently presented to Council and the community.

The key deliverables for the 2019-20 year are outlined below and include all LTP targets being met (noting not all of these are shown below). Progress on these deliverables will be reported to Council.

1. Integrated Catchment Management – further enabling alignment within the group and organisation as well as with externals to deliver on the goals within catchments.
 - a. Further targeting of the Freshwater and Land Programmes in relation to new information from the science programme through the State of Environment report and other science activity.
 - b. Improving protection of priority biodiversity sites (terrestrial and aquatic) through the land, freshwater and biosecurity animals programme.
2. Responding to and informing policy change – Assessing and implementing responses to new policy and organising and gathering information to inform policy and strategy processes.
 - a. A monitoring network review to respond to changes to the National Policy Statement for Freshwater Management and to prepare for upcoming Regional catchment policy processes.
 - b. Preparing and delivering a work plan to inform the upcoming plan change processes.
 - c. Completing climate change research to inform Council's climate change strategy.
 - d. Completing drinking water research to inform protection of drinking water supplies.
3. Operational Delivery – Ensuring the Annual Plan and external funding targets are met.
 - a. **Land** – 22,500 ha of new farm plans, 1000 ha of paddock maps, 3,440 ha of erosion control works, 5 industry partnerships supported, 30,000 poplar poles planted.
 - b. **Freshwater and Partnerships** – Complete 79 km of stream fencing, plant 63,333 riparian plants, fix 7 fish barriers, and enable 14 community involvement projects, 6 annual reports.
 - c. **Biosecurity Animals** – 57,441 ha of new (ex OSPRI) or previously “opted out” area added to the programme, overall average possum densities below 10% residual trap catch, a review of the possum control operation set ups with consideration to opt out of areas and non-rateable land.
 - d. **Biosecurity Plants** – Follow up on any incursions, investigate monitoring programme for exclusion species, options assessment for old man's beard control, review of aquatic weed management in the region and an annual report on biological control activity.
 - e. **Biodiversity** – 100 rapid ecological assessments, add four wetlands and seven bush remnants to the managed sites list, support 10 biodiversity collaborations, review of biodiversity collaborations project. Tōtara Reserve management, including capital upgrades.
 - f. **Science** – Contributions to the items listed above and below, deliver monitoring programmes (including swim spots), provide data to the LAWA website, complete an annual summary of the science programme.
4. Information Management – Improving information management systems and practices.
 - a. Complete data management plans for key group datasets, upgrade information management for the land, biosecurity animals, biosecurity plants and other programmes as resources allow.

5. Communication and reporting

- a. Produce a single operational plan for the group.
- b. Complete annual state of environment reporting based on catchment summaries.
- c. Review Council reporting.
- d. Complete a catchment based activity report to Council.
- e. Present to Council the 14 annual reports required by Annual Plan targets.
- f. Working with iwi/hapū, landowners, community groups, Advisory and Governance Groups (Table 1).

1.4. NRP Budgets for the 2019-20 Year

Council have set the budgets and targets for the Natural Resources and Partnerships group via the Long-term Plan and the subsequent Annual Plan for 2019-20. Budgets from rates are supplemented via additional income and expenditure by external agencies and landowners as further detailed below (). This additional expenditure provides for further work to be done and additional targets that are required to be met and reported on to funding providers. Overall, the NRP group income totals \$24.573 million (Table 1 and Table 2) and is 84% from rates and 16% from external funding (\$4.012 million). The rate income of \$20.560 million is approximately 80% from general rate and 20% from a range of targeted rates.

1.5. Budgeted Revenue

The budgeted external income from central government totals \$2.765 million (11% of the overall budget) and includes \$1.733 million from the Hill Country Erosion Fund and \$1.032 million from the Freshwater Improvement Fund.

Other budgeted cash income totals \$864 K. This includes:

- The poplar and nursery sales (approx.. \$600 K);
- Funding from Whanganui River Enhancement Trust (\$65 K);
- Various contributions to the Te Āpiti Manawatū Gorge project (\$89 K), camp fees and lease income at Tōtara Reserve (\$50 K);
- Income for monitoring work for Tararua District Council (approx. \$40 K); and
- Income from MPI for the check clean dry biosecurity programme (\$20 K).

Another budgeted income includes the \$383 K for the revaluation of Horizons' joint venture forestry investments. This revaluation is completed annually and is a non cash income.

A greater amount of external funding has been reflected in the budgets in 2019-20, reflecting both increased funding secured and the increased availability of information on the budgets secured at the time the budget process was underway.

1.6. Budgeted Expenditure

The group expenditure is budgeted to total \$24 million being \$0.586 million lower than income, which largely reflects the non-cash income budgeted for increased value of Horizons' joint venture forestry income. The group's expenditure is split across:

- Grants \$3.321 million (14%), noting this does not reflect all budget's spend on grants as some grant funding is currently reflected in other ways in the budget;
- Other external expenditure \$9.191 million (38%) includes laboratory analysis, possum control contracts, nursery management, purchase of forestry seedlings and riparian plants, poplar and willow poles, bait stations, forestry silviculture, whole farm plans and land mapping, and contractor expenditure for biosecurity works.

- Staff costs \$8.96 million (38%), including corporate overheads and staff time for other groups' contributions to programmes; and
- Internal expenditure \$2.513 million (10%) including vehicle running and \$1.930 million costs for the parts of the monitoring programme delivered by the Regional Services Group.

1.7. Other Leverage Funding

It is noted that not all external funding secured, or aligned with, is included in the budget. Horizons contributes to a range of cross-agency partnerships and external work programmes, either through in-kind support, or through direct financial contribution. While Horizons' components of these budgets are included in the Annual Plan, the amount leveraged is not.

Landowner contributions, and MBIE-funded research programmes, are both examples of funding not accounted for through Horizons' bank accounts but are tracked by some of the programmes. Leveraged external funding (or aligned funding) in the 2019-20 financial year:

- Manaaki Whenua, through support of Horizons Regional Council and other stakeholders have secured \$9.8 million in MBIE funding for a five year project titled, "Smarter targeting of erosion control". The aim of this project is to develop models and tools that will improve our understanding of the links between erosion sources and sediment related water quality, determine the performance of erosion control measures and develop a framework for national scale assessment of erosion sediment redistribution and economic impacts.
- Land programme collaborations including two Sustainable Farming Fund projects: one exploring the reduction of sediment loss from winter cropping through different catch crops, and another advancing our understanding of the impacts of winter sheep grazing on contaminant loss to waterways. Other initiatives include: research into breeding and application of poplar and willow trees; promotion of good farm management practices through the NZ Farm Environment Trust awards programme; and delivery of a public campaign around winter grazing.
- Additional funding for the freshwater and land teams from the Whanganui River Enhancement Trust to support environmental work programmes.
- A range of freshwater partnerships including: five MfE funded Freshwater Improvement Fund work programmes; a Sustainable Farming Fund project lead by DairyNZ exploring the potential benefits of plantain use for water quality and reduced nitrogen loss in the Upper Manawatu Catchment; a Ministry for the Environment funded community Environment Fund project in the Waikawa Catchment; and a further Sustainable Farming Fund project 'Future Proofing Vegetable Production' lead by LandWISE, in partnership with Horizons and horticulture growers in the Arawhata Catchment.
- Biosecurity collaborations including: a number of initiatives around wilding conifer control; participation in the Biocontrol Collective – a sector-wide initiative supporting biocontrol development and release; and partnership with Massey University to support a PhD study of enhanced riparian management and novel herbicide approaches to control of Old Man's Beard.
- Biodiversity collaborations as highlighted in the report, ranging from Kia Wharite and Te Apiti Manawatu Gorge projects, through to regional sector projects delivered through the BioManagers Special Interest Group and Bioworking group.
- Science and research collaborations, including: a partnership with Massey University supporting four PhD studies investigating different aspects of land use and its impacts on the fate and transport of nutrients in the region; development of a national water model (lead by NIWA and GNS science); Our Lakes health: past, present and future a programme lead jointly by Cawthron and GNS Science, providing a national overview of the health of 380 lakes in New Zealand; a Massey University pilot study investigating nutrient and flow pathways from intensive winter grazing; and investigation into nutrient loss from cropping and horticulture (led by Foundation for Arable Research and HortNZ in collaboration with regional councils).
- Funding secured for science and research through the Ministry for Business, Innovation and Employment Envirolink Fund¹⁵ (typically in the order of 120K per year).

¹⁵ Envirolink is a regional council driven funding scheme that facilitates information transfer from Science providers to Regional Councils. <http://www.envirolink.govt.nz/>

Table 1 Overview of activity budgets within the Annual Plan for the 2019-20 financial year. Please note this reflects Horizons budgets and excludes expenditure by Landowners etc.

	Land Management	Water Quality & Quantity	Biosecurity	Biodiversity	Environmental Reporting	Total	
Revenue (total)	7,484,040	8,273,350	6,294,310	2,072,770	448,570	24,573,040	
Rates (total)	4,702,600	7,201,050	6,274,310	1,933,770	448,570	20,560,300	84%
General rates	4,557,470	5,125,000	4,720,210	1,658,380	448,570	16,509,630	67%
Targeted rates	145,130	2,076,050	1,554,100	275,390	-	4,050,670	16%
External income	2,781,440	1,072,300	20,000	139,000	-	4,012,740	16%
Expenditure (total)	6,839,060	8,332,290	6,294,290	2,072,770	448,570	23,986,980	
Personnel Expenses	2,375,560	2,674,950	2,847,440	835,100	227,360	8,960,410	37%
Grants	2,185,200	509,500	-	626,990	-	3,321,690	14%
Other External Expenditure	2,073,790	3,183,750	3,194,850	551,660	187,600	9,191,650	38%
Interdepartmental Expenses	204,510	1,964,090	252,000	59,020	33,610	2,513,230	10%
Net Surplus (Deficit)	644,980	58,940	20	-	-	586,060	

Table 2 Overview of team budgets within the Annual Plan for the 2019-20 financial year. Please note this reflects Horizons budgets and excludes expenditure by landowners etc.

Budget	Land	Freshwater	Biosecurity Animals	Biosecurity Plants	Biodiversity	Science	Total
Revenue Total	7,159,660	3,263,670	4,421,720	1,872,590	1,873,470	5,981,930	24,573,040
Rates (total)	4,378,220	2,231,370	4,421,720	1,852,590	1,734,470	5,941,930	20,560,300
General rates	4,378,220	1,646,230	3,042,670	1,677,540	1,459,080	4,305,890	16,509,630
Targeted rates	0	585,140	1,379,050	175,050	275,390	1,636,040	4,050,670
External income	2,781,440	1,032,300	0	20,000	139,000	40,000	4,012,740
							0
Expenditure Total	6,514,680	3,322,620	4,421,710	1,872,584	1,873,480	5,981,910	23,986,980
Personnel Expenses	2,208,180	912,870	1,836,900	1,010,537	679,850	2,312,070	8,960,410
Grants	2,185,200	509,500	0	0	626,990	0	3,321,690
Other External Expenditure	1,928,790	1,816,430	2,403,310	791,547	511,640	1,739,940	9,191,650
Interdepartmental Expenses	192,510	83,820	181,500	70,500	55,000	1,929,900	2,513,230
% of NRP expenditure	27%	14%	18%	8%	8%	25%	1
Reserves	approved use	approved use	approved use			Approved use	
Capex	445,021	0	512,500	0	87,125	71,750	1,116,396
Total staff hours	24,661	9,909	23,290	10,134	7,696	25,044	100,734
Approx. Number of Staff	17.6	7.1	16.6	7.2	5.5	17.9	71.9
% of NRP budgeted staff	25%	10%	23%	10%	8%	25%	100%
Surplus/(deficit)	644,980	-58,950	10	10	-10	20	586,060

2. LAND MANAGEMENT

The land management programme has goals around hill country erosion management to *increase the region's resilience to storm events, enabling sustainable land use, improving water quality and reducing the impact of sedimentation on levels of service for flood control infrastructure. Managing coastal erosion, soil health and poplar and willow nurseries are also a part of the programme.*

The land management activity delivers work across three components:

- The Sustainable Land Use Initiative (SLUI) to manage hill country erosion;
- The regional & coast and Whanganui Catchment Strategy programme that includes the environmental grant programme (for works outside SLUI), the soil health monitoring programme and industry partnerships to support good management practice; and
- Management of the poplar and willow pole nurseries and procurement of poplar and willow material to supply the erosion control programmes.

Total operational expenditure with the land management budget is \$6,514 million with this predominately being as part of the SLUI programme (79%, \$5.170 million). The regional & coast programme that includes environmental grant work and Whanganui River Enhancement Trust (WRET) activity comprises 11% of the budget (\$0.762 million). Both the SLUI and regional & coast programmes purchase from the nursery activity.

2.1. National and Regional operating context

Central government has placed considerable emphasis on afforestation as a practical measure to solve a number of environmental issues – erosion and sedimentation, carbon emissions (and in turn, climate change and increased on-farm resilience), biodiversity and habitat restoration as well as provide economic development (plantation forestry and tree products e.g. manuka honey). This has been coupled with a range of new planting funding opportunities and proposed changes to regulation which may result in further planting activity.

The One Plan identified hill country erosion as one of the four key natural resource management issues for the region. The Manawatū-Whanganui Region has the largest amount of highly erodible land in pasture on private land of any region in New Zealand. On private land there is over 260,000 hectares of highly erodible land in pasture and a further 200,000 ha of land with woody vegetation cover. In response to the 2004 storm event, Horizons, central government and other partners established the Sustainable Land Use Initiative which is the cornerstone of Horizons' land management activity.

While forestry can provide significant environmental benefits, poor management of forestry can lead to increased biosecurity issues, including wilding conifers and increased weed and animal pest infestations. Poorly managed plantations and harvesting are susceptible to erosion and forestry slash can block rivers and damage infrastructure – as was seen in Tolaga Bay recently. Horizons plays a key role in administering a number of forestry grant programmes, and undertaking forest management and afforestation reporting.

Horizons has a strong, long-term reputation for delivering effective planting programmes in the region. However, we also recognise that there is growing resistance of conversion from agriculture to forestry in some districts – and this needs to be recognised as we look to increased afforestation of erodible land in the region. Horizons has recently revisited its funding structure for new forestry on erodible land in the region¹⁶. Further the programme has introduced a dedicated position to supporting best practice around forestry including supporting the development of forestry planning documents for the forestry Horizons contributes funding to.

Challenges and opportunities for 2019-20

Demand for poplar and willow poles continues to exceed supply. Increasing supply takes time (several years¹⁷) and there is uncertainty around future demand and budgets for programmes, for example will central government investment continue at the end of the current four year contract.

All planting programmes are at some risk as increasing regulation or on farm costs may drive land owners to pull back on grant programmes while the new funding streams available via central government may displace planned planting arrangements, creating a situation where our team may not meet our LTP planting targets even though planting programmes in the region have increased well beyond the targeted level, with consequential environmental improvements.

The lack of availability of planters and fencers as demand for afforestation and protection works increases may become a particular pinch point in the region, and lead to less being delivered at greater cost. This may also have knock-on effects to our own team as staff are attracted to forestry management and environmental planning opportunities within the private sector, or specialist areas within central government.

Targets and Budget for 2019-20

The programme has, in the past, secured additional funding through other programmes, including the QE II Trust, Nga Whenua Rahui, the Afforestation Grants Scheme, the Provincial Growth Fund (\$0.97 million last year), additional SLUI funding (\$0.31 million last year) and landowners (over \$2.46 million last year).

The AP budgets do reflect the additional funding via the Hill Country Erosion funding. At the time of completing the AP process, the overall quantum of hill country erosion funding was known, however, the specifics of the split of the funding amounts for support of physical works and capacity (staff and contractors) was not known. The detailed SLUI budget, including the revised budget based on the final contract for this work, is provided in the sections below (Table 3).

Table 3 AP and hill country erosion fund targets for 2019-20. Please note wording of the specific targets have been paraphrased here to

¹⁶ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Strategy-Policy-Committee-2019-11-06/1994%20Sustainable%20Land%20Use%20Initiative%20Funding.pdf>

¹⁷ It takes three years to grow poplar poles to be ready for use on farm.

enable easy comparison.

Performance measure/ contract target	Annual Plan	Hill Country Erosion Fund	Overall target (larger of the two)
Sustainable Land Use Initiative			
Erosion reduction works programmes in targeted SLUI catchments (ha)	3,100	3,440	3,440
Whole Farm Plan properties mapped per year (ha)	20,000	22,500	22,500
Farm or Paddock assessments mapped per year (ha)	-	1,000	1,000
Case study completed (number)	-	1	1
Feasibility reports (number)	-	6	6
Regional Land Initiatives (non – SLUI), Regional & coast, Whanganui Catchment, Nursery			
Manage grant programmes to deliver erosion reduction works (ha)	175	-	175
Support industry initiatives that promote sustainable land use (number)	5	-	5
Operate Council nurseries and source additional commercial material to deliver poplar and willow poles to control erosion (number of poles)	30,000	-	30,000

Table 4 Budgets for the components of the Land Management activity)

Budget	SLUI AP	SLUI Contract ¹⁸	Regional & Coast	Nursery	Forestry revaluation (non-cash)	Total based on Annual Plan	Total based on SLUI contract budget
Revenue							
Rates	3,695,090	3,695,090	696,320	-13,190	0	4,378,220	4,378,220
External	1,733,600	1,733,600	65,000 ¹⁹	599,840	0	2,398,440	2,398,440
Other (non-cash)					383,000	383,000	383,000
Total Revenue	5,428,690	5,428,690	761,320	586,650	383,000	7,159,660	7,159,660
Expenditure							
Staff	1,759,910	2,022,903	433,670	14,600	0	2,208,180	2,471,173
External	3,272,350	3,009,357	278,120	563,520	0	4,113,990	3,850,997
Internal	142,000	142,000	49,510	1,000	0	192,510	192,510
Total Expenditure	5,174,260	5,174,260	761,300	579,120	0	6,514,680	6,514,680
Surplus	254,430	254,430	20	7,530	383,000	644,980	644,980
Reserves (1 July 2018)	858,000						
Capex	379,421	379,421		65,600 ²⁰		445,201	445,201

As outlined above, the AP budget for SLUI reflects the overall quantum of funding for SLUI, including the new Hill Country Erosion Fund (HCE) contract, however, the detail of what the funding had been secured for was not available at that time. The AP budget and the revised budget are shown in Table 5. To provide a comparison of the budgets from the previous year, the revised budget is also compared to the 2018-19 budget (excluding the additional funding from the Provincial Growth Fund (PGF), SLUI boost fund, the Supplementary SLUI Programme).

¹⁸The SLUI contract was signed in early August and the reallocation of staff time is based on estimated charge out rates.

¹⁹ WRET have indicated they will fund \$75,000 this financial year, this is an increase on AP budget of \$65,000, the increase is not reflected in expenditure at this stage.

²⁰ Further use of reserves for the Woodville nursery development has been approved.

Table 5 Sustainable Land Use Initiative Budget for 2019-20 showing the budget as originally entered into the annual plan and as revised post the contract for the HCE programme being finalised.

Budget	AP 2018-19	AP 2019-20	Contract 2019-20	Difference 2019-20 contract minus AP2018-19	Percentage increase
Revenue					
Rates	3,677,003	3,695,090	3,695,090	18,087	0%
External	1,088,509	1,733,600	1,733,600	645,091	59%
Total Revenue	4,765,512	5,428,690	5,428,690	663,178	14%
Expenditure					
Staff	1,707,628	1,759,910	2,022,903	315,275	18%
External	2,788,609	3,272,350	3,009,357	220,748	8%
Internal	142,000	142,000	142,000	0	0%
Total Expenditure	4,638,237	5,174,260	5,174,260	536,023	12%
Surplus	127,275	254,430	254,430	127,155	100%
Capex	110,275	379,421	379,421	269,146	244%

Summary

- Increases in revenue primarily as a result of the HCEF contract application will be reflected in increased expenditure as shown in Table 5.
- Increases in staff expenditure provide additional staff expertise into monitoring /audit of programme works, forestry expertise for on farm decision support and extra effort needed to develop whole farm maps and paddock maps. This should result in more works and an increase in staff time to service the grant process.
- Increases in external expenditure are primarily in the grant works programme, but also in consultancy costs for specialist forestry and land use advice and an allowance for cost increases as a result of a new WFP mapping contract.

The SLUI budget also includes capital expenditure for the joint venture forests (shown in Table 5 as capex). Horizons has interests in 10 joint venture forests with a net stocked area of 1,377 hectares. In June 2019 these were valued at \$4.816 million, an increase in value of \$0.794 million including GST over the last financial year. The estimated value at time of harvest is projected to be approximately \$27 million including GST. A report on these forests was provided to Council in April 2017.

A summary of the proposed work programme for the joint venture forests over the next three years is shown below (Table 6), and it is noted that the work undertaken in any one year is subject to change due to growth rates of the forest, contractor availability, weather and pest and disease.

Table 6 Proposed work programme for the joint venture forests for the next three years.

Work Type	2019-20	2020-21	2021-22	Comment
Silviculture	324,421	208,090	314,320	Contracted work for pruning and thinning
Management (tracks, fences, weed and pest control)	55,000	55,000	55,000	Allowance made for annual work dependent of weather damage etc.
Total	379,421	263,090	369,320	

The silviculture regime of each forest is assessed based on forest growth measurements. A change of management to "one hit" pruning has led to increased costs of silviculture over the next five years, but with no second pruning overall the life of the forest management cost will be lower.

In 2019-20 the major costs are a thin to final stocking on 164 ha of forest with an estimated cost of \$131,000 and a final thin of 121 ha of forest with an estimated cost of \$97,000.

There are other operational costs associated with the Joint Venture forests. These are included in the External Expenditure area of the overall SLUI budget and includes insurance, rates, annual valuation and legal fees, Emissions Trading Scheme fees etc.

The SLUI activity is able to access additional funds via Council approved usage of available SLUI reserves. This enables more work to be allocated on an annual basis than the annual budget. This enables further work to be allocated to accelerate the programme and also provides an important financial management tool to manage the reality that not all work allocated in a year gets completed. The amount of reserves available for allocation will be confirmed as a part of the year-end financial processes. At 1 July 2018 the SLUI reserves available for allocation was \$0.858 million. The SLUI programme also has capital and operational budget for activity with the 10 joint venture forests.

Further, there are council approvals for further capital expenditure on the Woodville nursery upgrade.

2.2. Activity area #1: Sustainable Land Use Initiative (SLUI)

Overview

The SLUI programme is a long-term initiative, and is currently one of, if not the largest hill country erosion management activity in the country. To date, SLUI has completed 746 Whole Farm Plans covering over 552,067 ha of private land and achieved 37,268 ha of erosion control works. These works have been targeted with 63% of the works being carried out on "top" and "high priority" land.

The SLUI programme is undergoing some changes in 2019-20. These changes reflect new information provided through the SLUI review and changes to the Hill Country Erosion Fund. The new contract with the HCEF includes a 55% overall increase in central government funding compared to last year's baseline Hill Country Erosion funding. The funding is for four years starting in July 2019 and is for a total of \$6.4 million.

Further changes to the programme are being implemented due to the new 1 Billion Trees funding that is available directly from central government via Te Uru Rakau.

A key focus for the 2019-20 year is increasing the pace of work on the ground (number of hectares per year), the targeting of works and increasing the number of SLUI farm plan holders completing work each year. Activity includes 3,400 ha of erosion control works and production of 22,500 ha of SLUI WFP.

Programmes and projects for 2019-2020

The SLUI programmes and projects during 2019-20 are set out in Table 7, and an activity report on the achievement of programme and project measures will be reported annually to Council:

Table 7 Horizons' Sustainable Land Use Initiative Work Programme 2019-20

Contract Management
<ul style="list-style-type: none"> ▪ Complete Milestone reports to Te Uru Rakau as contracted. Reports due in November, March, May and June. ▪ Provide shape files to TUR. ▪ Invoice TUR upon satisfactory completion of targets.
Farm Plans
<ul style="list-style-type: none"> • Increase targeting of new farm plans and works (within catchments and within farms) to improve erosion control effectiveness, targeting "top" and "high" priority land. • Implement new tools including SLUI whole farm maps (WFM) and SLUI paddock maps (PM) to improve flexibility when targeting priority land, widening the pool of land available to SLUI funding. • Recognise Whanganui Catchment Strategy Plans as SLUI Plans and utilise SLUI funding on these farms, allowing more works to be funded. This will bring 40 farms and 22,000 ha into the SLUI programme. • Maintain high level of active plans through periodic reviews and customer contact.
Grant administration
<ul style="list-style-type: none"> • Implement new SLUI limits on funding for whole farm afforestation as approved by Council in June 2019. • Implement reclassification changes of some hill country riparian fencing projects to retirement projects, clarifying grant rates for the different types of plan. • Implement new work programmes for lifecycle management of poplars and willows on farms, including grants for poplar pruning and removal of "old man poplars". These programmes will be carried out within a set funding limit. • Review and increasing auditing of works to deliver on contract targets and proof of establishment. Supply an annual report on this work. • Assist with landowner applications to the 1 Billion Trees programme where they align with the goals of the SLUI programme. Look for complimentary funding with 1BT and SLUI. • Monitor grant programme for effective delivery and targeting, provide feedback to staff and Council and look for continuous improvement.
Information Management and Forest Management Systems
<ul style="list-style-type: none"> • Upgrading information management to improve reporting processes and connectivity between the various sources of information in the programme such as field information, SLUI database, financial reporting and council/contract reporting and compliance. • Maintain the work programme within the Joint Venture (JV) forests. • Complete annual audit and valuation of JV forests. • Effective management of SLUI reserves. • Effective contractor management, including mapping contractors (let new four year contract).
Advice Services
<ul style="list-style-type: none"> • Increasing provision of advice for forestry appraisals to ensure environmental requirements of right tree, right place. • Promote best practice in forestry. • Complete case studies and support the compliance function around forestry management (National Environmental Standard for Plantation forestry, forestry harvesting etc). • Increase alignment with other NRP teams to deliver on integrated catchment management outcomes. This will include alignment with biodiversity and biosecurity (weed and pest) functions.



Photo 1 Staff inspecting a retirement fence (Libby Owen).

Reporting to Council

- Milestone reports to TUR (November, March, May and June).
- Annual monitoring / audit report to TUR (note first report due August 2020 on results of 2019/20 audit).
- Bi monthly reports to Catchment Operations Committee.
- Progress against targets.
- Future activity
- Issues
- Forestry Report – one report during year on progress of Joint Venture forests, likely to be February/March.
- Report to SLUI Advisory group twice per year – spring 2019 and autumn 2020.
- Annual report (of previous financial year) to Council at first Catchment Operations Committee of new financial year.

2.3. Activity area #2: Regional & Coast

Overview

The regional coast & land programme includes the Whanganui Catchment Strategy (WCS), environmental grant, soil health, industry partnerships, and nurseries programmes. The key projects within these for the 2019-20 year are outlined below.

The Whanganui Catchment Strategy has been operational since 1997 and has developed 40 farm plans across over 22,000 ha. Over the course of the programme, approximately 2,300 ha of work have been completed. This programme will continue to partner with the Whanganui River Enhancement Trust (WRET) to provide erosion and sediment control programmes throughout the catchment. There will continue to be a focus on the Ohura and Waikawa Catchments due to their high sediment loads contributing to the Whanganui River.

Programmes and projects for 2019-2020

The regional & coast programmes and projects during 2019-20 are set out in Table 8, and an activity report on the achievement of programme and project measures will be reported annually to Council:

Table 8 Horizons' Regional & coast Work Programme 2019-20

Regional Land and Coast	
<ul style="list-style-type: none"> Provide advice to landowners on request in areas outside of SLUI priority zones; this will include downland farms, lifestyle and coastal areas. Provide environmental grant programme expenditure where appropriate. With the introduction of SLUI paddock maps, the environmental grant activity will be directed more to erodible land (compared to top and high priority land), lifestyle areas and coastal and dune erosion control. Continue to support wider organisational activities including liaison with River Management, Consents and Compliance teams. Support freshwater and biodiversity through ensuring contacts with landowners and potential grant assistance is directed to the appropriate work stream. 	
Whanganui Catchment Strategy	
<ul style="list-style-type: none"> Implement SLUI funding for WCS, ensuring equity of grant rates across the programme and contributing to the targets for SLUI. Maintain records for separate WCS funded work to ensure no double counting occurs. Maintain the funding partnership with the Whanganui River Enhancement Trust. Move from a single demonstration farm to a number of demonstration sites, with works and funding supported by WRET. Maintain membership and relationships with the Taumarunui Sustainable Land Management Group. 	
Soil Health	
<ul style="list-style-type: none"> Provide advice on soil health and soil management, and promote and demonstrate Visual Soil Assessment. Maintain the Regional SOE soil quality monitoring, complete an annual monitoring report. 	

Industry Partnerships

- There are two key industry relationships where the land team provide contracted funding, staff expertise and support. These are;
 - NZ Farm Environment Trust, and the Horizons Region's Ballance Farm Environment Awards. Staff support the local committee, supply judges and support the winners field day.
 - Poplar and Willow Research Trust, where staff are members of the Trust supply financial administration and are on both the Technical Advisory Group and the Nursery Manager's Group.
- Continue support of primary industry organisations to promote sustainable land use and good management practice.
- Maintain representation by Horizons at a national level in a number of areas, including Land Managers and Land Monitoring Forum Special Interest Groups, and the National Land Use Capability Classification TAG.

Nurseries

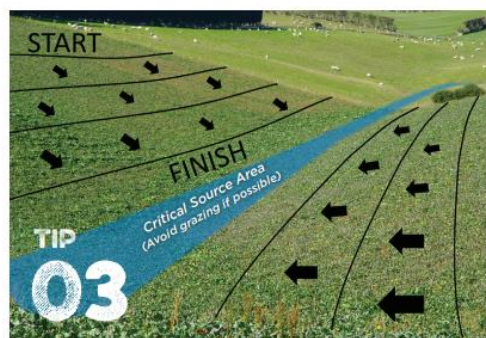
- Operate our Council owned and leased nurseries to produce quality trees at a realistic price, meet production targets and secure agreement with other suppliers to meet any shortfall in supply.
- Support wider collaboration with other regional council and commercial nurseries.
- Continue to support the appropriate production models, including new varieties, disease and pest risk assessment, potential irrigation and capital expenditure where appropriate.

TIP
01**Exclude stock from waterways**

Create an ungrazed buffer zone between the livestock and the waterway. About 3-5 metres is a good starting point, but this should increase with slope and instability of soil.

TIP
02**Leave an ungrazed buffer zone around Critical Source Areas**

Critical Source Areas (CSAs) are parts of the paddock that can channel overland flow directly to waterways (e.g. gullies, swales, very wet areas, spring heads, waterway crossings, stock camps and vehicle access routes).

TIP
03**Grazing paddocks strategically**

On a sloping paddock, fence across the slope and start grazing at the top of the slope. That way, the standing crop acts as a filter. Or, if there is a waterway in the paddock, start grazing at the far end of the paddock.



Figure 2 Extract from winter grazing campaign supported by Horizons and other regional councils.

Whanganui Catchment Strategy

- The WCS farms will become eligible for SLUI funding in 2019-20, enabling further work to occur on these farms. This will ensure equity of grant rates across the programme and open up more funding to larger work programmes on farms. Work carried out under SLUI funding will contribute to the targets for SLUI.
- The 2019-20 AP has a separate budget for WCS, and this will be utilised and reported on separately to SLUI. Work funded by the WCS programme will contribute to the LTP target for that programme. No works will be double counted. As a part of the AP process for 2020-21, consideration will be given to merging these budgets and targets.
- Maintain the funding partnership with the Whanganui River Enhancement Trust. The trust has signalled an increase in funding for 2019-20 above the amount indicated in the AP. These funds will contribute to increased grant rates in the land outside of the SLUI/WCS farm plans.

Reporting to Council

- Bi monthly reports to Catchment Operations Committee
- Progress against targets
- Future activity
- Issues
- Soil Health Monitoring report
- One report in the first half of the financial year.

3. FRESHWATER & PARTNERSHIPS

The core goal of the freshwater implementation activity is to *work with partners to improve water quality and aquatic habitat outcomes, including supporting and facilitating community involvement.*

The freshwater & partnerships programme links with a range of national and regional policies and strategies. The programme aims to deliver freshwater enhancement work in partnership with others to improve water quality and aquatic health outcomes. Some of the work also informs restoration options and also seeks to build capacity.

The scope of the works by the freshwater team has significantly grown since the team was formed in 2012. This has been through increased investment by ratepayers and through securing external funding and collaborating with others. Council approval to utilise the targeted rate reserves for this activity has also enhanced the delivery of the programme.

3.1. National and Regional operating context

Central government has a significant reform programme underway around freshwater management and has accelerated pressure on regional councils to make substantial progress on improving freshwater quality. There are strong signals of increased freshwater regulation, targeted interventions and associated funding, as well as a review of three waters management – which may lead to structural change for some organisations.

Societal and community expectations also continue to shift in relation to freshwater. There is an increased commentary around freshwater management and our programmes are experiencing increased demand for iwi/hapū, community and landowner involvement in improving water quality and aquatic habitat. Treaty Settlement processes are also introducing change to the Freshwater & partnerships programmes.

The scale of the work we need to do regionally to improve freshwater quality is large, given the water resources in the region include 35,000 km of streams, 220 lakes greater than 1 ha, 40 estuaries and 3,100 km² of coastal waters. While we make steady progress against our regional targets and regularly exceed them due to additional effort and external funding, we are not going to achieve it alone. The 100 km of stream fencing and 150,000 riparian plants per year makes an important, but small difference across the region and, increasingly, the programme is focussing these efforts towards localised outcomes.

We depend on partnerships to do our work. We have a number of accord agreements in place that have successfully run over a number of years. These will be complemented by the freshwater futures catchment work. There are also a range of iwi management plans now in place or being developed that influence our work. Along with the changes to the RMA, the One Plan continues to be amended to implement the NPSFM, creating an increasingly complex regulatory environment for us to navigate, including the challenges of obtaining regulatory permissions through consent processes to do restoration works like fishpass installation and lakeweed harvesting. The activity of the freshwater team also extends to sewage treatment plant upgrades, and the diversion of these point source wastewater discharges from freshwater bodies to land.

Given the wide variety of activity the freshwater team does, the team needs to have a wide range of skills to understand the practicalities of working in the rural environment, an understanding of water quality issues and associated interventions and the ability to work with a number of agencies, iwi/hapū and community groups.

Challenges and opportunities for 2019-20

If current demand is anything to go by, the programme is forecast to hit staff capacity and budget constraints in some areas in the 2019-20 year resulting in some landowners being placed on waiting lists.

A challenge for the team is determining intervention logic to achieve improvements in water quality and aquatic health. This work will continue over the year as resources allow with a priority on:

- The number of lakes that sit within Band D of the Freshwater National Policy Statement attributes and the requirement that plans are to be developed to get lakes out of this state (Band D);
- A number of river monitoring sites are showing declining trends and/or poor macroinvertebrate communities which require plans to be developed to move out of this state. Further work is required on understanding the drivers of why each of these sites is currently in this situation and then the development of interventions which will result in them improving; and
- The sites that are defined as aquatic biodiversity habitats in the One Plan or have been found to meet the same criteria since then.

3.2. Activity area #3: Freshwater & Partnerships

Overview

The freshwater & partnerships programme delivers work across five key components:

1. Regional freshwater programme, to improve water quality and aquatic habitat outcomes, including supporting and facilitating community involvement outside of the Manawatū and Whangaehu Catchments;
2. Manawatū Accord and Freshwater Improvement Fund project, to improve water quality and aquatic habitat outcomes, including supporting and facilitating community involvement within the Manawatū Catchment;
3. Whangaehu Catchment Freshwater Improvement Fund project, to improve water quality and aquatic habitat outcomes, including supporting and facilitating community involvement, within the Whangaehu Catchment;
4. Waipu Catchment Freshwater Improvement Fund project to remove the Rātana WWTP discharge from Lake Waipu and irrigate to land and develop a restoration plan for Lake Waipu; and
5. Lake Horowhenua Accord and Freshwater Improvement Fund project, to improve water quality and aquatic habitat outcomes.

In addition to the AP and contract targets for the Freshwater & partnerships project the team will also focus on:

- Further improving targeting of works to improve effectiveness of the overall programme in improving water quality and aquatic habitat outcomes;
- Increasing alignment with the other Natural Resources and Partnerships teams, in particular land, science and biodiversity/biosecurity to improve delivery on integrated catchment management outcomes;
- Reviewing and increasing auditing of works; and
- Upgrading information management within the activity to improve reporting processes.

Programmes and projects for 2019-2020

The freshwater & partnerships programmes and projects during 2019-20 are set out in Table 9, and an activity report on the achievement of programme and project measures will be reported annually to Council:

Table 9 Horizons' Freshwater & Partnerships Work Programme 2019-20

Freshwater Support Programme
<ul style="list-style-type: none"> • Dudding Lake restoration options report. • Lake Horowhenua Freshwater Improvement Fund project.
Regional Freshwater Programme
<ul style="list-style-type: none"> • Water quality and aquatic habitat enhancement including stream fencing, riparian planting, fish barrier remediation and community involvement projects. • Waikawa Community Environmental Fund project. • Whanganui River Enhancement Trust (WRET) project. • Ototoka Catchment focus catchment.
Manawatū River Leaders' Accord
<ul style="list-style-type: none"> • Delivery of the Manawatū Freshwater Improvement Fund project. • Support the Manawatū River Leaders' Accord to hold at least two meetings. • Quarterly reporting to the Governance Group, MfE and bimonthly reporting to Horizons' Environment Committee.
Whangaehu Catchment
<ul style="list-style-type: none"> • Delivery of the Ngā Wai Ora o te Whangaehu Awa Freshwater Improvement Fund project. • Quarterly reporting to the Governance Group, MfE and bimonthly reporting to Horizons' Environment Committee. • Ensure environmental data is made available to the public via the LAWA website.
Lake Waipu
<ul style="list-style-type: none"> • Implement the lake monitoring plan and continue collecting baseline information prior to upgrade of the Rātana wastewater treatment plan. • Oversee the Working party and reporting requirements to MfE for the Freshwater Improvement Fund project.
Lake Horowhenua Accord
<ul style="list-style-type: none"> • Progress recovery of costs from the Hōkio A Trust related to the Environment and High Court hearings regarding consents to install a fishpass, sediment trap and undertake lakeweed harvesting. • Maintenance work on the Arawhata sediment trap, including additional planting on the boundary with the Marae, and ongoing weed control. • Lake restoration projects and continued preparation for weed harvesting in the Lake, including access way and boat ramp construction.
Working with the Horticultural Sector
<ul style="list-style-type: none"> • Contribute to Sustainable Farming Fund project, future proofing vegetable production. • Design and implementation of proposed interventions to reduce nutrient and sediment losses from horticultural farms e.g. establishment of sediment traps.

Freshwater support programme

Regional Freshwater programme

The regional freshwater programme provides for water quality and aquatic habitat enhancement in areas that do not have Freshwater Improvement Fund projects. It includes budget for works on the ground and has AP targets of 12 km of stream fencing, 20,000 riparian plants, one fish barrier remediation and one community involvement project. The programme also has permissions through Council resolution to be able to allocate Water quality and quantity reserves in any year (if they exist) for further enhancement works.

The Waikawa community environmental fund project

This collaborative project is being led by Landcare Trust on behalf of partners, including Horizons and has secured funding from the Community Environmental Fund administered through the Ministry for the Environment (MfE). Horizons' commitments are up to \$12,500 in Year 1, \$15,000 in Year 2, and \$17,500 in Year 3 and will be resourced out of the Regional Freshwater budget where the works align with our normal grant criteria, and landowner liaison for these projects will be delivered by Horizons' staff.

Whanganui River Enhancement Trust (WRET) project

This project is a collaborative project with Taranaki Fish and Game, Horizons, and WRET. The project has traditionally focussed on the Manganui o Te Ao Catchment, and this year the focus will be on the Oroutoha Stream which is a tributary of the Manganui o Te Ao. The majority of the works have already been allocated, with a focus on stream fencing in this catchment.

Ototoka Catchment.

The Ototoka Catchment has been identified as catchment that has *E. coli* levels that have been found to be sourced from livestock. This has recently resulted in permanent health warning signs being installed at the swimming hole at the coast. This financial year will see a targeted campaign undertaken through advertising, mail drops and site visits to increase the uptake of stream fencing and riparian planting in the catchment.

LAKE DUDDING'S RESTORATION OPTIONS REPORT

Finalisation of the restoration options report for Dudding Lake that was initiated in 2018-19 year was delayed following the discovery of grass carp in the lake. We are currently working with lake experts as to the best way to progress the conferencing statement that was started. With the agreement of the experts the conferencing statement is currently on hold until the numbers of grass carp present in the lake are known.

LAKE HOROWHENUA FRESHWATER IMPROVEMENT FUND PROJECT

Led by the Lake Horowhenua Trust and in partnership with Horowhenua District Council (HDC) and Horizons Regional Council, this project secured \$842,750 from the MfE administered Freshwater Improvement Fund toward a project budget of \$1,685,500. Partnership contributions included \$50,000 from the Lake Trust, \$692,750 from HDC and \$100,000 from Horizons. The three components of the project are cultural monitoring, stormwater management and groundwater research. Horizons' contribution is to the groundwater research component for a total project budget of \$140,000 over three years, with Horizons contributing \$100,000. Originally planned to start in July 2018, this project has been delayed due to legal challenges and the Lake Trust election process. The programme plan is currently being refined and Horizons' commitment to the ongoing project is uncertain as the scope and timeframes are currently uncertain. Horizons has undertaken some preliminary work to scope and prepare for the groundwater project and may, if required, pursue the project outside of the Freshwater Improvement Fund project.

Manawatū River Leaders' Accord

The Manawatū River Leaders' Accord was established in August 2010. The overall goal is to improve the Manawatū River and the mauri (life-force) of the Manawatū River, so it sustains fish species and is suitable for contact recreation, in balance with the social, cultural and economic activities of the catchment community. More information on the Manawatū Accord can be found on the Manawatū River Leaders' Accord website (www.manawaturiver.co.nz).

Over the 2019-20 year, Horizons will continue to support the Manawatū River Leaders' Accord to hold at least two meetings.

The primary focus in the Manawatū Catchment for the freshwater & partnerships team is delivery of the Manawatū Freshwater Improvement Fund project which is to achieve 50 km of stream fencing, planting 40,000 riparian plants, supporting nine community projects, remediate four barriers to fish passage, support the development of four iwi environmental management plans, support projects run by Palmerston North City Council called Urban Stream and Horowhenua District Council for the Tokomaru WWTP discharge to land, and oversee the administration of the Governance Group. Horizons' representatives on the Governance Group are Michael McCartney and Cr Keedwell. There is quarterly reporting to MfE and bimonthly reporting to Horizons' Environment Committee.

Whangaehu Catchment

The major focus within the Whangaehu Catchment will be the delivery of the Ngā Wai Ora o te Whangaehu Awa Freshwater Improvement Fund project. The milestones for this project also align with the commitments that Horizons has made in the LTP for this catchment. A Horizons budget of \$160,000 has been set for the Ngā Wai Ora o te Whangaehu Awa project. This programme is in its second year and is funded through the AP, as historically, any works in the Whangaehu Catchment were funded out of the Regional Freshwater Programme. In addition to the Horizons funding, the Freshwater Improvement Fund and landowner co-funding will enable the targets to be met.

The Whangaehu Freshwater Improvement Fund project commenced on 1 July 2018. A restoration project specific to the Tokiahuru Catchment is to be managed by Ngāti Rangi and the remaining sub projects are being led by Horizons.

Lake Waipu

The Lake Waipu project is a small discrete package of work that involves removal of the Rātana Wastewater Treatment Plant (WWTP) discharge to Lake Waipu, and instead applying the discharge to land. This involves upgrades to the treatment plant (more storage) and a land treatment system being established. In-lake monitoring is to occur prior to, during and after removal of the WWTP discharge, to allow the effects to be monitored and also help inform any further in-lake interventions that will need to be undertaken to help restore the health of the lake.

The payments from the Freshwater Improvement Fund will commence in 2020-21. Prior to this, the project will commence identifying suitable land and starting the resource consent process, which is to be led by Rangitikei District Council. Horizons will implement the lake monitoring plan and continue collecting baseline information. This monitoring is likely to include:

- Collection of water quality samples on a quarterly basis;
- Collection and analysis of sediment cores;
- Collection of data identified in the shallow lakes gap analysis restoration report; and
- Continuous monitoring for pH, DO, conductivity and temperature during the summer period.

Lake Horowhenua Accord

The Lake Horowhenua Accord was established in August 2013 with an overarching purpose of coming together to resolve, once and for all, the condition of Lake Horowhenua.

Over the years since the signing of the Accord, the Lake Accord partners have produced an Action Plan and completed a Freshwater Clean-Up Fund and the Te Mana o Te Wai project and have successfully secured funding through the Freshwater Improvement Fund for the continuation of work in the catchment.

Work in the Lake Horowhenua Catchment is supported by the Lake Restoration rate, with some other funding for projects coming from other components of Horizons budgets e.g. the Science and Innovation Team fund the majority of the monitoring budget.

Over the 2019-20 year, Horizons will continue to work to restore Lake Horowhenua. Some of the key projects are:

Recovery of costs from the Hōkio A Trust for both the Environment Court and High Court hearings. These costs were awarded to Horizons as part of the decision. Across Horizons, as the applicant and regulator, these costs amount to approximately \$130,000. The recovery of these costs will require further monitoring and activity over the 2019-20 year.

Sediment trap. There is some follow up and maintenance work to do in regard to the Arawhata sediment trap, including additional planting on the boundary with the Marae, ongoing weed control and activity in relation to the consent conditions.

Lake weed harvesting. The annual plan identifies that the lake weed harvesting will likely be delayed to the 2020-21 year, in part due to legal challenges to the Lake Horowhenua Trust and the requirement for new elections. The Annual Plan further outlines that Council have re-established the lake restoration in the 2019-20 year and that this will be allocated to lake restoration projects within the lake catchment, including the continued preparation for weed harvesting in the Lake. The continued preparation for weed harvesting in the lake includes responding to the appeal around the boat ramp construction (which was dismissed in July 2019) and further work on archaeological permissions for the construction of the access way and boat ramp, and completion of that construction. Further work is required to establish harvesting in 2019-20, including ensuring resource consent conditions are met.

Working with the Horticultural Sector

Building on previous work with the Tararua Growers Association as a part of the Freshwater Clean-Up Fund project, Council established new funding of \$70,000 per year for work with the horticulture sector to reduce nutrient and sediment loss from horticulture farms. This funding will be used, in part, to contribute to a Sustainable Farming Fund project future proofing vegetable production (see below).

The balance of the funding will be prioritised to implementation of work to reduce nutrient and sediment losses from horticultural farms e.g. establishment of sediment traps etc, similar to the way freshwater grants are paid for fencing and planting of waterways. It is noted that this funding may be utilised to design the proposed interventions.

The funding for this project sits within the freshwater support programme, however, it is reported separately here as it has a separate AP Target.

The future proofing vegetable production project is mainly funded through the Sustainable Farming Fund with a number of other co-funders. The project is not specific to the Lake Horowhenua Catchment, although a lot of the ground work and trials are to occur within the catchment where the relationships have already been established through other work programmes such as the Clean-Up Fund. Once these projects have been trialled in the Lake Horowhenua Catchment they can be moved out into other parts of the region. This project has three main deliverables:

- Guidelines for Novel Nitrogen Recapture Techniques;

- Updated Good Nutrient Management Practices; and
- Common Pool Resource Management, which is about getting actual change for the better happening on farms.

The Sustainable Farming Fund project is also being supported by Gisborne District Council, Landwise and Potatoes NZ. Horizons has asked that the work be presented to growers outside of the Horowhenua as a part of the project. A Massey PhD study, with support from Horizons' Science and Innovation programme, is aligned with this work.

The on the ground work with the Horticulture Sector will focus on opportunities in the Horowhenua Catchment.

Budget for 2019-20

Total operational expenditure with the Freshwater and Partnership programme is budgeted to be \$3.2 million.

The AP targets for the Freshwater & partnerships programme were reviewed as a part of the LTP process and are strongly influenced by the contractual deliverables of the Freshwater Improvement Fund projects, which are administered through the Ministry for the Environment. Horizons secured external funding in 2017 for projects that started in July 2018.

Overall, the programme sets out to deliver 79 km of stream fencing, 63,333 riparian plants, seven fish barrier repairs, 13 community projects and five annual reports. Progress on these targets is reported to Council through the Environment Committee. However, the targets do not include the reporting that is required quarterly to the Governance Groups and the Ministry for the Environment for the Manawatū, Whangaehu and Lake Waipu Freshwater Improvement Fund Projects.

The freshwater support programme is where the budget sits for staff time for the freshwater team and additional support within the organisation (i.e. hours that we have requested from Land Management Advisors and Science and Innovation). In addition, it includes a number of small, discrete projects that seek to find out further information to refine our invention logic, or develop methods for monitoring the effectiveness of interventions that we have undertaken.

Table 10 AP targets for 2019-20. Please note wording of the specific targets have been paraphrased here to enable easy display. [this needs to be transposed for consistency]

	Regional Programme	Manawatū Catchment	Whangaehu Catchment	Lake Waipu Catchment	Lake Horowhenua Catchment	Total
Stream fencing (km)	12	50	17	0	0	79
Riparian planting (number of plants)	20,000	40,000	3,333	0	0	63,333
Fish barrier remediation (number repaired)	1	4	2	0	0	7
Community projects supported	1	9	3	0	0	13
Annual report		1	1	1	2	5
Annual report topic		Manawatū FIF project	Whangaehu FIF project	Lake Waipu FIF project	Lake Restoration Activity. Work with the Horticulture sector	

The AP targets do not reflect the full range of deliverables for the Freshwater and Partnership programme. A change to the budgets for the freshwater programme for the 2019-20 year is the inclusion of the forecast spend on these other projects i.e. the budgets reflect additional central government funding received and additional expenditure externally to the various partners in the delivery of the project e.g. district councils, iwi/hapū etc.

Table 11 Budgets for the components of the Freshwater & partnerships Activity. Note this excludes landowner spend.

Budget	Regional Programme	Manawatū Catchment	Whangaheue Catchment	Lake Waipu	Lake Horowhenua restoration rate	Total
Revenue (total)	\$1,396,320	\$925,300	\$714,000	\$15,380	\$212,670	\$3,263,670
Rates	\$1,396,320	\$415,000	\$192,000	\$15,380	\$212,670	\$2,231,370
External	\$0	\$510,300	\$522,000	\$0	\$0	\$1,032,300
Expenditure (total)	\$1,396,320	\$925,300	\$714,000	\$15,380	\$271,620	\$3,322,620
Staff	\$909,250	\$0	\$0	\$0	\$3,620	\$912,870
External	\$403,250	\$925,300	\$714,000	\$15,380	\$268,000	\$2,325,930
Internal	\$83,820	\$0	\$0	\$0	\$0	\$83,820
Surplus	\$0	\$0	\$0	\$0	-\$58,950	-\$58,950
Capex	\$0	\$0	\$0	\$0	Approved use	\$0
Reserves	Approved use	Approved use				\$0

The freshwater & partnerships activity can access reserve funds via Council for the Regional Freshwater and the Manawatū Accord programme. This enables more work to be allocated on an annual basis than the annual budget to accelerate the programme, and also provides an important financial management tool to manage the reality that not all work allocated in a year gets completed in that year.

Further, there are council approvals for further capital expenditure in relation to the lake weed harvesting activity. These are not detailed here as some aspects of these approvals are not in the public domain.

The AP budgets presented above do not reflect the full extent of co-funding for the programme in 2019-20. The landowner contribution is one omission.

Further, there are other partnerships including Horizons' involvement in other Freshwater Improvement Fund projects for Lake Horowhenua and Waiwiri (that Horizons are not leading), a project in the Waikawa Catchment funded by the Community Environment Fund administered through the Ministry for the Environment, and funding from the Whanganui River Enhancement Trust (WRET) in partnership with Taranaki Fish and Game and landowners for works in the Manganui o Te Ao Catchment.

Regional Freshwater Programme

The regional freshwater programme has an annual budget of \$200,000 for grants and total budget of \$1.364 million. The primary expense is staff cost of \$909 k. There is \$70 k for working for horticultural growers and the balance supports advice and intervention logic work and some grants and collaborative funding. Their budget includes \$33 k currently set aside for the Lake Horowhenua Freshwater Improvement Fund project that is focussed on GW to inform intervention logic. The budget below is an estimate of approximately where the costs will reach for each of the Annual Plan targets that need to be met.

The proposed budget for the regional freshwater programme is shown in Table 12.

Table 12 Budget for the Regional Freshwater Grants Programme (excluding the Waikawa Catchment)

Project	Horizons	Landowners21	Total	Target
Stream fencing	105,000	105,000	210,000	12 km
Riparian planting	55,000	55,000	110,000	20,000
Fish passes	20,000	0	20,000	1
Community projects	5,000	0	5,000	1
	185,000		345,000	

The proposed Horizons budget for the Waikawa Environmental Community Fund project is shown in Table 13.

Table 13 Proposed Horizons budget for the Waikawa Environmental Community Fund project for the 2019-20 year.

Project	Horizons	Landowners22	MfE	Total	Target
Stream fencing	5,000		5,000	10,000	250m
Riparian planting	10,000		10,000	20,000	6,700
	15,000		15,000	30,000	

Manawatū Leaders' Accord

The AP targets for the Manawatū River Leaders' Accord are to be achieved through the \$415,000 Manawatū Accord targeted rate, Freshwater Improvement Funding and landowner co-funding.

The targets for the 2019-20 financial year are shown in Table 10. These targets are aligned with the deliverables contained in the Deed of Funding with the MfE for the Freshwater Improvement Fund project.

Table 14 outlines the budgets for the sub projects that Horizons are directly managing, and Table 15 shows the expected transfers of funding from MfE through Horizons to other agencies that are leading sub projects.

Table 14 Proposed Horizons budget for the Manawatū Awa Freshwater Improvement Fund project for the 2019-20 year.

Project	HRC	MDC	Landowners	MfE	Total	Target
Stream fencing	\$174,583		\$349,166	\$174,583	\$698,332 ²³	50km's
Riparian planting	\$85,834		\$171,668	\$85,834	\$343,336 ²⁴	40,000
Fish passes	\$15,000			\$15,000	\$30,000 ²⁵	4
Mātauranga Māori	\$60,000			\$60,000	\$120,000	4
Community projects	\$50,000	\$11,667		\$38,333	\$100,000	9
Governance, H&S	\$8,250			\$8,250	\$16,500	
	\$393,667	\$11,667	\$520,834	\$382,000	\$1,308,168	

²¹ The Deed of Funding with MfE does not require a landowner contribution, however, to be consistent with our other grants and in order to spread the funding further, a contribution from the landowner will be actively sought.

²² The Deed of Funding with MfE does not require a landowner contribution, however, to be consistent with our other grants and in order to spread the funding further, a contribution from the landowner will be actively sought.

²³ This works on the assumption of the landowner contributing 50%. The Deed of Funding with MfE allows the split to be 33:33:33. Depending on allocation levels and the ability to meet the milestones, the landowner contribution may need to be decreased.

²⁴ This works on the assumption of the landowner contributing 50%. The Deed of Funding with MfE allows the split to be 33:33:33. Depending on allocation levels and the ability to meet the milestones, the landowner contribution may need to be decreased.

²⁵ This is budgeted on no contribution from the structure owner. It is normal practice to receive some contribution from the structure owner.

Table 15 Proposed Manawatū Awa Freshwater Improvement Fund budgets for sub projects not directly managed by Horizons for the 2019-20 year.

Project	HDC	PNCC	MfE	Total	Target
Tokomaru WWTP land discharge	45,000		45,000	90,000	Irrigation design and consent application.
PNCC urban streams		84,550	84,550	169,100	Urban eels consent and construction. Riparian planting Turitea and Mangaone Streams.

Whangaehu Freshwater Improvement Fund

The targets for the Whangaehu Freshwater Improvement Fund are shown in Table 10 and budget for 2019-20 in Table 16.

Table 16 Proposed Horizons budget for the Ngā Wai Ora o te Whangaehu Awa Freshwater Improvement Fund project for the 2019-20 year.

Project	Horizons	Ngāti Rangī	Landowners	Ministry for the Environment (MfE)	Total	Target
Stream fencing and riparian planting	125,834		251,668	125,834	503,336 ²⁶	17km's 3,333 plants
Fish passes	8,333			8,333	16,667 ²⁷	2
Tokiahuru fencing and planting		56,000		56,000	112,000 ²⁸	2,000 plants 5 km's
Community projects	16,667			16,667	33,333	3
Governance, H&S	8,333			8,333	16,667	
	159,167	56,000	251,668	215,167	682,002	

Lake Waipu Freshwater Improvement Fund

The budget for the Lake Waipu Freshwater Improvement Fund project for the five years is contained in Table 17.

Table 17 Proposed budget for the Lake Waipu Freshwater Improvement Fund project over the five-year term.

Project	Horizons Regional Council (HRC)	Rangitikei District Council (RDC)	Ministry for the Environment (MfE)	Total
Wastewater upgrades and land treatment		950,000	800,000	1,750,000
Science and monitoring	75,000		75,000	150,000
Total	75,000	950,000	875,000	1,900,000
Project	HRC	RDC	MfE	Total

²⁶ This works on the assumption of the landowner contributing 50%. The Deed of Funding with MfE allows the split to be 33:33:33. Depending on allocation levels and the ability to meet the milestones, the landowner contribution may need to be decreased.

²⁷ This is budgeted on no contribution from the structure owner. It is normal practice to receive some contribution from the structure owner.

²⁸ This project is being led by Ngāti Rangī and has no financial contribution from Horizons.

Reporting to Council

Manawatū Freshwater Improvement Fund – MfE – 31st July, 31st September, 31st January, 30th April.

Whangaehu Freshwater Improvement Fund – MfE – 31st July, 31st September, 31st January, 30th April

Annual Reports

Manawatū Freshwater Improvement Fund – Council – once per year.

Whangaehu Freshwater Improvement Fund – Council – once per year.

Lake Waipu FIF – Council – once per year.

Lake Horowhenua – Council – once per year.

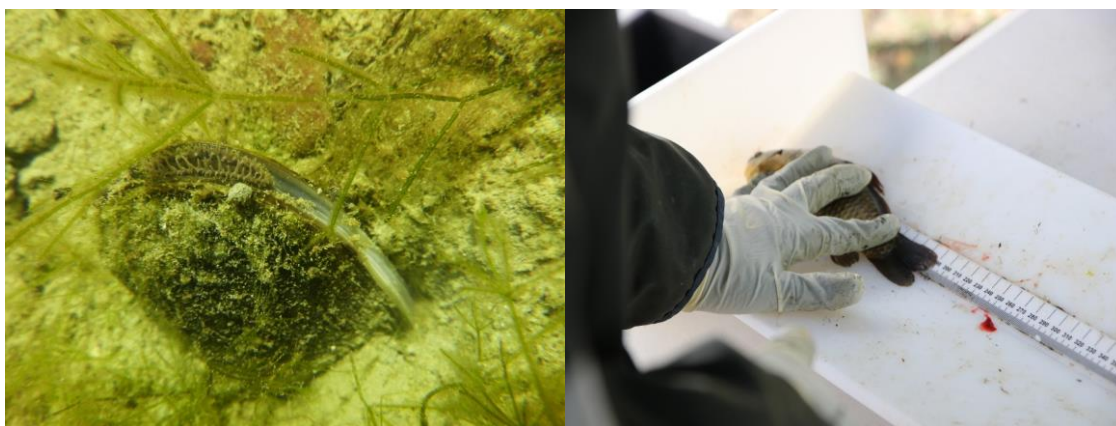


Photo 2 and Photo 3 Close up photo of a kakahi (freshwater mussel) in the Ohura Catchment (left) and processing of fish during the pest fish survey in Dudding Lake. .



Photo 4 and Photo 5 Community planting days in the Tokomaru (left) and Koputorua (right) Catchments.



Photo 6 and Photo 7 Fencing and fish pass work completed in the Whangaeahu Catchment under the Freshwater Improvement Fund project.

4. BIODIVERSITY, BIOSECURITY & PARTNERSHIPS

The Biodiversity, Biosecurity, and Partnerships team's focus is excluding animal and plant pests that are not already established in the region, managing the existing threats from pest plants and animals to the productive, indigenous, and cultural values of our region, and identifying and protecting our valued biodiversity sites to provide intact and functioning examples of the ecosystems that make up our region.

There are three delivery streams which deliver this work:

1. Pest animals which delivers possum control over 1.4 million hectares, delivers a control programme to eradicate rooks from the region over time, monitors 25% of the possum control area each year, and provides an amenity pest service to assist the public with pest control solutions.
2. Pest plants are managed under the Regional Pest Management Plan 2017-2037²⁹. The pest plants and animals are attributed one of four levels of control; 1 - exclusion (preventing establishment), 2 - Eradication, 3 - Progressive containment (rolling back), and 4 - Sustained control programme.
3. Biodiversity activity is spread across three main activities, biodiversity collaborations, priority habitat protection and management of the Tōtara Reserve Regional Park.

4.1. National and Regional operating context

Biosecurity is a shared responsibility³⁰ and the various agencies, industry partners, landowners and the broader community all have a role in biosecurity management. Some key agencies include:

- The Ministry for Primary Industries that has a lead role for management of unwanted organisms;
- The Environmental Protection Agency that regulates the importation of new organisms through implementing the Hazardous Substances and New Organisms Act 1996 (including new biocontrol agents);
- The Department of Conservation that controls the release of any introduced aquatic life (including exotic fish), where the species is otherwise absent;
- The Fish and Game Council that has a role in relation to release of sport fish; and
- Regional councils that have a role in biosecurity, including the establishment of Regional Pest Management Plans.

Our regional biosecurity work is mandated by the Biosecurity Act (1993) and links with the National Biosecurity Strategy (2003). Horizons renewed its Regional Pest Management Plan in 2017, drawing together pest plant and pest animal management into a single Regional Pest Management Plan. The process to produce the new Pest Management Plan went through public consultation and encompassed the requirements of new national legislation (the National Policy Direction for Pest Management 2015) that provided direction from central government to Regional Council around how regional pest management plans should be produced, including the various requirements for cost benefit analysis and good neighbour rules.

Biosecurity management also provides a crucial tool to achieve the goals outlined in the One Plan for soil conservation, biodiversity and flood protection. We also have representation and input a range of national and regional programmes, including the National Pest Plant Accord, the New Zealand Biological Control Collective, the Regional Steering Group, the Freshwater Pest Partnership Steering Group, and several roles with Wilding Conifer Control.

²⁹ Horizons Regional Council Regional Pest Management Plan 2017-2037.

<http://www.horizons.govt.nz/CMSPages/GetFile.aspx?guid=0b570d57-af7b-4d75-a7aa-071aa9da37bb>

³⁰ Roles and responsibilities are further overviewed in Horizons Regional Council's Pest Management Plan

The central government's focus on environmental policy and conservation is likely to generate further work for indigenous biodiversity protection, conservation and restoration – particularly if the National Instruments for indigenous biodiversity (under the RMA) are rolled out.

Challenges and opportunities for 2019-20

The withdrawal of the OSPRI programme to manage pests in relation to control of Bovine Tuberculosis will make around 421,500 ha of further area in the region available for inclusion into the programme. Council have made the decision to encompass this area into the programme over time to continue possum control in these areas. This will increase the size of the programme by about one third over a 10-12 year period with the majority of the area to come into the programme in the first four years (started last year with an additional 180,000 ha coming into the programme). The additional workload of around 30 percent is to be met by an increase in budget that is 10.5% of the budget for the programme prior to the area being added. This places increasing pressure on the programme to target control and introduce efficiencies into the programme as well as increasing the time between control treatments for some areas of the programme. New work around possum population modelling, and additional monitoring efforts will assist with this.

Biosecurity & biodiversity management is being reviewed nationally, and national Instruments for indigenous biodiversity (under the RMA) could have significant costs for the regional and district councils, particularly in information management and monitoring. Further, the tools used in biosecurity management, including sprays such as Round Up and pest control baits of various types are opposed by some in the community and this can have significant impact on operations and staff safety. The national level review of use of tools like certain baits used for possum control could have significant implications for our programmes.

Opportunities for both the biosecurity animals and plants programmes to align better with the biodiversity programme have been identified this year and are outlined in this operational plan. These include completing more possum and other pest control in the priority sites identified in the biodiversity programme.

4.2. Activity area #4: Biosecurity Animals

Overview

The Biosecurity Animals Activity delivers work across five components to protect both production and biodiversity values:

- The Possum Control Programme;
- Auditing and monitoring;
- Rook control;
- Amenity pests; and
- National/regional initiatives.

The Biosecurity Animals Activity links with a range of national and regional policies and strategies. Biosecurity Act 1993, National Policy Direction 2015 and Regional Pest Management Plan 2017-2037.

Programmes and projects for 2019-2020

The Biosecurity Animals programmes and projects during 2019-20 are set out in Table 18, and an activity report on the achievement of programme and project measures will be reported annually to Council:

Table 18 Horizons' Biosecurity Animals Work Programme 2019-20

Long Term Animal Pest control
<ul style="list-style-type: none"> • Deliver possum control to maintain average possum abundance across 1,489,074 ha of the region to below 10% RTC. • Deliver rook control within the region to continue the decline of this pest's numbers and breeding potential. • Ensure all external control contractors are finished by the end of May so all PCOs are completed for the year.
Surveillance and monitoring
<ul style="list-style-type: none"> • Carrying out outcome monitoring using waxtags over 25% of the PCOs, with all new areas receiving pre and post-control monitoring. • Ensure the monitoring plan is delivered to timeframes to allow for earlier planning of following year's control work.
Regional Responses
<ul style="list-style-type: none"> • Continue to provide an amenity pest advisory service to the ratepayers of the Region. • Continue to improve alignment of Horizons' PCO programme with other stakeholders such as DOC and Predator Free 2050.
Readiness and capability
<ul style="list-style-type: none"> • Outsource research into the risk posed to the PCO programme from re-invasion from non-treated land such as crown and non-rateable land. Develop options for the owners and managers of these lands to meet their obligations under the RPMP. • Develop and implement a surveillance plan for wallabies, which are an exclusion pest in the RPMP.

The Manawatū-Whanganui Region has a possum control programme that will maintain the possum population below a target of 10% RTC (Residual Trap Catch) across an area of 1.489 million hectares of rateable land. The possum programme started in 2006 and covered 70,000 ha, and has grown every year to include more land. Typically, this has followed OSPRI who have initiated possum control for the control and eradication of bovine TB, and when OSPRI has withdrawn Horizons has absorbed the area into its possum control programme. The Horizons programme is delivered by a combination of council staff (60%), and external contractors (40%). The cost of the possum control programme is \$4,088,613 including the monitoring programme.

OSPRI have been very successful in removing bovine TB for the cattle and deer herds of the region through an integrated programme that included possum control. As they move out of the region over the next decade Horizons will take up the control, estimated to be another 250,000 ha of area. Horizons does not provide control on Crown and non-rateable land, and landowners are able to opt out of the programme if they wish, however, they are obliged by the RPMP to maintain low possum populations along their boundaries so as to not undermine the control efforts on neighbouring land. There were opt outs of 139,000 ha in 2018-19 from the 1,489 million ha of the programme. Horizons will commission a study into risks posed to the PCO programme from re-invasion from non-treated land such as crown and non-rateable land. Develop options for the owners and managers of these lands to meet their obligations under the RPMP.

Horizons undertakes outcome monitoring by using waxtags, and monitors 25% of the PCOs each year to provide a robust estimate of possum abundance across the region. The target for the programme is 10% RTC, and last year 3.2% RTC was achieved. New areas to the programme are pre and post-control monitored to establish if they actually require control, and if control is required the post result will measure the change in abundance, and this will also inform and calibrate our possum population model – PosSim. This model is used to support decision making, around which, PCOs are to be deferred due to very low possum abundance so that resources can be targeted at PCOs with higher possum populations.

Rooks are a production pest and are included in the Horizons eradication programme. Most of the rookeries are in the Tararua District, with smaller rookeries in the Manawatū and Rangitikei areas. The control programme will continue to locate and treat active nests in rookeries, and contribute to the steady decline in their numbers and impact to the region.

Rabbits are a landowner responsibility under the RPMP. Monitoring of rabbits for rabbit haemorrhagic disease is undertaken tri-annually and is programmed for 2020-21 along with a population monitor as well. The amenity pest service will deal with enquiries regarding rabbits.

The amenity pest service provided by Horizons is well patronised with 837 enquiries dealt with in 2018-19, and is steadily increasing. Possums, rabbits, and mustelids made up 83% of the enquiries in 2018-19.

The AP Targets for the biosecurity animals programme are shown in Table 20 below.

Table 19 LTP targets and Annual Plan targets. Please note wording of the specific targets have been paraphrased here to enable easy comparison.

Performance measure/ contract target	Annual Plan
Possum densities are maintained at/below 10% residual trap catch (RTC) in all existing/new possum control operations. This is to enhance production, biodiversity, disease protection, and amenity values.	<10% RTC
Additional ha included in the Possum Control Operation (PCO) programme	57,441 ha
Ha of possum control	1,489,074 ha
Monitoring general – monitor 25% of the PCOs annually	40 PCOs
All known rookeries are treated annually to reduce crop losses and damage.	
Provide an urban/peri-urban animal pest management service to assist ratepayers with specialist advice and equipment. All enquiries responded to within two working days.	

Budget for 2019-20

The budget for the 2019-20 year reflects the increase in area treated for possum control of 20% (241,000 ha) over the 2017-18 year, with a budget increase of 10.5% for the same period. To facilitate the extra control area into the PCO programme some PCO areas are being deferred from receiving control due to very low possum population levels, with control effort being targeted at the PCOs with the elevated possum densities. The possum monitoring programme will be fully utilised to meet the target of monitoring 25% (40) PCOs this year. The rook and amenity pest programmes have minimal increases to reflect CPI movements and will deliver similar programmes to those in previous years.

Table 20 Budgets for the components of the Biosecurity Pest Animals Programme.

Budget	Possums	Monitoring	Rooks	Amenity	Reg/Nat Initiatives	Total
Revenue						
Rates	3,755,890	332,740	155,110	167,980	10,000	4,421,720
External						
Total Revenue	3,755,890	332,740	155,110	167,980	10,000	4,421,720
Expenditure						
Staff	1,568,810	85,500	68,480	114,110		1,836,900
External	2,045,070	242,740	76,620	28,880	10000	2,403,310
Internal	142,000	4,500	10,000	25,000		181,500
Total Expenditure	3,755,880	332,740	155,100	167,990	10,000	4,421,710
Capex	512,000					512,000
Number of Staff	15	1		1		17

Reporting to Council

Reports on the biosecurity animals programme will be provided to the Environment Committee over the year.

4.3. Activity area #5: Biosecurity Plants

Overview

The core goal of Horizons' pest plant management activity is *to safeguard the regional economy and environment from the damage caused by harmful pest plants, or prevent the transformation of productive land and the region's natural biodiversity by invasive plants*. We achieve this by preventing establishment of new species, removing those that are few in number and reducing the distribution of widespread pest plants to protect what has not been transformed.

The pest plant management activity links with a range of national and regional policies and strategies. We also support New Zealand government driven pest incursion responses, both within our region and nationally. This is a function detailed by a Memorandum of Understanding between Ministry for Primary Industries and Regional Councils.

The pest plant management activity delivers work across four components.

- Implementing pest plant management programmes described in Horizons' Regional Pest Management Plan (2017);
- Undertaking biological control agent programmes including supporting community led projects, distribution and monitoring of agent populations across a wide range of pest plant species;
- Providing advice and information to the public about best practice pest plant control and behaviour to prevent the spread of pest plants; and
- Responding to 'new to the region' incursions and assisting in transitioning to long-term management if appropriate.

Programmes and projects for 2019-2020

The Biosecurity Plants programmes and projects during 2019-20 are set out in Table 22 and an activity report on the achievement of programme and project measures will be reported annually to Council³¹:

Table 21 Horizons' Biosecurity Plants Work Programme 2019-20

Exclusion Programme
<ul style="list-style-type: none"> Highlight the exclusion programmes methodology by reporting on likely search areas and indicator sites and the various surveillance types required to find and then act in time to be effective.
Eradication programme
<ul style="list-style-type: none"> Assess the measures of success for our Eradication species and chart each species' progress to date and whether resources are sufficient to enable our targets to be met, and report on changes needed for future management.
Progressive Containment
<ul style="list-style-type: none"> Undertake an assessment of the old man's beard programme, our most costly species, to ensure we are on track to meet our RPMP targets and effectively giving the community what it wants. Council has endorsed a substantial increase in funds towards old man's beard, and this has meant an increase of \$91,000 in 2019-20. Promote the introduction of the old man's beard gall forming mite to the Taihape area and align the release to an area of community of interest to embed establishment and off-target monitoring locally. The pest plant team will continue to survey for new sites of all target species, undertake control operations at sites and work collaboratively with partner organisations to ensure programmes are aligned to provide long lasting results.
Incursion Response
<ul style="list-style-type: none"> Lead the response to the recently discovered hornwort incursion in Lake Namunamu.
Communications
<ul style="list-style-type: none"> We will provide collateral and information and engage with ratepayers via media, shows and talks to groups. Continue to collect data from all control operations to effectively report on the pest plan goals. Produce a 'tutsan management' booklet which includes the results of biological and chemical research Horizons has contributed to into one source.

³¹ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20C%20Biosecurity%20Activity%20Plants.pdf>



Photo 8 Galls on broom plant.

Table 22 Categories of pest plant control as described in the RPMP 2017-37

Programme	Description	Percentage of sites managed at target state of 'zero-levels'	Number of and an example of target species.
Exclusion	To affect early detection of new invasive species arriving in the region. They are not currently present in the region but are known to be a threat elsewhere and are likely to find a suitable habitat.	0	11 species; e.g. Chilean needle grass
Eradication	Pests which are present in the region but are limited in the size or extent of infestation, their eradication is feasible and a cost-effective solution to protecting production or environmental values.	80% of 1610 sites	18 species; e.g. Climbing spindleberry
Progressive containment – mapped	Population levels or difficulty and expense of control prevent achievement of a region-wide zero-level objective. For each species managed this way an active management zone is defined, within which the pest plant species will be controlled wherever it is found, as per the Eradication designation.	75% of 4369 sites	11 species; e.g. Old man's beard
Progressive containment – unmapped	Primarily production pests; managed via good neighbour rule and the Clear land rule.	NA	15 species; e.g. Gorse
Response and Investigation	Proactively deal with 'new' issues that arise and seek to understand the extent of the problem, whether any intervention will be successful, and who or which organisation should best manage the intervention.	22 paddocks	Velvetleaf

This operational plan delivers on the key priorities for pest plant management established through the Pest Plan and Horizons' non-regulatory pest plant management activity. The Pest Plan outlines work programmes for 66 individual pest plant species of regional significance. Horizons funds and organises control for 18 plant species across the region and a further 11 plant species inside individually specified active management zones for regional benefit. We now manage 5,979 sites of which 4,547 are at zero-levels; increasing the proportion of sites at zero-levels to 76 percent from 66 percent the previous year. The longer sites have been managed by staff, the higher the proportion of zero-levels are attained; currently the measure of sites managed for longer than three years is 84 percent.

Enforcement of the Pest Plan rules, particularly good neighbour responsibilities, which aim to prevent adverse effects of pest plants on the occupiers of clear properties, is a strong theme of Horizons' approach through the Pest Plan. We enable land occupiers to meet their obligations by using Approved Management Plans which describe how the pests will be managed to reduce spread.

Within Horizons' biosecurity pest plant team there are six Biosecurity Officers – Plants (BOPs) and one programme leader – Pest Plants. They have primary responsibility for inspection, enforcement, advisory and monitoring activities. The Biosecurity Officers are responsible for engaging contractors to carry out aerial surveillance and control work, although isolated plants and smaller sites may be treated or removed by BOPs.

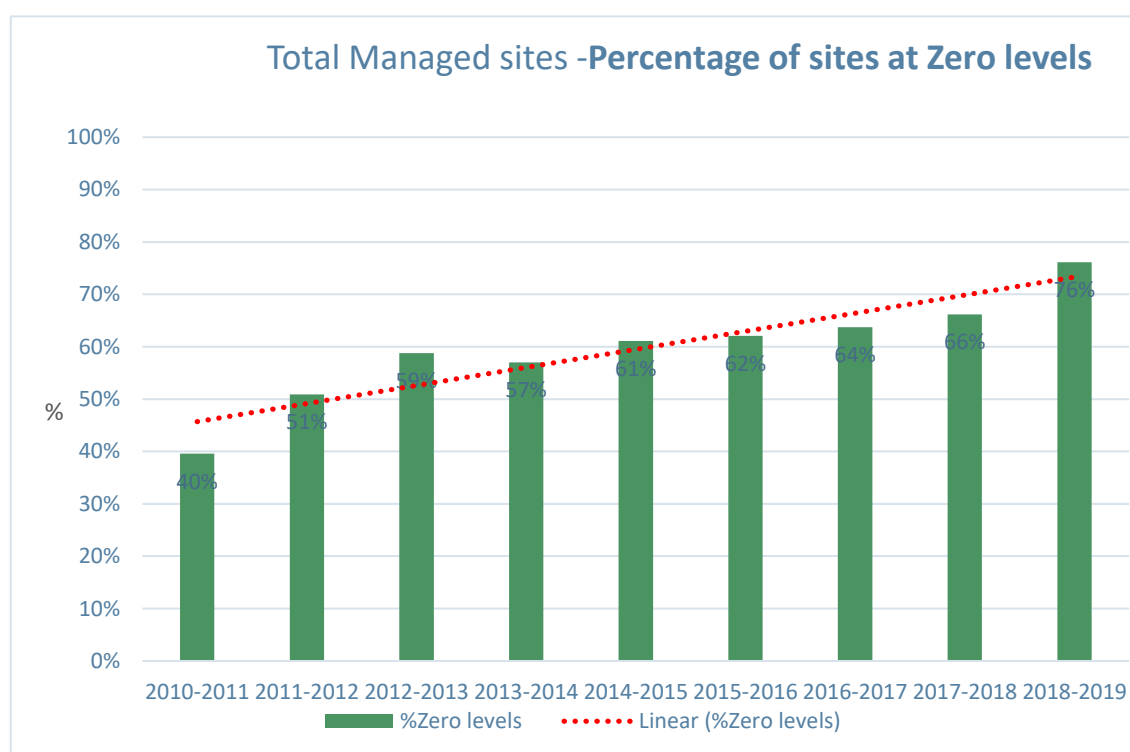


Figure 3: Proportion of sites managed by staff that are at target site state of zero-levels

The AP targets for the pest plant programme Table 23 below are the same as the targets for last year.

Table 23 Long-term Plan performance measures (2019).

Performance Measures for Levels of Service	2019-20	2018-19 Result
Any exclusion category pest plants that are found in the region are promptly managed. Where exclusion category pest plants are found in the region, an initial response plan will be completed within 2 weeks and then enacted (if not enacted before 2 weeks).	Number of response plans required. Percentage where a response plan has been produced within 2 weeks (target 100%) Number of response plans enacted with their specified timeframes (target 100%)	No response plans required.
Number of managed sites at zero-levels increases for pest plants identified for eradication in the Regional Pest Management Plan.	Overall % of managed sites at zero-levels increases by 10%	Achieved (80%, required 65%)
Number of managed sites at zero-levels increases for pest plants identified as progressive containment - mapped in the Regional Pest Management Plan.	Overall % of managed sites at zero-levels increases by 10%	Achieved (75%, required 64%)
Financially support the national bio-control agent development programme and report annually to Council on this programme.	Financial support provided and annual report to Council	Achieved
Monitoring of some released biological agents will be completed to assess establishment and host damage (using the national protocol).	20 assessment plots will be monitored	Achieved
Pest plant enquiries received are responded to within 3 working days.	95% of enquiries will be responded to within 3 working days	Not-achieved (94%)

Budget for 2019-20

As indicated by the Annual Plan budget in Table 2, the translation into work streams is outlined in Tables 25 and 26 below. The budget for 2019-20 has increased by 6.45% to reflect the extra effort in the control of old man's beard in the Rangitikei District.

Table 24 Internal budget allocation showing how this is mapped to equivalent operational plan Programme

Internal programme name	Operational plan programme	2019-20 budget
Biological Control	Biological control	\$179,286
Crown/non-rateable (vector)	Exclusion/Eradication/PC-unmapped	\$51,687
Surveillance activity	Exclusion/Response, Investigation and Surveillance	\$68,996
Production	Exclusion / Eradication/ PC-mapped/ PC-unmapped	\$250,061
Zero-density	Eradication/PC-mapped/PC-unmapped	\$1,179,376
Promotion	Promotion	\$133,179
National and regional initiatives	National and regional initiatives	\$10,000
Total		\$1,872,575

Table 25 Operational plan programme as per RPMP designations 2019-20

Operational plan Programme	Staff hours (#)	Staff hours (\$)	Km (\$)	External Expenses \$	Total Budget (\$)
Exclusion	108	\$12,281	\$500	\$12,508	\$25,289
Eradication	1812	\$170,981	\$12,700	\$99,520	\$283,201
Progressive Containment - mapped	5040	\$527,351	\$35,800	\$535,393	\$1,098,544
Progressive Containment - unmapped	942	\$95,702	\$12,000	\$4,000	\$111,702
Biological control	690	\$68,358	\$3,000	\$92,000	\$163,358
Promotion	304	\$31,419	\$4,000	\$35,196	\$70,615
Response, Investigation and Surveillance	332	\$31,325	\$2,500	\$2,930	\$36,755
National and regional initiatives	0	\$0	\$0	\$10,000	\$10,000
Others hours	450	\$73,120			\$73,120
Total	9,678 (7.2 staff)	\$1,010,537	\$70,500	\$791,547	\$1,872,584

Reporting to Council

Updates setting progress against LTP targets will be provided to Environment Committee bi-monthly.

4.4. Activity area #6: Biodiversity

Overview

The core goal of the non-regulatory biodiversity programme is **to maintain and enhance the full range of indigenous biodiversity across the region**. We aim to achieve this by delivering work across three components:

1. The priority biodiversity sites programme, a site led programme working with landowners to maintain and enhance priority sites on private land;
2. The biodiversity partnerships programme, where projects extend beyond the boundary of a single landowner and/or involve community groups or external agencies; and
3. Management of the Regional Park – Tōtara Reserve.

The biodiversity activity links with a range of national and regional policies and strategies.

National policy direction is changing with government signalled upcoming consultation around an updated/revised National Biodiversity Strategy and a new National Policy Statement for Indigenous Biodiversity. These documents will influence the way that Horizons manages biodiversity within the region.

The One Plan provides the framework for Horizons' biodiversity management in the region. The objectives, policies and methods for managing indigenous biodiversity are set out in Chapter 6 of the One Plan. The policies are implemented by two principal methods: regulatory and non-regulatory. Regulatory methods are delivered via plan rules, which control activities that have the potential to have an adverse effect on areas of indigenous biodiversity.

Programmes and projects for 2019-2020

The biodiversity programmes and projects during 2019-20 are set out in Table 26. This year's work programme, particularly that within the Priority Biodiversity Sites programme, is ambitious and as such has been prioritised, with the highest priority areas being targeted for completion within the financial year. An activity report on the achievement of programme and project measures will be reported to Council:

Table 26 Horizons' Biodiversity Work Programme 2019-20

Priority biodiversity sites
<ul style="list-style-type: none"> Contribute to the management of an additional 4 wetlands, Contribute to the management of an additional 7 bush remnants, Complete 100 Rapid Ecological Assessments (REA), Monitor existing sites at level three or higher for weeds, Complete weed control at scheduled sites, Provide advice to public on biodiversity issues, such as planting and weed control, as required, Work alongside the science team to develop management prescriptions and costings for 10 priority sites, Development of a strategy to improve transparency around the allocation of existing and future resources/funding.
Biodiversity Partnerships
<ul style="list-style-type: none"> Support 7 biodiversity collaborations Support 13 existing community-based biodiversity improvement projects Support 9 community grant recipients to deliver their projects, Review the Biodiversity Partnerships programme, Support public outreach programmes such as school planting days.
Regional Parks
<ul style="list-style-type: none"> Annual report on the management of Tōtara Reserve Regional Park for biodiversity and recreation values, including managing the camping facility, Weed control contract management and pest control including wasps and possums, Contract management (track maintenance and camp ground management), Capital upgrades.

Priority biodiversity sites

The priority biodiversity sites programme has been through a review over the past eighteen months, and one outcome of the review is a move from managing bush remnants and wetlands to ensuring the full range of ecosystems found in the region are maintained and enhanced. This new approach is in line with national policy direction and methods for identifying sites and is consistent with other Regional Councils throughout New Zealand. Newly identified sites are assessed by staff for their condition and eligibility for management. Once eligible, staff work alongside the landowner and sometimes QEII to fence sites and carry out pest plant control.

The key areas this year will be:

- To ground truth 100 putative³² priority biodiversity sites;
- Develop management prescriptions for 10 confirmed high priority biodiversity sites; and
- Development of a process to allocating existing and future resources/funding.

The putative top 30 percent of sites across the region have been identified. This equates to approximately 10 per cent of historic cover. A process to visit putative sites, that have not previously had Rapid Ecological Assessments, will begin this year. Sites on private land will be prioritised.

A focus this year will be determining the level of ongoing investment that priority sites require in order to maintain or enhance biodiversity values. For a subset of confirmed high priority biodiversity sites, we will a) identify ecological integrity targets, b) identify pressures required to be managed to meet ecological integrity targets, and c) develop management prescriptions and indicative cost information to reduce pressures to required levels. Initially, the first set of management prescriptions will inform strategy development for the allocation and investment of resources. Over time, we aspire to developing management prescriptions for all managed priority sites. This will assist with accurate forecasting of requirements for increased resourcing as more sites are brought onto the programme. This work will be jointly funded, with the Science team, from the biodiversity implementation programmes regional/national initiatives budget.

With over one thousand putative sites (excluding those on Department of Conservation managed land) it is probable that the costs for implementing management prescription works will outstrip available resources. There is a requirement for a process to allocate existing and future resourcing amongst priority indigenous biodiversity sites. This process will be developed jointly by the Science and Innovation team and the biodiversity implementation team for consideration by Council.

Alignment across teams within NRP is a group focus this year. To ensure that high value indigenous biodiversity sites are receiving increased protection and enhancement as required, opportunities for alignment across the team, within the group, will be pursued. This work programme will involve additional changes to the information reported to Council in the future. For example: the number of high priority biodiversity sites receiving increased possum control may be a metric used to report progress in this area.

Biodiversity Partnerships

These projects are divided in to two sections: biodiversity collaborations (\$490,094), and community biodiversity grants (\$135,852). Funding types are a mix of targeted and general rates. In addition to the specific projects, an amount is set aside (Community Biodiversity Management), primarily for internal labour (staff costs) and vehicle costs, to support these projects. This year, the community biodiversity projects, community grants and iwi biodiversity grants have been merged. A review of the biodiversity partnerships programme is planned.

Biodiversity Collaborations

The seven biodiversity collaborations are outlined above. Some projects (e.g. Tawata Mainland Island and Rangitikei Environment Group (REG)) draw funding directly from this budget whilst other projects (e.g. Kia Wharite and Te Āpiti Manawatū Gorge) draw funding from multiple partners.

³² Putative sites are those which have been inferred from a model although, for the majority of these, no direct evidence of their status is available.

Biodiversity grants

The Biodiversity Grants Project budget provides support for community groups, school, early childhood centres and iwi/hapū groups with not-for-profit projects that enhance our region or encourage community engagement with our natural environment. A portion of this budget may be utilised to complete a review of the biodiversity partnerships programme. The review will examine how the resources supporting these initiatives contribute to maintaining and enhancing biodiversity across the region.

Tōtara Reserve Regional Park

Tōtara Reserve Regional Park was vested in Horizons' management at the beginning of the 2011-12 financial year. For several years prior, it was managed in partnership with Manawātū District Council. An advisory group is now in place to handle the strategic management of the Regional Park and it meets twice a year. The advisory group consists of two Councillors, two staff representatives (ex officio), two iwi representatives, two representatives from the local community and the Chair of Camp Rangi Woods Trust. This is one of the projects with a targeted uniform annual charge (UAC) rate and 90% of the funding is generated by a UAC on Manawātū District and Palmerston North City ratepayers.

Targets

The AP targets for the biodiversity programme (Table 27) are the same as the targets for last year and include; the management contribution to an additional 11 high priority (4 wetlands and 7 bush remnants) biodiversity sites. Meeting the One Plan targets of having contributed to the management of 100 wetlands and 200 bush remnants is on target with current projections predicting the achievement of these targets within the 2028-29 timeframe.

The biodiversity review has resulted in the programme changing focus to ensure the full range of ecosystems present in the region are identified, maintained and enhanced. This requires a change to targeting sites that contain rare ecosystems that are currently not well represented in the programme. This is likely to prove more challenging than taking on sites where land owners approach us. The high priority sites may also be more costly to bring under management. Bringing these sites on to meet LTP targets may come at the expense of the ongoing management of other sites already on the programme.

Table 27 Summary of the biodiversity activity group Long-term Plan targets for 2019-20.

Performance Measures for Level of Service	2019-20 Target
Protect/Enhance Priority Habitat Remnants	
Additional priority biodiversity sites managed (4 wetlands and 7 bush remnants)	11
Support Community Involvement in Biodiversity Protection	
Support existing community-based biodiversity improvement projects.	12
Tōtara Reserve Regional Park	
Annual report on the management of Tōtara Reserve Regional Park for biodiversity and recreational values, including managing the camping facility.	1

Budget for 2019-20

Biodiversity Partnerships accounts for over half of funding with 53 per cent of the total rate funding. The Priority Sties Programme has 36 per cent and Regional Parks account for the remaining 11 per cent. Table 1 below shows how these percentages alter slightly when the non-rated income from Tōtara Reserve Regional Park is added.

Table 28 Financial overview of Biodiversity Group Activity (2019 – 2020)

Activity	Rate Funding	Income	Total Operational Budget	% Total Budget
Priority Sites (Bush Remnants and Wetlands)	\$629,494			33.6%
Biodiversity Partnerships (Environmental Initiatives)	\$912,338	\$89,000	\$1001,336	53.4%
Regional Parks (Tōtara Reserve)	\$192,665	\$50,000	\$242,665	13.0%
Total	\$1,734,497	\$139,000	\$1,873,497	100%

Priority Sites Programme

The Priority Sites Programme (\$629,494) includes the work completed around protecting priority biodiversity sites throughout the region. This includes fencing, pest plant control and at a small number of sites, pest animal control. Sites may also benefit to varying degrees from work undertaken in Possum Control Operations funded from the biosecurity budgets. Work to further quantify the current extent and future potential in this area will be undertaken this year as part of the group alignment work.

Table 29 Priority Sites project funding – 2019-20

Project Name	Budget Amount	Funding Type	
		General Rate	UAC
Biodiversity Management	\$386,549	50% (\$193,275)	50% (\$193,275)
Regional/National Initiatives	\$9,996	50% (\$4,998)	50% (\$4,998)
Biodiversity Pest Plant Control	\$97,379	50% (\$48,690)	50% (\$48,690)
Biodiversity Support	\$135,570	50% (\$67,785)	50% (\$67,785)
Total	\$629,494	\$314,747	\$314,747

Biodiversity Partnerships Programme

The Biodiversity Partnerships Programme (Rate funding of \$912,338) covers biodiversity related projects that extend beyond the property of a single land owner and/or involve community groups or external agencies (Table 30). The current suite of projects targets sites or areas with environmental, recreational, social and cultural values.

Table 30 Biodiversity Partnerships Programme funding with Biodiversity Collaborations funding itemised for each project

Project name	Rate funding	Funding type				
		General Rate	UAC	Diff UAC >4ha	Diff UAC <4ha	Waitarere UAC
Community Biodiversity Management (project support)	\$250,008	50% (\$125,004)	50% (\$125,004)			
1. Rangitikei Environment Group (REG)	\$95,004			50% (\$47,502)	50% (\$47,502)	
2. Kia Wharite	\$150,000	50% (\$75,000)	50% (\$75,000)			
3. Weedbusters Palmerston North	\$52,301	50% (\$26,150)	50% (\$26,150)			
4. Tawata Mainland Island	\$50,004	50% (\$25,002)	50% (\$25,002)			
5. Waitarere Beach Community Project	\$6,996					100% (\$6,996)
6. Pukaha Mt Bruce	\$26,779	50% (\$13,389)	50% (\$13,389)			
7. Te Āpiti Manawātū Gorge Enhancement	\$109,010	50% (\$54,505)	50% (\$54,505)			
Biodiversity Grants	\$172,236	50% (\$86,118)	50% (\$86,118)			
Total	\$912,338	44.4% (\$405,169)	44.4% (\$405,169)	5.2% (\$47,502)	5.2% (\$47,502)	0.8% (\$6,996)

1. Rangitikei Environment Group

The Rangitikei Environment Group (REG) carries out pest plant control and biodiversity restoration works within the Rangitikei District with financial support from Horizons and Rangitikei District Council (RDC).

Old man's beard (OMB) is the main focus for REG and work is split between urban, rural and public reserves. Urban sites are tackled in a manner that is almost identical to Horizons' Weedbusters Palmerston North programme. In rural areas, REG encourages and assists OMB Self-Help Groups with control works. REG also undertakes walking track maintenance within RDC reserves.

REG is funded by a 100% targeted rate in the form of a Uniform Annual Charge (UAC) contributed by Rangitikei ratepayers.

2. Kia Wharite

This project is a partnership between Horizons, DOC, and local iwi and landholders aimed at improving the health of more than 180,000 ha of private and conservation land within the Whanganui River Catchment. It benefits threatened species such as the North Island brown kiwi and whio (blue duck), and has the additional benefit of improving overall biodiversity and forest health.

The project has achieved measurable gains for biodiversity within the area and is a partnership brand that is recognised and respected both locally and nationally. The partnership was described by former Conservation Minister Tim Groser in 2009 as a 'model for conservation projects'.

3. Weedbusters Palmerston North

Weedbusters is a partnership between Palmerston North City Council, DOC and Horizons. It is a site-led urban weed programme primarily focussed on the control of old man's beard, gunnera, wild ginger and banana passionfruit in the greater Palmerston North City and Feilding areas.

The public are our eyes and ears out in the field, identifying infestations and calling our free phone number to report weeds. Our staff visit all reported sites between November and April, control infestations, record the locations and log them for follow-up visits in the next control season. Occupiers visited are also given an information pack on weed control as part of the Helping You to Help Yourself campaign.

4 - Tawata Mainland Island

This project comprises approximately 100 ha of forest on land administered by the Tawata Whanau Trust and Taiaoroa I.T. Farm (formerly Titi Tihu Putere Farm). It is on the true left bank of the Whanganui River about 47 km southwest of Taumarunui. Whanganui National Park is on the other side of the river.

The project's goal is to restore the health of the forest, turning it into a wildlife sanctuary suitable for the reintroduction of species. Of special interest is the reintroduction of kokako, which many kaumatua remember being quite common when they were children.

With Horizons' support, the forest is now completely fenced off from stock and control is ongoing for possums, rats, mustelids and goats.

5 - Waitarere Beach Community Project

The Waitarere Beach Progressive & Ratepayers Association (WBPR) approached Horizons in 2010 about a problem with coastal wattle and other exotics invading the dunes and affecting views and the aesthetic appeal of the beach. Most of the weeds present were not among the plants that Horizons dealt with under the Regional Pest Plant Management Strategy and, therefore, the Council had no mandate to control them.

Horizons commissioned an independent report and presented the findings to a public meeting with the Waitarere Beach community. The community agreed to pay a targeted rate to Horizons for the purposes of controlling the exotic plants and restoring the native plants on the dunes.

The targeted rate has been used to control coastal wattle, yucca, cape ivy, lupin and other unwanted plants and to propagate native spinifex grass for replanting cleared areas of the dunes.

6 - Pukaha Mt Bruce

When established, this sanctuary was managed by DOC as the lead agency and primary landowner. Both Horizons and Greater Wellington Regional Council, being neighbouring agencies (Pukaha Mt Bruce is split by the regional boundary), joined as partners. In July 2013, the Pukaha Mount Bruce Board took over the operation of the Visitor Centre, education programmes and retail activities from DOC and in October 2015 it took over the operation of the captive breeding programme from DOC.

DOC is contracted to undertake the forest restoration programme at Pukaha Mount Bruce on behalf of the Board. Both Regional Councils remain as partners and each contributes staff, along with DOC and community volunteers, to the Advisory Group that supports the Pukaha Mt Bruce Trust.

Horizons and GWRC operate a possum and predator control buffer zone around the reserve. The Horizons contribution is spent on pest animal control, which is undertaken by our Regional Response team.

Pest plant control in the buffer zone, which includes some privately owned native forest, is managed by our biodiversity team and paid for from the Priority Sites Pest Plant Control budget.

7 - Te Āpiti Manawatū Gorge

The high significance of the Manawatū Gorge to many sectors of the community resulted in a collaborative approach to managing the area with the formation of the Te Āpiti Manawatū Gorge Biodiversity Project 2006-16. This has been further strengthened with the formation, in 2016, of the Te Āpiti Manawatū Gorge Governance Group to support and expand the project. The Governance Group includes representatives from Horizons Regional Council, Department of Conservation, Rangitāne o Manawatū, Rangitāne o Tamaki nui a Rua, Kahungunu ki Tamaki nui a Rua, Palmerston North City Council, Tararua District Council, Manawatū District Council and a community representative.

Biodiversity Grants

The Community Grant project budget (\$140,852) provides support for community led projects undertaking biodiversity enhancement work. The budget allocation for the individual projects to be supported in 2019-20 and further descriptions of these projects are provided below in Table 31. Some changes to these allocations may occur during the year if projects do not proceed as planned.

Table 31 Community Grant Project recipients, projects and budgets.

Community Grants	Description	Operational Budget
Te Potae o Awarua This joint initiative by the Aorangi Awarua Trust and the Department of Conservation is situated in the north western part of the Ruahine Range in an area of high biodiversity value, and incorporates land administered by both the Trust and DOC.	A predator control programme predominantly for protecting whio (blue duck) with benefits also for kiwi.	\$15,000
Massey Hill A partnership between Horizons, Massey University, and Palmerston North City Council.	Weed control is ongoing and thousands of natives have been planted to improve the aesthetics. This year, 300 more trees will be added and weed control will continue.	\$5,000
Turitea Reserve This project has an over-arching strategy to protect and enhance biodiversity values in Palmerston North's water supply catchment. It is a partnership with Palmerston North City Council and Horizons.	Funding assistance for pest animal control and monitoring within the reserve. Monitoring trends for pest levels and bird recovery have led to the formation of a group to investigate the reintroduction of species to the reserve.	\$23,000
Bushy Park A predator-free native forest and wildlife sanctuary near Whanganui.	Horizons funding support assists Bushy Park Trust with the costs of their predator control programme. Our staff also provide advice on pest animal control, pest plant control and wetland restoration.	\$20,000
Kahuterawa Stream Biodiversity Project A partnership between Horizons, Massey University, C T Keebles Bush Trust, Rangitāne, New Zealand Defence Force (NZDF).	The project aims to enhance the biodiversity values of the Kahuterawa Stream from the bridge at Linton to the confluence with the Manawatū River by revegetating the stream corridor with eco-sourced native plants.	\$11,000
Foxton River Loop	Advice and funding assistance to the Save Our River Trust and Wildlife Foxton Trust for weed control, revegetation plantings, fencing and environmental education initiatives.	\$1,000
Manawatū Estuary & Predator Project	Horizons provides advice and funding assistance to the Manawatū Estuary Management Team for pest animal control, weed control and environmental education initiatives. The pest animal control is a predator trapping programme focussing on mustelids, in and around Fernbird Flat and undertaken by our Regional Response Team.	\$8,000

Community Grants	Description	Operational Budget
Awahuri Forest – Kitchener Park Awahuri Forest Kitchener Park is a valuable semi-swamp forest remnant with strategic importance for the future walkway network and recreational opportunities in and around Feilding.	Horizons will provide advice on ecological matters and funding for signage, planting and pest plant control. Horizons' Biodiversity Coordinator is an advisory trustee (no voting rights) on the Awahuri Forest Kitchener Park Trust.	\$8,000
Ahimate Reserve (formerly Waitoetoe Park)	Horizons supports the Ahimate Reserve community with planting days, plant maintenance and weed control. Rangitāne and Palmerston North City Council are partners in this project.	\$7,000
Gate Pa Bush Restoration A partnership between Horizons, New Zealand Defence Force and Massey University to protect and enhance one of the last remaining blocks of Tōtara terrace forest in our region.	Gate Pa Bush is located within the Ohakea Air Force base. Horizons will provide assistance with weed control in the bush.	\$1,000
Ohau Beach Walkway The project is a partnership with Horowhenua District Council to create a walkway from the end of Muhunua West Road to the beach.	There is an opportunity to restore the natural vegetation sequence from the foredune to 900 m inland. Horizons will provide advice on restoration planting and funding for weed control and plant propagation.	\$1,000
Cape Turnagain The project runs from the Herbertville village to the Whangāehu village, from the Wanui River to the Whangāehu River, and from Horizons' Region into Hawke's Bay Region. The three year project has a total budget of \$144,000 with Horizons committing to \$30,000 (split \$15,000 in year 1, \$5,000 in year 2 and \$10,000 in year 3).	This is a seven-part restoration project on the Cape, focusing on the restoration of coastal vegetation – specifically <i>Pimelea prostrata</i> , securing habitat for a moth endemic to Cape Turnagain; the control of invasive pest animal and plant species; and community education. Work will focus on the restoration of 203 ha of coastal treeland, flaxland, dunelands and cliffs which are legally protected by QEII National Trust covenants.	\$5,000 (year two)
Moawhango River Willow Clearing	This is an ongoing collaboration with Genesis to remove willows from the banks of the Moawhango River.	\$5,000
Community Grants (Table 32)	Community grants are part of the Biodiversity Grants programme and are available to help community groups, schools, early childhood centres, and iwi/hapū groups with not-for-profit projects	\$20,144
Currently unallocated funds		\$42,092
Total		\$172,236

Community grants are part of the Biodiversity Grants programme and are available to help community groups, schools, early childhood centres, and iwi/hapū groups with not-for-profit projects that enhance our region or encourage more people to engage with our natural environment. By providing funding and advice we are able to support the great work these groups do while encouraging more people to think about the ways we interact with our natural environment.

Community Grant applications are sought annually and guidelines have been developed to help determine whether a project could be eligible for a grant. Applications are assessed for their environmental benefits, feasibility, community involvement and long-term benefits to the region.

Applications have been completed for 2019-20 and the recipients, projects and budgets are shown in Table 32. Further descriptions of these projects that have been funded are provided below. Some changes to these allocations may occur during the year if projects do not proceed as planned.

Table 32 Community Grant recipients, projects and budgets.

Recipient	Action	Budget
Bulls River Users' Group	Plant pest control	\$3,000
Castlecliff Coast Care and Progress Castlecliff Inc.	Dune enhancement	\$1,453
Dannevirke High School	Restore local waterway	\$1,746
Huntermville Consolidated School	Pest trapping	\$1,964
Nga Tawa Diocesan School	Native plants to enhance forest area	\$1,000
Ohau School	Walking track improvements	\$3,981
Puddleducks' Montessori Preschool	Wetland restoration	\$2,500
Taihape Area School	Wetland restoration	\$2,000
Westmere Lake Volunteers	Pest control and planting of natives	\$2,500
Total		\$20,144

Tōtara Reserve Regional Park

The Regional Park Programme (\$192,665) includes management of the region's only Regional Park; Tōtara Reserve. Work includes maintenance, protection and enhancement within the reserve as well as management of the campground.

The budget for 2019-20 provides a similar quantum of overall rate funding to the previous year. Camp fees were raised last year and overall camping numbers remained relatively stable with revenue from the camping ground up by over \$2,000 last year on the season before that.

Table 33 Tōtara Reserve Regional Park 2019 - 2020

Programme	Rate Funding	Other Income	Funding Type	
			Targeted (PNCC/MDC) rate	General Rate
Regional Reserve	\$192,665	-	90% (\$173,399)	10% (\$19,266)
Camping fees, rent, & CRW lease	-	\$50,000	-	-
Total	\$192,665	\$50,000	\$173,399	\$19,266

Table 34 Tōtara Reserve Regional Park Operational Budget

Programme	Funding	% Total Budget
Tōtara Reserve Regional Park		
Operational Costs	\$246,965	
Capital Expenditure		
SUB TOTAL	\$246,965	101.8%
Off-season income (rental property and CRW lease)	(\$4,300)	
NET OPERATIONAL COSTS	\$242,665	100.0%
Seasonal Camp Ground (6 months)		
Operational Costs	\$45,700	
Income (rental property, CRW lease and camp fees)	(\$45,700)	
NET CAMPGROUND COSTS	(\$0)	
Total Budget		
TOTAL OPERATIONAL BUDGET	\$242,665	100%
NET RATE FUNDING	\$192,665	

Reporting to Council

Updates setting progress against LTP targets will be provided to Environment Committee bi-monthly.

An Annual Report will be submitted to Environment Committee.

5. SCIENCE & INNOVATION

The Science and Innovation Team complete a range of monitoring and science work across the topics of water allocation, surface and groundwater quality, land, biodiversity, air quality, drinking water and climate change. Environmental reporting is a key function of the team's work and a significant component of the overall budget, and activity is focussed on monitoring the state of (and changes in) the environment.

The core goal of the science and innovation programme is *co-ordination and delivery of a range of monitoring, research and reporting functions to support NRP's implementation teams, and to inform and support decision-making across the wider organisation. Communicating science to our community and stakeholders is also a key function of the team.* To achieve these goals, the team works in partnership with Horizons' staff and external agencies – including iwi, local and central government, science and research providers, stakeholders and the community.

5.1. National and Regional operating context

Central government continues to advance an array of national work programmes around environmental policy – from freshwater and 3 waters, through to climate change and biodiversity. This is requiring an increasingly agile response from local government, not only in terms of data and information provision, but also in terms of our own policy development and implementation. New and emerging issues, such as the detection of per- and polyfluoroalkyl substances in soil and water arising from the discharge and disposal of fire-fighting foam, have also consumed time and resources in recent years.

Keeping pace with the demand for science and information, both locally and nationally, is an ongoing challenge. Our science and innovation programme continues to evolve to meet the needs of our community and stakeholders. In some cases, this is prompting us to review the existing tools and techniques we use to monitor and manage natural resources in our region. In 2019-20 this will include reviewing our existing monitoring network to ensure Horizons continues to be well-placed to provide the right information at the right time. Continuing to seek more effective and efficient ways of collecting, processing and reporting information is also a key driver for this work.

Consultation from our community through Horizons' Long-term and Annual Plan. Consultation has highlighted areas of concern for our community, such as land use impacts on water quality, drinking water security, and climate change. To this end, research has (and continues to) focus on these issues.

Capability and capacity within the broader science sector can present challenges, particularly when it comes to providing evidence-based science to address the myriad of complex challenges we face as a region. Over time we have built and sustained key partnerships with science providers from Crown Research Institutes, universities and private consultancies to ensure we continue to deliver high-quality, cutting-edge science and research. These research streams and partnerships are highlighted throughout this section of the report.

Challenges and opportunities for 2019-20

Within the broad suite of changes proposed by central government, we anticipate that changes to the National Policy Statement for Freshwater Management (NPS-FM), the National Environmental Standards (NES) for Sources of Human Drinking Water and NES for Air Quality, will impact on our work programme during 2019-20. The quantum of new work required as a result of these changes is presently difficult to estimate.

We are already planning to refine our freshwater monitoring network during 2019-20 and will use the opportunity to integrate these changes as much as the timing of these changes allows, ensuring our monitoring programmes remain effective, efficient and fit for purpose.

We will continue to build our talent pool in the team, with the recruitment of new fresh water science staff, and provide development opportunities for staff, including training and secondment opportunities. We will continue to build both data management and geospatial capability to ensure that the team is well-placed to support its own needs, as well as utilising the expertise of others.

5.2. Activity area #7: Science & Innovation

Overview

The science and innovation programme delivers works across five key components:

1. Water quality and quantity monitoring and research to inform reporting and assess policy effectiveness across the Region's rivers, coasts, lakes and estuaries;
2. Land research and monitoring to identify priorities for the management of land and fluvial resources;
3. Biosecurity and biodiversity monitoring and research to inform prioritisation of sites and measure the effectiveness of work programmes;
4. Air quality monitoring in Horizons' two gazetted airsheds, Taihape and Taumarunui, and reporting to meet the requirement of the National Environmental Standards (NES) for air quality, and detect and report breaches for these standards to the community; and
5. Environmental reporting to support assessment and evaluation of policy effectiveness, management approaches, inform decision making, and to contribute to national level reporting on the state of the Region's resources.

Programmes and projects for 2019-2020

The Science programmes and projects during 2019-20 are set out in Table 35, and an activity report on the achievement of programme and project measures will be reported annually to Council:

Table 35 Horizons' Science Work Programme 2019-20

Water Quality and Quantity
<ul style="list-style-type: none"> • Deliver core monitoring programmes for water quantity and quality, and biomonitoring, including reporting obligations under the National Regulation on Water Use Measurement and Reporting (2010). • Undertake a review of our freshwater and coastal monitoring network. • Provide science support to One Plan review programme and 'Our Freshwater Future'. • Continue to advance our understanding of the region's coast and estuaries.
Land Management
<ul style="list-style-type: none"> • Complete fluvial surveys of the Whangaehu and Eastern Ruahine Catchments. • Advance and report on sedimentation transport investigations in the Arawhata Catchment. • Support research into the fate, transport and management of nutrients in the region.
Biosecurity and Biodiversity
<ul style="list-style-type: none"> • Identify opportunities for alignment with other NRP teams e.g. biosecurity animals and land teams. • Support the biodiversity team to complete assessments at 100 putative³³ priority biodiversity sites. • Continue to refine the activity monitoring for priority biodiversity sites. • Develop management prescriptions for 10 high priority sites. • Complete the third year of bird monitoring programme in Tōtara Reserve, and report on findings.

³³ Putative sites are those which have been inferred from a model although, for the majority of these, no direct evidence of their status is available.

Environmental Reporting and Air Quality Monitoring

- Deliver the core monitoring programme for air quality and undertake an annual public education campaign around air quality.
- Implement our science communication strategy.
- Investigate one aspect of climate change and report to Council.
- Continue to work with city and district councils to improve management of public drinking water supplies.
- Provide an annual report on the State of the Environment via catchment summaries.
- Ensure environmental data is made available to the public via the LAWA website.

Water quality and quantity

Water quality and quantity Monitoring

Water quality and quantity monitoring is delivered by Horizons' Science and Innovation and Environmental Data teams. Water quantity, quality monitoring, and biomonitoring during 2019-20 encompasses:

- River flow at 65 sites, groundwater levels at 192 sites, and measurement of water use at over 350 sites across the region;
- River water quality at 90 state of environment sites, 32 discharges and 52 sites located upstream and downstream of discharges;
- Water quality at 9 coastal and estuary sites, and habitat mapping of 2 estuaries;
- Groundwater quality at 32 sites;
- Water quality in 15 lakes, and habitat monitoring in approximately 10 lakes;
- 82 popular swim spots throughout the bathing season (November to April); and
- Macroinvertebrates at 74 sites, and periphyton at 63 sites.

Monitoring network review

During 2019-20, a key focus of this work programme will be progression toward aligning our processes with the new National Environmental Monitoring Standard for Discrete Water Quality.

We also intend to review the existing freshwater monitoring network to identify any gaps and further refine the network where necessary, giving consideration to the requirements of implementation programmes, the One Plan, NPS-FM and consent monitoring.

A joint research programme with DairyNZ and NIWA continues, with research into drivers of macroinvertebrate community health coming to a conclusion, and research to explore the relationships between nutrient concentrations and loads to achieve periphyton outcomes getting underway.

One Plan Changes and 'Our Freshwater Future'

A key focus for Horizons' Science and Innovation Team is informing regional planning processes, including changes to Horizons' One Plan and 'Our Freshwater Future' programme. In 2019-20 resourcing will support delivery of:

- Provision of technical support and advice to support the Plan Change 2 and Plan Change 3 processes, including an analysis and comparison of One Plan and NPS-FM objectives and metrics; and
- A road map for ongoing science and research requirements to support future policy and plan change processes.

Catchment reporting

Catchment-scale reporting is finding increasing favour nationally and internationally as a means of communicating the state of natural resources and value of their effective management. Approaching reporting from a catchment perspective acknowledges the unique differences in the environmental, economic, social and cultural needs of the diverse areas of our region. Rather than a more traditional science-driven reporting framework, catchment reporting sets a basis from which to provide our communities with simple and clear communication of the current state of the environment.

The overall aim of this project is to synthesise our current knowledge about the condition of our region's air, land, biodiversity and water, and inform and prioritise effective action in each catchment. In 2019-20 we will provide Council with a catchment-based activity report to demonstrate the range of work within one catchment. This will be delivered later in the reporting year, in place of one of the current activity-based regional reports to Council.

Lakes, Coast and Estuaries Research

Horowhenua Accord

Scientific research to support the implementation of the Horowhenua Accord during the 2019-20 year, including monitoring and technical advice and support around the installation of infrastructure associated with lake weed harvesting, and maintaining the two flow sites installed in 2018-19 which are informing the refinement of a groundwater balance for Lake Horowhenua, building on previous work. Groundwater quality sampling and level surveying is also planned within Horizons. This project is led by Horizons' Freshwater & partnerships team, in collaboration with the Science and Innovation team.

Lakes380

The Lakes380 – Our lakes' health: past, present, future project is funded by the MBIE³⁴ Endeavour fund and run jointly by GNS³⁵ Science and Cawthron Institute in partnership with iwi and hapū, and supported by several Regional Councils, including Horizons. Twenty-two lakes within the Horizons Region have been selected for the project. Several of these are monitored regularly for water quality to assist in validating information collected from the sediment cores.

Envirolink research

Horizons is one of a number of smaller regional councils who can access funding through the MBIE Envirolink Fund. Generally, around \$120,000 is allocated to Horizons on an annual basis. A number of potential projects have been identified, and to date, four advice grants have been secured for 2019-20, including:

- Two advice grants (total \$24,050) for Xerra (formally the Centre of Space Science and Technology) to undertake an evaluation of remote sensing tools for lake and lake catchment monitoring in the Manawatū-Whanganui Region. Through this project, Xerra will assess the potential for remote sensing tools to augment Horizons' existing lake monitoring programme;
- Through a \$19,965 medium advice grant, NIWA will investigate the influence of the region's river plumes after high rainfall events on the oceanic environment by deploying an ocean glider for in situ measurements of physical ocean properties. Together with previous reports, this will determine the added scientific value of Horizons deploying an offshore oceanographic buoy in its western Coastal Management Area (CMA) and address concerns and questions about the fate of terrigenous sediments carried into the CMA via the region's major river systems; and
- A further \$40,000 large advice grant (in partnership with Hawke's Bay Regional Council) is supporting the development of a quantitative microbial risk assessment (MRA) tool. Application of an MRA tool will enable council planners and community decision makers to better assess the microbial risk associated with activities on drinking-water supplies.

³⁴ Ministry of Business, Innovation and Employment.

³⁵ Geological and Nuclear Sciences.

Land and fluvial monitoring and research

Fluvial surveying

The fluvial survey programme is completed as a part of a long-term survey plan that has been developed cross-organisationally and is overseen by the engineering investigations and design team. This project funds cross-section surveys and reports to provide information on the changes in levels, due to aggradation or degradation, of river channels and berms.

The focus for 2019-20 will be the completion of the Whangaehu Catchment, and surveying of the Eastern Ruahine area of the Manawatū Catchment.

Sediment Source and Transport

Sedimentation effects on levels of service were identified as a significant issue regarding the management of Council's flood protection and land drainage assets in the 30 Year Infrastructure Strategy and Long Term Plan 2018-2028. Furthermore, sedimentation plays a significant role in freshwater management, impacting swimmability and the health of ecosystems in our rivers, estuaries, lakes and coastal environments. In recent years, Horizons has increased investment in understanding sedimentation impacts on community outcomes to better target river management and catchment intervention works.

Leading on from the Lower Manawatū Sedimentation Study completed by Tonkin + Taylor in 2018-19, we are now seeking to further explore sedimentation mitigation options and determine where we can get the best value from implementing sedimentation management tools. Through a series of workshops, both with staff and external experts, we will identify key pressure points and the feasibility and effectiveness of mitigation options will be explored with costs and timeframes for implementation included.

During 2019-20, the work programme will also focus on developing an integrated sedimentation and drainage management plan for the Arawhata Catchment. This project will be contracted externally with the aim that it will result in recommendations for modifications to the drainage network that improve its sediment trapping efficiency while not reducing – and if possible enhancing – the hydraulic efficiency of the network and possible upgrades to the current drainage system.

Wastewater

The One Plan sets out a new approach to managing on-site wastewater systems across the region. A key component of successful implementation of this approach is working with Territorial Authorities to ensure implementation is cost-effective to customers, and with practitioners who sell, install and provide advice on compliant systems.

Horizons will continue to provide advice on the suitability of on-site wastewater systems in a range of ways, including direct consenting for larger systems, as a result of enquiries, and as a consequence of any Regional Council 'sign off' (that the system design meets One Plan standards) to conform to provisions in some District Council building consent requirements.

Nutrient Management Research

Specific activities of 2019-20 include the provision of technical support for the Plan Change 2 and 3 processes, and support for research programmes that will be delivered in collaboration with a range of external partners. Horizons is currently supporting external research projects including:

- The MPI Sustainable Farming Fund (SFF) project 'Future Proofing Vegetable Production'. The project, led by Dan Bloomer of LandWISE in collaboration with growers and funding partners (including Horizons) will develop and test new production and nitrogen mitigation techniques to develop new generation good management practices;
- The continuation of a joint programme led by Foundation for Arable Research (FAR) and Horticulture NZ's Sustainable Farming Fund fluxmeter project that is measuring nutrient loss rates from cropping and horticulture farms in the region;

- The conclusion of a pilot study assessing water and nutrient flow pathways from intensive winter grazing on gravel soils in the Rangitikei and quantify the likely impact of this nutrient loss on the Rangitikei River;
- A further SFF Project: Innovative Drainage Management Technologies. This project is being delivered by Massey University in partnership with industry groups and local landowners in the coastal Rangitikei area. It will evaluate and demonstrate novel in-field and edge-of-field drainage management technologies, as targeted and cost-effective solutions to reduce water and nutrient losses from farm production systems; and
- Providing monitoring support and technical advice to inform a DairyNZ project investigating the uptake of plantain in the Upper Manawatū Catchment.

Contaminated Land

The region has a number of contaminated sites arising from closed landfills, timber treatment sites and other industrial facilities, as well as – for example – former gas works, sheep dips, fuel storage and defence force activities.

During 2019-20, this work programme will continue to focus on investigations into contamination of land and water with per- and polyfluoroalkyl substances (PFAS) primarily arising from the use of fire-fighting foam. This includes reporting on local investigations underway at Ohakea Air Base, the Bulls public water supply and Palmerston North Airport, in addition to providing support to the national working group, as required.

Biosecurity and biodiversity

Biodiversity Implementation Support

Providing management and implementation support to the Biodiversity team is a priority and during 2019-20 includes:

- Providing support to ground truth 100 priority biodiversity sites, including data collection, input and data management;
- Development of management prescriptions for ten confirmed high priority biodiversity sites;
- Development of a process to allocate existing and future resources/funding; and
- Identification of opportunities for alignment with other NRP teams to increase protection at high value indigenous biodiversity sites.

Biodiversity Monitoring

For forest fragment and wetlands monitoring, prioritised work for 2019-20 includes:

- Maintaining the integrity of the Rapid Ecological Assessment (REA) process;
- Developing activity monitoring in managed biodiversity sites; and
- Working collaboratively with other regional councils to continue to refine and standardise methodology for tracking biodiversity state and trend.

Tōtara Reserve Bird Monitoring

A review of the bird monitoring programme at Tōtara Reserve was undertaken in July 2017 and a revised approach was put in place from 2017-18. Monitoring in 2019-20 will continue, applying the updated methodology recommended during the review, with a final report summarising the monitoring to be delivered during the year.

Environmental reporting and air quality monitoring

LAWA

The LAWA website is a Regional Council-driven initiative to present information about the state and trends of New Zealand's natural resources and now hosts water quality, quantity, lakes and air monitoring information. The groundwater quality module is due for release later this year and the land module is also in development.

During 2019-20 Horizons will continue to prepare and provide data to the LAWA website. This activity also supports a level of staff time for additional modules that are anticipated, such as modules for groundwater quality and biodiversity.

Information management

The data management work programme for 2019-20 includes:

- Further development of the automated quality control process to incorporate the National Environmental Monitoring Standards (NEMS) quality coding requirements, with data processing steps to follow once the NEMS has been finalised;
- Integration of groundwater data from across a range of databases and quality assurance of these data;
- Improvements to software used to store and manage water quantity and quality information (Groundwater Database, Hilltop and Hilltop Sampler);
- Continued development of field data capture to improve efficiency and quality of data collection;
- Exploring options to update the storage tools for biological species samples, including the freshwater bio-data archival system, Ecobase, and allowing the addition of estuarine and lake samples. An appropriate system would enable direct importing of in-field electronic data, automatic QC process, with the ability to incorporate additional information in the future;
- Developing a system to improve the tracking of science information requests, and recording of information around permitted activities e.g. domestic wastewater, water use, vegetation clearance and forestry harvesting, in a manner that can be more efficiently reported and tracked over time;

Climate change

Since 2018 Council has included additional funding of \$50,000 per annum in the LTP to investigate on aspects of climate change research per year. The work to date and plan for 2019-20 is overviewed below.

Greenhouse Gas Inventory

To help support our communities and inform the adaptation discussion, the Science and Innovation team have committed to investigate one aspect of climate change impact on the region each year. During 2019-20 this funding will be directed toward the development of a regional greenhouse gas inventory.

Climate change strategy

Development of a Climate Change Strategy for Horizons Regional Council was initiated in 2018-19 by a cross-organisational team including representatives from the Science and Innovation and Land & Partnerships teams. The purpose of this strategy is to provide a position on Horizons' role in mitigating and adapting to the effects of climate change, direction on what action Horizons should proactively take and give staff understanding of the approach being taken by the organisation and how it related to their everyday work.

Following an initial Council workshop in May 2019, a draft set of objectives and policy framework were developed with a view to present these to the incoming Council following the October elections. It is intended that this will be followed by a vulnerability assessment for the region. This will be delivered in collaboration with Territorial Authorities and informed by the two recent NIWA reports that Horizons commissioned to assess the implications of climate change in the region.

Drinking Water Research

Since July 2018, Council has included additional funding of \$100,000 per annum in the LTP to inform decision-making around the management of existing and future public water supplies, including ensuring communication with other agencies involved in drinking water supply management.

During 2019-20 we will continue working with our partners to improve drinking water security. This will include following up on recommended actions identified in the source protection reports for each city/district and continuing to advance our knowledge around security of other public drinking water supplies, such as non-council operated and smaller council-operated supplies.

State of Environment Reporting

The last SoE report was published in May 2019 and a framework for annual reporting, in the form of catchment summary report cards, was developed.

During 2019-20 we will be publishing summary report cards for each Freshwater Management Unit (FMU). These will also inform the development of more comprehensive catchment reporting, identified in the Water Quality and Quantity section above.

Science Communication

Science Communication Strategy

During 2019-20, the Science and Innovation team will, alongside our Communications team, implement Horizons' strategy for communicating science to a range of end-users. During the early stages of the reporting year, an action plan will be developed, with key operational outputs for the reporting year including delivery of the summer swim spot and air quality campaigns; updating public information around drinking water security; and publishing the annual State of Environment reporting information.

Public information and RMA Advice

External information sharing is an important part of Horizons' science programme. The purpose of this project is to communicate programme outputs to inform and educate resource consent holders and the public of the value of these programmes and how they contribute to the wider management of the region's natural resources.

Opportunities to communicate information can range from data provision, over-the-phone (non-RMA) advice, site visits, and provision of guidance material, through to community workshops. During 2019-20 we will continue to build on work to update the Horizons' website to better communicate information about the environment and natural resource use.

Community and national engagement

To ensure up-to-date and relevant scientific information is effectively communicated to Horizons' staff, councillors, consent holders, iwi, the public, and any other parties interested in aspects of natural resource management. This includes staff participation in national work programmes, such as:

- Essential Freshwater;
- Environmental Monitoring and Reporting (EMaR);
- National Environmental Monitoring Standards (NEMS);

- Other national guidance material, e.g., the National Biodiversity Strategy; and
- Regional Sector Special Interest Group (SIG) leadership and participation.

This activity also provides the time for staff engagement, including leadership roles, across national working groups to support, guide and develop reporting frameworks, national environmental monitoring standards and guidance material. Staff time is also set aside to ensure that Horizons can quickly respond to new and emerging needs of central government environmental science and management initiatives.

Budget for 2019-20

The science programme has an annual budget of \$6.03 million for 2019-20 that is primarily funded by a mix of general rates (\$4.35 million) and resource user (also known as "Section 36") charges (\$1.64 million). The Horizons' Science and Innovation team is also contracted by others to complete some monitoring and science work, with this revenue contributing to the overall budget. In the 2019-20 budget for Miscellaneous Revenue, this includes \$40,000 for monitoring carried out by Horizons on behalf of consent holders.

The annual rates are specified in the Annual Plan and funding is spread over four activities: Water Quality and Quantity, Land, Biosecurity and Biodiversity, and Environmental Reporting and Air Quality Monitoring. Resource user charges are associated with both surface and groundwater quantity and quality activity, and gravel use.

Additional sources of funding include:

- Envirolink – a contestable fund where generally up to \$120,000 per annum is secured to complete a range of small advice grants of up to \$5,000, medium advice grants of up to \$20,000 (or up to \$40,000 with a partner council). Tools grants are also available for significant, nationally relevant projects that exceed \$200,000. It is noted that this funding is not received to Horizons' accounts, but is directly paid to the external science providers.
- Co-contributions sourced from external research programmes funded through our collaborative research programme with Massey University, the National Science Challenges, MBIE Endeavour Fund, Crown Research core funding, Sustainable Farming Fund, as well as research supported by the Ministry for the Environment, the region's Territorial Authorities and industry groups such as DairyNZ.

Table 36 Financial overview of Biodiversity Group Activity (2019 – 2020)

Budget	Water Quality and Quantity	Land and Fluvial	Biosecurity and Biodiversity	Environmental Reporting and RMA Advice	Air Quality	Total
Revenue						
Rates	4,969,674	324,375	199,298	388,887	59,680	5,941,914
External	40,000		0	0	0	40,000
Total Revenue	5,009,674	324,375	199,298	388,887	59,680	5,981,914
Expenditure						
Staff	1,762,079	167,375	155,250	208,387	18,966	2,312,057
External	1,367,320	145,000	40,025	180,000	7,600	1,739,945
Internal	1,880,275	12,000	4,023	500	33,113	1,929,911
Total Expenditure	5,009,674	324,375	199,298	388,887	59,679	5,981,913
% of Natural Resources and Partnerships expenditure	20.9%	1.4%	0.8%	1.6%	0.3%	25%
Reserves						
Capex	71,750	0	0	0	0	71,750
Number of Staff	14.1	1.07	1.21	1.36	0.14	17.9
% of Natural Resources and Partnerships budgeted staff	19.6%	1.5%	1.7%	1.9%	0.2%	25%

Reporting to Council

- Environment Committee activity reports in August, December, February, April and June.
- Annual Report – Environment Committee, August 2019.
- State of Environment Catchment Summaries – Strategy and Policy, September 2019.
- Drinking Water – Environment Committee, December 2019.
- Catchment Report Cards – Environment Committee, February 2019.
- Climate Change Research – Strategy and Policy, May 2020.
- Water quality drivers – Environment Committee, December 2020.

5.3. Appendix 1

Table 37 Summary of monitoring sites measured for various parameters. Note some sites monitored for one parameter may be measured for other parameters.

Monitoring Sites by Freshwater Management Unit							
	Manawatū	Horowhenua	Whanganui	Turakina / Whangaehu	Rangitikei	East Coast	Total
Water Quantity							
Groundwater Level	122	24	14	7	25	0	192
Flow	32	3	8	12	8	2	65
Water Quality							
SoE parameters	46	14	13	8	8	1	90
Discharge (upstream)	12	0	1	6	6	1	26
Discharge (source)	15	0	2	6	8	1	32
Discharge (downstream)	12	0	0	6	7	1	26
Groundwater Quality	17	7	1	0	6	0	31
Lakes	0	1	4	1	9	0	15
Coastal and Estuary	2	1	2	0	3	1	9
Biomonitoring							
Macroinvertebrates	44	8	5	10	7	0	74
Periphyton	38	4	3	11	7	0	63
Contact Recreation							
Swim Spots	27	11	17	7	15	5	82



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