



WATER QUALITY AND QUANTITY

1 ACTIVITY OVERVIEW

The Water Quality and Quantity Activity of the Annual Plan includes the work programmes of Horizons' Freshwater & Partnerships Team and the Science and Innovation Team.

Horizons' Freshwater & Partnerships Team works closely with other Horizons teams, and people external to the organisation, to implement water quality and aquatic habitat improvement works. This work draws on monitoring and research undertaken by Horizons' Science and Innovation, and Environmental Data teams, along with that of other agencies, to prioritise and focus implementation efforts.

Both programmes actively seek funding from other sources, to provide external science advice and facilitate the acceleration of works. This includes **Freshwater Improvement Fund** (FIF) grants administered through the **Ministry for the Environment** (MfE) for the Manawatū, Whangaehu, and Lake Waipu/Rātana catchments, and the Community Environmental Fund for the Waikawa catchment. Funding of science advice through the **Ministry of Innovation, Business and Employment's** (MBIE) Envirolink fund totals approximately \$120,000 per annum.

Implementation activities include riparian fencing and planting for water quality improvement and fish habitat enhancement, identification and enhancement of whitebait spawning habitat and fish passage improvement, sewage treatment plant upgrades, work with horticulture growers, and harvesting of lake weed.

Science activities include monitoring and reporting of water quantity for both surface water and groundwater, and the quality of groundwater, rivers, lakes, estuaries, and the coast. More than 80 popular swim spots are monitored weekly throughout the bathing season (November – April). In addition to guiding implementation programmes, science and research also informs consent decision-making, and policy development and implementation. Communication of science data and information is primarily covered in the Environmental Reporting and Air Quality Monitoring section of this report.

This item presents the Water Quality and Quantity Activity regionally (where appropriate) and/or for each of the **Freshwater Management Units (FMUs)** that make up the Manawatū-Whanganui region, integrating the implementation work of the Freshwater & Partnerships Team, and the water quality and quantity activities of the Science and Innovation and Environmental Data teams. This includes the:

- Regional Water Quality and Quantity Programme;
- Whanganui & Kai Iwi;
- Whangaehu – including the Whangaehu FIF projects;

- Rangitīkei-Turakina – including the Lake Waipu (Rātana) FIF project;
- Manawatū – including the Manawatū River Accord and FIF project;
- Horowhenua – including the Lake Horowhenua Accord and FIF project, as well as freshwater improvement work with horticulture growers; and
- Coastal Tararua.

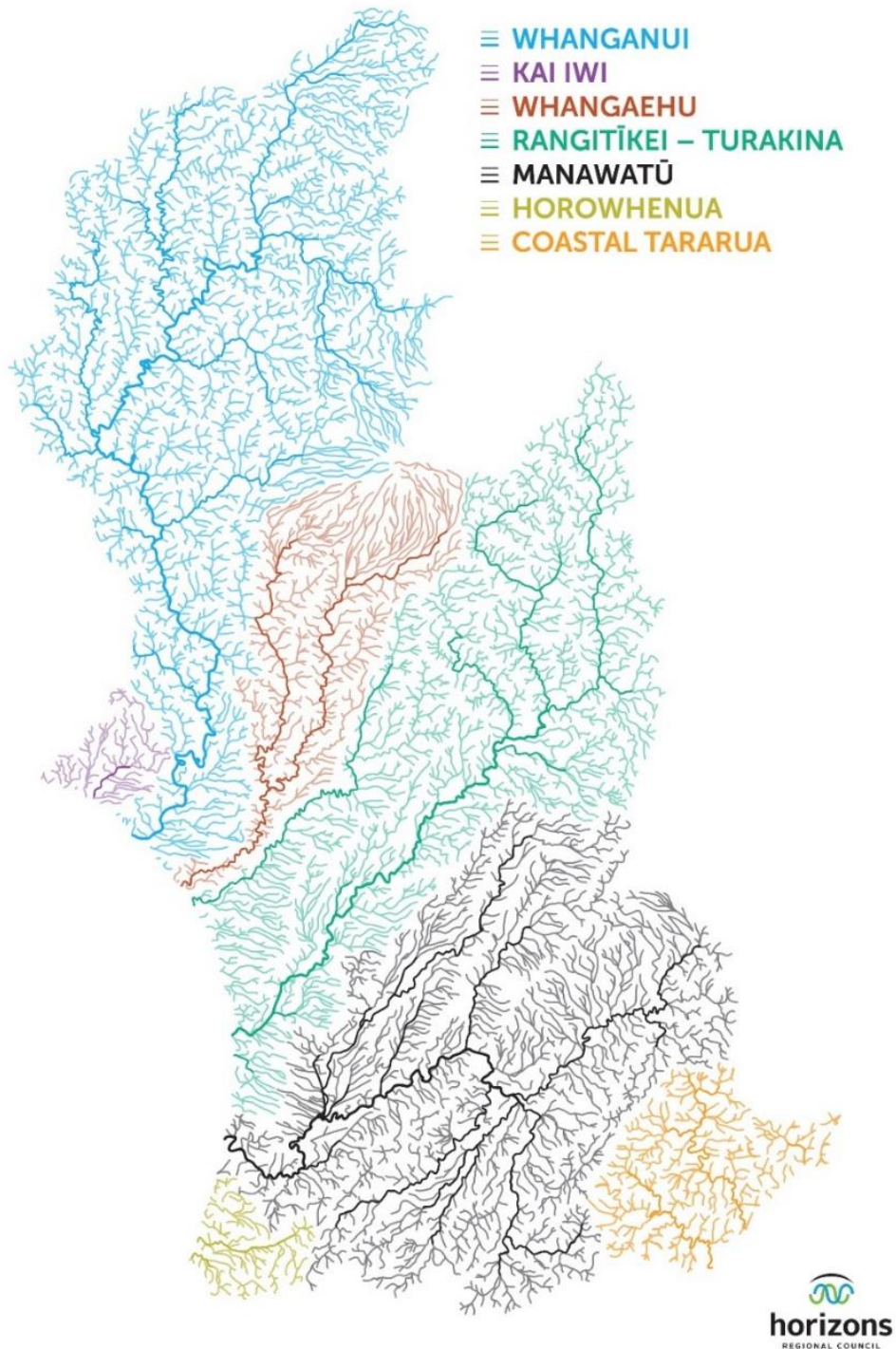


Figure 1: Freshwater Management Units in the Horizons Region

2 REGIONAL WATER QUALITY AND QUANTITY PROGRAMME

2.1 Regional Freshwater & Partnerships Overview

PROGRESS AGAINST ANNUAL PLAN TARGETS

2.1.1 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, and facilitating community involvement. Some of the work also informs restoration options and seeks to build capacity. The programme delivers work across five key components:

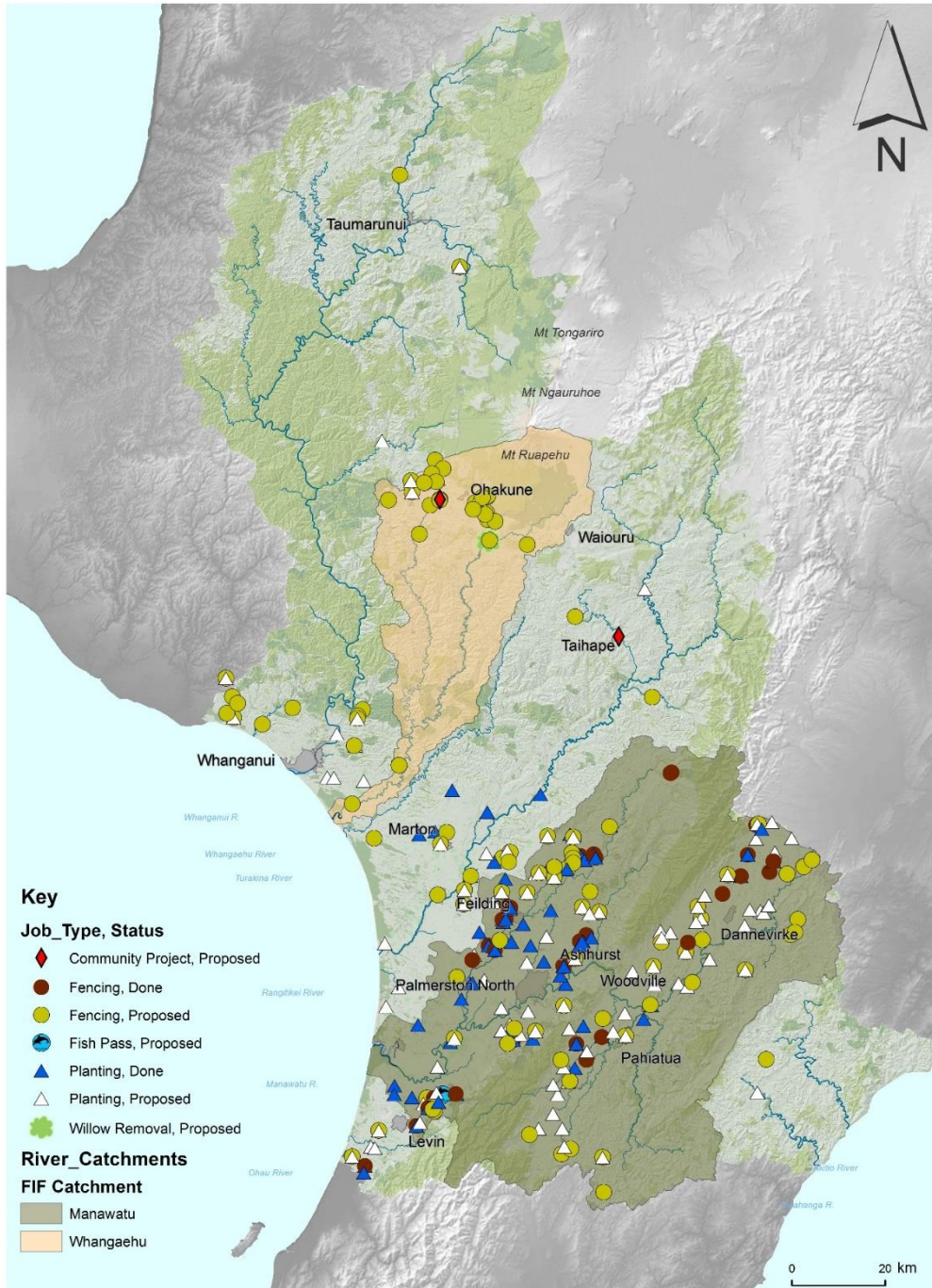
- Regional freshwater programme, outside the Manawatū and Whangaehu Catchments;
- Manawatū Accord and Freshwater Improvement Fund project;
- Whangaehu Catchment Freshwater Improvement Fund project;
- Waipu Catchment Freshwater Improvement Fund project to remove the Rātana WWTP discharge from Lake Waipu and irrigate to land and develop a restoration plan for Lake Waipu; and
- Lake Horowhenua Accord and Freshwater Improvement Fund project.

2.1.2 A summary of progress against Annual Plan targets is presented in this section of the report, and project updates on specific works are presented in the relevant FMU summary.

Table 1: Freshwater & Partnerships programme progress on the 2020-21 Annual Plan targets as at 30 September 2020.

	Riparian fencing (km)				Riparian planting			
	Target	Allocated	Complete	% complete	Target	Allocated	Complete	% complete
Regional	12	26.3	0.185	1.5%	20,000	34,095	10,600	53%
Manawatū	50	92.5	33.7	67%	40,000	114,500	44,477	111%
Whangaehu	17	25.7	0	0%	3,333	4,416	0	0%
Total¹	79	144.5	33.885	43%	63,333	153,011	55,077	87%
	Fish passes				Community projects			
	Target	Allocated	Complete	% complete	Target	Allocated	Complete	% complete
Regional	1	0	0	0%	1	1	1	100%
Manawatū	4	0	0	0%	9	0	2	22%
Whangaehu	2	0	0	0%	3	8	0	0%
Total³	7	0	0	0%	13	9	3	23%

¹ NB: The totals in these target tables represent an overall total and achieving these totals does not necessarily mean all targets have been met, as it is the individual targets that are in the Annual Plan.



Freshwater Grant Projects

Map prepared by L Ferguson, NRP. 12 October 2020

Figure 2: Freshwater implementation projects for stream fencing, riparian planting, community projects, and fish passes for the 2020-21 financial year.

JOBS FOR NATURE PROJECTS

2.1.3 In July 2020 Council resolved to enter into three Jobs for Nature “Quick-start” projects. These projects are funded through the broad Jobs for Nature Fund, and more specifically are referred to by the Ministry for the Environment (MfE) as Public Waterway Ecosystem Restoration Fund projects.

- 2.1.4 During the reporting period, the project work programmes, annual work plans, and Deeds of Funding for the Regional Stream Fencing and Riparian Planting, and Enhancing fish populations through fish passage remediation have been completed with the MfE. The Deeds of Funding for both projects have been signed and the first meetings of the Governance Groups was set for 20 October 2020.
- 2.1.5 During the reporting period the following recruitment for the currently signed-up projects was completed:
- Three Freshwater Advisors have been recruited for the Regional Stream Fencing and Riparian Planting programme, with all three due to join the team during October. The additional winter staff recruitment will commence early next calendar year;
 - Recruitment for the Fish Passage Coordinator role has been completed, with a start date of late October;
 - Recruitment has been completed for the four research assistants on the fixed four-year contracts, and the four summer students, with the majority of the team starting on 27 October and a few in November 2020.
- 2.1.6 With the number of people starting working at Horizons at the same time, a number of programmes and courses are being specially organised for the team to enable them to become fully operational as quickly as possible.

2.2 Regional Water Quality & Quantity Science Programme Overview

MONITORING PROGRAMMES

- 2.2.1 Water quality and quantity monitoring is overseen by Horizons Science & Innovation Team, but delivered in partnership with the Environmental Data, Consents Monitoring and Freshwater & Partnerships teams. Much of this activity focusses on improving knowledge and understanding of the region's freshwater and coastal environments by monitoring the state of the environment, tracking changes over time, and identifying areas of emerging pressure. Water quantity, quality monitoring, and biomonitoring programmes currently encompass:
- River flow at 65 sites, groundwater levels at 192 sites, and measurement of water use at more than 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 11 coastal and estuary sites, and ecological condition and/or sedimentation of five estuaries;
 - Groundwater quality at 35 sites;
 - Water quality in 15 lakes and submerged plants in approximately 10 lakes;
 - 82 popular swim spots throughout the bathing season (November to April);
 - Macroinvertebrates at 74 sites and periphyton at 63 sites.

2.2.2 The monitoring network is undergoing a review in response to national policy requirements, and to better inform decision-making and implementation programmes.

STATE OF THE REGIONAL WATER RESOURCE

2.2.3 NIWA reports that winter 2020 was the warmest winter on record with above average temperatures across the country. Rainfall has been average or below average over much of the Horizons region for the past four months (Figure 3). Rainfall has been particularly low in the Rangitikei District, but is currently about 78% of median rainfall. This has led to drier than normal soil moisture levels in parts of the region, affecting groundwater levels. Approximately 50% of the bores we monitor for water levels are currently low or below average (Figure 4), particularly in Taranaki, Manawatū, Rangitikei and Turakina. Whereas in Horowhenua and Whanganui, average rainfall over the previous four months has helped to support groundwater levels. Groundwater levels are generally at their highest during spring but as they are already low, it is unlikely that these will replenish prior to summer. This may result in groundwater users experiencing lower pressure and water levels throughout summer.

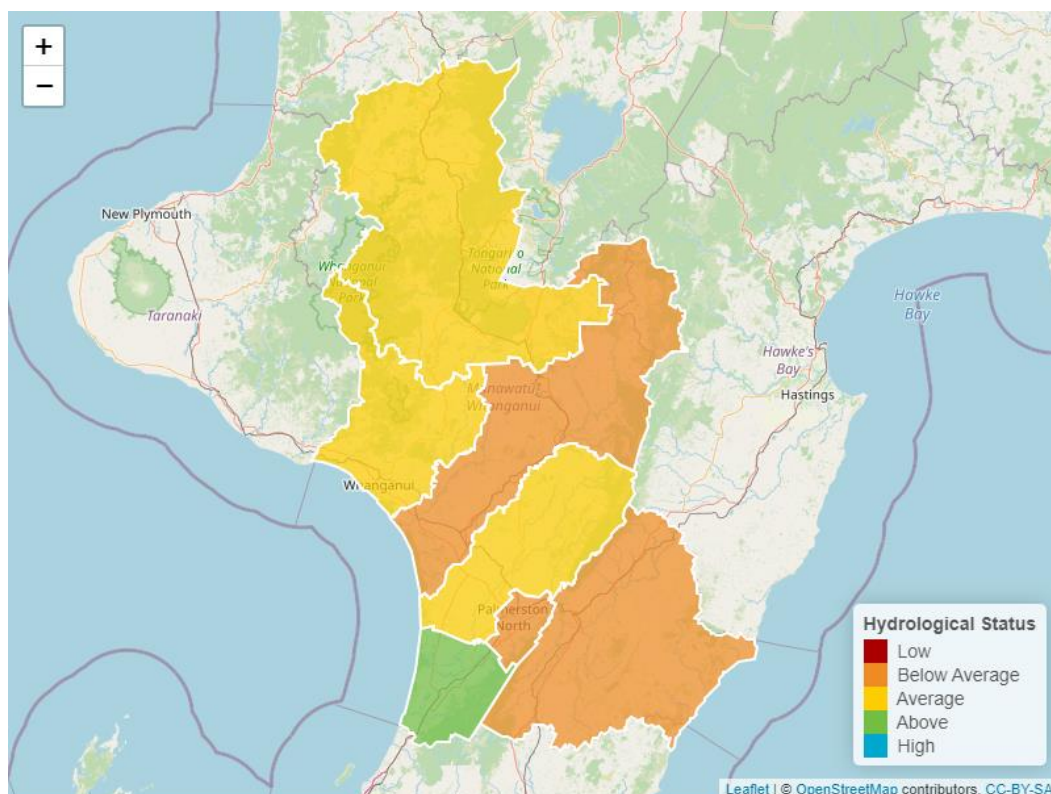


Figure 3: Hydrological status as determined by rainfall quantities over the preceding four months at seven representative sites, October 2020.

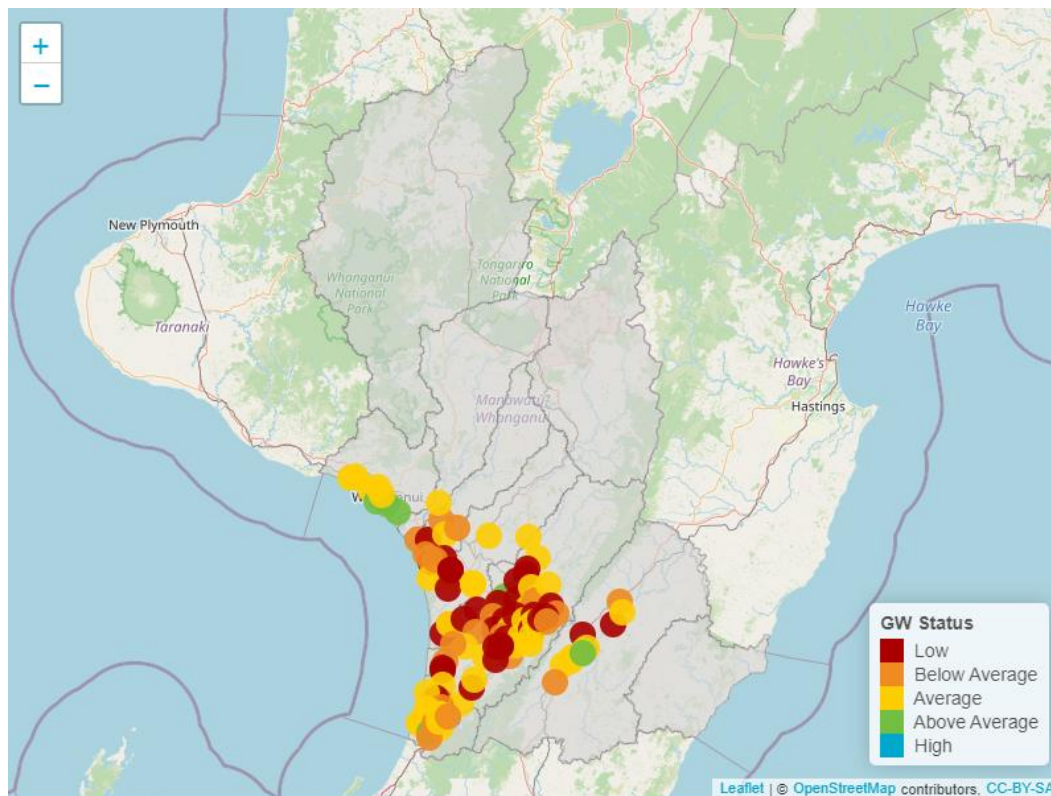


Figure 4: Groundwater level status as determined by monthly monitoring at 130 bores, September 2020.

WATER METERING PROGRAMME AND THE NEW NPS-FM REQUIREMENTS

- 2.2.4 Horizons' water metering programme uses technology known as "telemetry" to automatically report water use to Horizons. This automated reporting was trialled in the region by Horizons in 2003 and the programme has grown over time with Horizons providing and servicing the equipment. Formal requirements for telemetry were established in the One Plan for both ground water and surface water consents. The automated supplied data is processed daily by Horizons Watermatters system that reports to Horizons' website and was established in 2007.
- 2.2.5 The National Regulations on Water Use Measurement and Reporting first came into effect in 2010. These regulations required all water abstractions of greater than 5 litres per second (l/s) to be measured by water meter, and that daily abstraction data be returned to the relevant regional council annually.
- 2.2.6 In 2020, Central Government released revisions to the national water metering regulations as part of the Essential Freshwater package. The primary change is the requirement for water takes to provide data automatically to councils, with takes of different sizes phased in over a period of six years. At the end of six years, all takes greater than 5 litres per second (5 l/s) will require telemetry. Takes of 5 l/s equate to approximately 432 m³/day. This equates approximately to the amount required to irrigate 8.6 ha of land or provide stock drinking water for 300 dairy cattle.

2.2.7 Horizons was one of a small group of councils that the MfE consulted with to ensure the practicality of these changes, prior to recommending them. The changes come about as a recognition of the importance of consistent and timely access to water use data in effectively managing the water resource, which was not previously provided by the 2010 Regulations.

2.2.8 An assessment of Horizons' current water metering programme against these requirements shows that Horizons are well placed to meet the new requirements within the timeframes set out in the regulations. Table 3 summarises Horizons' current position in relation to the revised regulations.

Table 2: Status of Horizons' Water Metering programme against revised regulations (abstractions >5 l/s)

Rate of abstraction	Currently consented abstractions*	Number of automated measuring data streams (FTP and telemetry)	Abstraction data streams to be connected/installed
>20 l/s	381	368	13
10-20 l/s	117	108	9
5-10 l/s	75	51	24
Total	573	527	46

*includes some diversions for hydroelectricity generation that may not be able to be captured by standard methods

2.2.9 Of the 573 currently consented abstractions to which the regulations apply, 527 already meet the requirements of the revised regulations in terms of metering and telemetry (i.e. water meter installed and abstraction data returned daily via electronic means). Of those 527 electronic data streams, almost all are collecting data at 15-minute intervals as required under the revised regulations. The remaining sites will be converted to 15-minute data as and when they are visited during the 2020-21 summer season. All new installations or replacements will be defaulted to 15-minute data.

2.2.10 At the time of writing, 64 consented abstractions require telemetry installation or confirmation of FTP data provision. The majority, if not all, of these are intended to be resolved over the 2020-21 season, subject to the consent holders installing and verifying water meters as required by consent, with this needing to be done prior to telemetry installation. These meter installations are to be followed up by the Consents Monitoring team and, once confirmed as completed, the task is handed to the telemetry team for installation of telemetry gear.

2.2.11 The field team is sufficiently resourced to achieve the telemetry installations required. The replacement of faulty or problematic telemetry units will also continue.

WATERMATTERS AND SUMMER SEASON WATER USE MONITORING

2.2.12 Horizons' Watermatters webpages provide water use information publicly and back to registered consent holders from whom we receive telemetered water use data, allowing them to manage their water takes in accordance with their consent conditions.

- 2.2.13 Registered consent holders are able to access their individual water use records against the specific consent limits in terms of volume and rate allowed by the consent, and also in terms of the relevant minimum flow restrictions for that abstraction. The pages also allow the download of data by the consent holder, to analyse or feed into on-farm management systems. Most of the 70 registered users of these pages are irrigators, or large industrial abstractors.
- 2.2.14 The Watermatters web pages are ready for the upcoming irrigation season, and are fully integrated with the IRIS/Hilltop data systems used by Horizons to store water use, flow and consent information. The Watermatters system allows timely and accurate data provision, and automated compliance checking. Regular checking will take place throughout the season, or as issues arise. The publicly available Watermatters pages show a regional overview, via a map and list, of where restrictions apply are also ready. By the end of November, work on re-aligning the regional and catchment-based overview allocation pages, which were not available last season due to system changes, to the appropriate internal data plus sources and mapping software will be complete. In the longer term, it is intended that these pages will form the basis for Horizons' surface water accounting reports.
- 2.2.15 Heading into summer, the water metering field team will continue with telemetry inspections, installations and replacement of old gear with improved technology.

LAKES PROGRAMME REVIEW

- 2.2.16 In September 2020 Central Government launched the National Policy Statement for **Freshwater Management** (NPS-FM) and the **National Environmental Standards for Freshwater** (NES-FW). Under the NPS-FM regional councils are required to monitor a set of lake sites that adequately represent each of the regions' Freshwater Management Units (FMUs). The current lake water quality monitoring programme does not meet this requirement.
- 2.2.17 A review of the lakes monitoring network in light of NPS-FM requirements and other recommendations has been drafted. Recommendations in the draft report also address needs from the 2019 **State of Environment** (SoE) report and the One Plan water quality targets. The review outlines the rationale for the selection of long-term lake monitoring sites to represent all five FMUs with natural geomorphic lake types in the Horizons region, to ensure Council meets requirements under the NPS-FM. While the report focusses on SoE monitoring, consideration will also need to be given to monitoring that is required to inform potential lake restoration.
- 2.2.18 Three options for future State of Environment monitoring are presented in the report, and all options retain the current SoE monitoring of 15 aeolian/dune lakes. Recommended changes include:
- Changes to ensure Horizons meets requirements under NPS-FM including options for additional lakes to be added to the programme and an increase in frequency of monitoring to monitor lakes that are currently part of the programme and any added lakes on a

monthly basis. This frequency is an increase over the current quarterly sampling of the majority of lakes in the current programme.

- Adjustments to the in-lake locations of sampling sites to better reflect inflows and outflows.

2.2.19 Recommended changes would improve overall reporting on lakes in relation to the national and regional policies and to provide information to inform potential restoration work. Council will have the opportunity to review funding decisions relating to the lake monitoring programme through the Long-term Plan process.

CONTACT RECREATION WATER QUALITY MONITORING

2.2.20 Monitoring of more than 80 popular swim spots around the region begins from 1 November 2020 and the programme is delivered in collaboration with MidCentral Public Health Service, local councils and Ngā Waihua o Paerangi Trust. Recruitment of swim spot monitoring staff is now complete with monitoring results reported weekly, as they become available, via both Horizons (<http://www.horizons.govt.nz>) and the LAWA (<http://www.LAWA.org.nz>) websites.

- The 2019-20 swim season showed that 58 river and seven estuary sites were, on average, swimmable 61% of the time with caution advised 16% of the time. Sites were considered unsuitable for swimming 23% of the time.
- Overall, the 11 coastal sites were swimmable 96% of the time. Caution was advised 2% of the time, and sites were considered not suitable for swimming 2% of the time.
- Of the five lakes monitored these were, on average, swimmable 61% of the time with caution advised 28% of the time and they were deemed unsuitable for swimming 10% of the time.

2.2.21 Lake Dudding was briefly closed from 27 November to the 20 December 2019 due to algae cell density and bio volume exceeding the recreational guidelines, and on the advice of public health officers. There were no closures of other monitored lakes.

2.2.22 Kaikokopu Stream at Himitangi Beach had cautionary signage erected by public health officers on 12 December 2019 due to high *E.coli* results (Figure 5). This site was planned to have a faecal source investigation to determine the source of any *E. coli*. However, this was postponed to the 2020-21 season due to Covid-19 lockdown.



Figure 5 Cautionary signage at Kaikokopu Stream at Himitungi Beach during the 2019-20 season

MUDFISH MONITORING

- 2.2.23 Brown Mudfish (*Neochanna apoda*) are one of five mudfish species found in New Zealand, and the only species of mudfish in the Horizons Region (Figure 6). Mudfish are highly cryptic (camouflaged) and secretive fish that live in very specific habitat types – typically wetlands, drains, and forest pools. They are the only New Zealand fish species able to aestivate – a process similar to hibernation – which means they are able to survive out of water when their habitat dries up. They do this by remaining buried in gaps beside roots, in mud or similar cover, until their habitat is inundated during rainfall. Given this unusual life cycle, mudfish monitoring is undertaken during the wetter months of the year (generally June to October) when mudfish are active.
- 2.2.24 Historically, it is likely that mudfish habitat in the Horizons Region, particularly in the Horowhenua, Lower Manawatū and coastal Rangitikei, was extensive. With clearance and drainage of wetlands and wetland forests, available habitat for these species has been substantially reduced. At the time of development of the One Plan in the early 2000s, there were only 10 sites known to contain these fish within our region.

2.2.25 Horizons Regional Council staff undertake surveys within known mudfish habitat to monitor fish populations, and do exploratory surveys to establish the presence of previously unknown populations. Monitoring for the 2020 calendar year is now complete with eight sites visited, including one site at which brown mudfish were caught for the first time. This brings the total of known and exploratory sites within the region to approximately 22, depending on how sites are aggregated.



Figure 6: Brown Mudfish – Lake Herbert. September 2020.

LAND-USE MAPPING

2.2.26 Land-use information is important for a range of purposes including investigating links between land use and outcomes for water quality. This has been identified as a significant information gap nationally ([MfE, 2019](#)). Previous land-use maps for the Horizons region have been limited in their static nature and were infrequently reproduced due to being both cost and time-intensive. The last complete map of land-use in the region was compiled by Horizons in 2008 to inform development of the One Plan.

2.2.27 To update land-use information for the region, Horizons commissioned Manaaki Whenua – Landcare Research to provide an updated land-use map as well as the provision of a tool to enable Horizons to update land-use information on a regular basis.

2.2.28 The land-use classification combines multiple classifications from a range of sources including AgriBase, Land Cover Database v5.0, Horizons Regulatory data, the **Sustainable Land Use Initiative** (SLUI) Whole Farm Plans, and Valuation and ratings data. **A Land Use Management Support System** (LUMASS, an open source spatial modelling tool) model for the automatic update of the land-use classification was developed, which allows us to update the land-use

layer as updated input datasets become available. Some of these data sources are static, for example the Land Cover Database is a 2018 dataset and will not be reproduced for several years, whereas the SLUI Whole Farm Plan dataset is updated regularly and an updated AgriBase dataset is provided every six months. Horizons will aim to use the LUMASS tool to produce a map annually to provide a snapshot in time of land use each year. This layer will be made available at the Water Management Subzone level on both the internal and external Local Maps electronic mapping tools in the coming months.

2.2.29 A primary and secondary classification were provided with finer detail than previous land-use maps used by Horizons. There are 11 primary classifications and 30 secondary classifications and the top three land uses across the region at the secondary classification level are sheep, beef and/or deer (44 per cent), native forest on non-agricultural land (18 per cent) and pasture grazed by dairy cows (8 per cent) (Figure 7). Though classified differently and not directly comparable, these numbers at a regional or FMU scale are very similar to those reported in the 2018 State of Environment report and 2019 Catchment Report Cards, which used AgriBase as the main data source. In the SoE report, 45 per cent of the region was described as sheep and beef while pasture grazed by dairy cows was also 8 per cent.

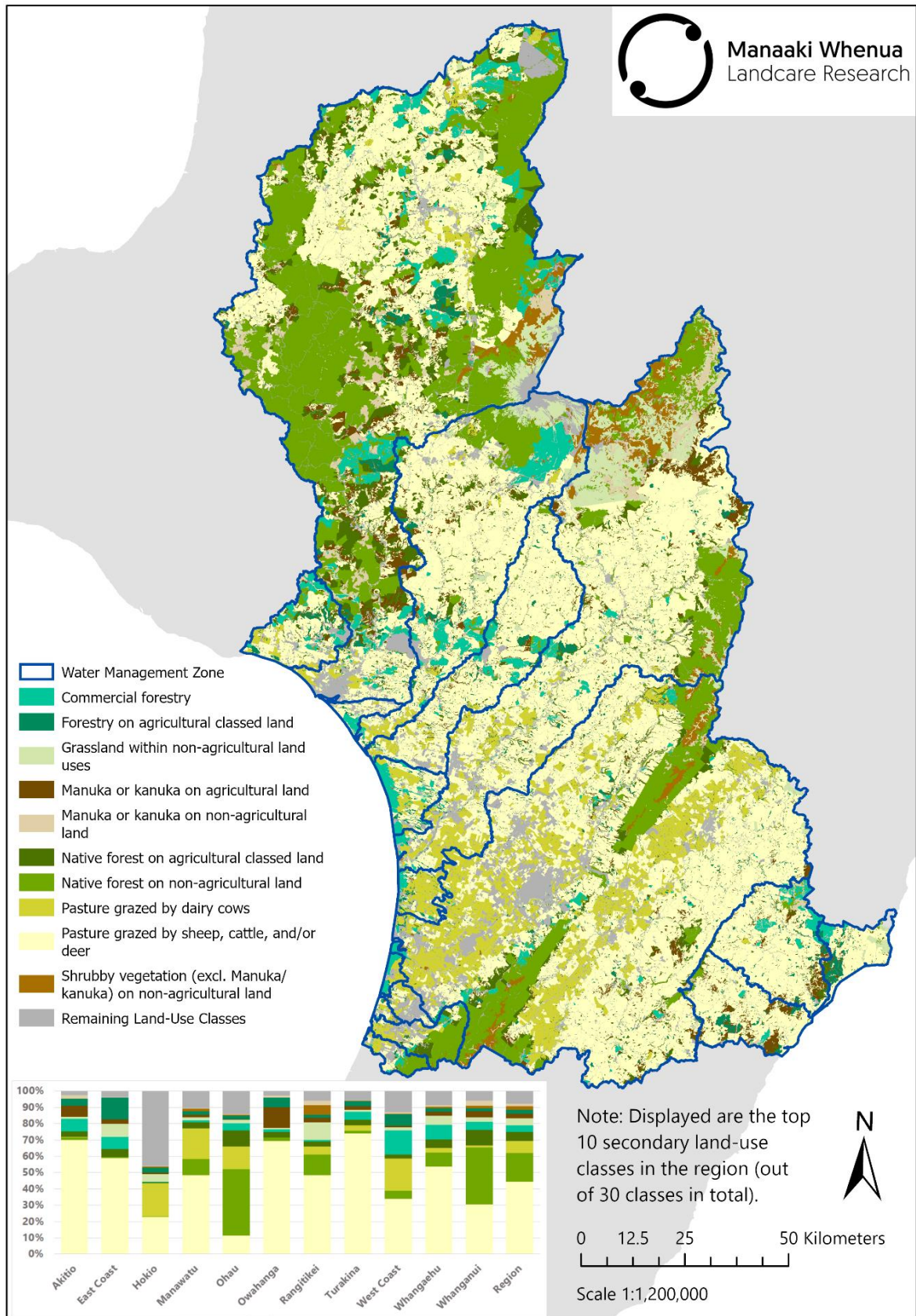


Figure 7: Distribution of the 10 largest secondary land-use classes across the Horizons Region.

ORTHORECTIFICATION OF HISTORIC IMAGERY

2.2.30 Spatial datasets and digital elevation models are an essential part of our research programmes and play a key role in understanding spatial changes in the environment. This financial year, the fluvial programme will fund the orthorectification of historic imagery across Rangitikei and Manawatū. Orthorectification is a process of correcting optical distortions of aerial imagery to enable production of digital elevation models. This imagery is available for decadal time periods from the 1940s to the 1980s. From a fluvial programme perspective this means we can use the digital elevation models produced from this process to better quantify how our river systems and gravel resources have moved and changed over time in a more quantitative way, and therefore inform how they might change in the future. In a wider context, this product could have applications across the organisation, e.g understanding historic landslide movement.

2.3 Whanganui and Kai Iwi FMU

2.3.1 During this reporting period, 6.5 km of stream fencing and 3,525 riparian plants have been allocated within the Whanganui Catchment with the focus on getting plants in the ground. Some 5.3 kilometres of stream fencing and 1,500 riparian plants have been allocated along the Kai Iwi and Ototoke Streams within the Kai Iwi catchment and South Taranaki iwi Ngaa Rauru have been engaged to supply riparian plants for next winter from their Kii Tahi nursery based in Patea.

2.4 Whangaehu FMU

WHANGAEHU FRESHWATER IMPROVEMENT FUND PROJECT

2.4.1 This programme focuses on the delivery of the Ngā Wai Ora o Te Whangaehu FIF project, which focuses on the protection and enhancement of waterways within the Whangaehu Catchment. The main components of the programme are supporting stock exclusion from waterways, riparian enhancement and planting where desirable, aquatic habitat enhancement, supporting industry and community-led initiatives, and a joint project with Ngati Rangī.

2.4.2 With stream fencing and riparian planting allocations in this project now being fully allocated and landowners in this catchment are being signed up under the Jobs for Nature (previously the Regional Growth Fund Programme) fund to enable works to be completed. Given the harsher winter conditions in the upper Whangaehu Catchment, the planting season starts later and was underway in October.

2.4.3 The Community Grants project was open to applications on 20 June 2020, with a press release circulated on 25 June 2020. Applications were open until 7 August 2020 with nine applications being received seeking \$69,242.31 though only \$66,824.54 was available to be allocated. The panel met on 28 August 2020 to discuss the applications and agreed to fund eight applications (i.e not including the Makaranui Whanau and Winiata Campsite Trust project which was funded

for two years in year two of the FIF project). All applicants had been advised of their success (or otherwise) by 4 September 2020 and staff are in the process of contracting parties for completion of the work. The eight successful projects are:

- Ethical Waste – Waimarino Recycling Centre Storm Water Clean Up to raise community awareness of waste water pollution;
- Friends of the Mangawhero Walkway, Ohakune 2000 – including Mangawhero Willow Removal;
- Lower Whangaehu Catchment Group – Lower Whangaehu Wetland Establishment;
- Mo Te Katoa Marae Trust – Nga Manakitanga o te Makotuku;
- Papakinga Marae – Nga Mokai Tokiahuru;
- Pauro Marino Trust – Pauro Marino Fencing and Walkway Project;
- Raetihi Promotions Charitable Trust – Makotuku Walkway establishment;
- Ruapehu College – Makaranui Monitoring and Restoration Education Programme; and
- The continuation of Moana Ellis and Makaranui Whanau and Winiata Campsite Trust – Restoration and protection of Taonui stream and tuna reserve at Makaranui.

2.5 Rangitikei-Turakina FMU

PFAS MONITORING FOR OHAKEA

2.5.1 Horizons has been working with the **New Zealand Defence Force** (NZDF) on the ongoing monitoring of **per- and ploy-fluoroalkyl substances** (PFAS) and related compounds around Air Force Base Ohakea. PFAS are a large group of manufactured compounds that have industrial and consumer applications. A monitoring programme was specially designed by Pattle Delamore Partners Ltd this year to monitor the movement of the PFAS plume over time². Four piezometers were drilled in the Ohakea area to enable groundwater sampling in addition to four existing water supply wells and three surface water sites that will also be sampled as part of the programme. The first round of monitoring began in September 2020 with another round of monitoring planned for early 2021. Results will be reported to Horizons after each sampling run has been finalised.

FLUVIAL PROGRAMME

2.5.2 Fluvial surveying will focus on the Kawhatau River this financial year as it is a key gravel source for the Rangitikei River. This survey will extend beyond previous surveys in the Kawhatau that focussed on the gravel beaches only, to further our understanding of the fluvial processes occurring.

² PDP (2020) RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan

STREAM FENCING AND RIPARIAN PLANTING

- 2.5.3 The Freshwater & Partnerships team lead a Horizons staff planting day with the local schools and community upstream of the SH3 bridge at Bulls on 3 July 2020, planting 1,000 native trees to enhance Horizons Regional Council land cared for by the Bulls River Users Group.



Figure 8: Staff planting day next to the Rangitīkei River near the SH1 bridge in Bulls.

- 2.5.4 In this reporting period 15.392 km of stream fencing and 20,960 riparian plants have been allocated within the Rangitīkei – Turakina FMU, with the focus during the reporting period on getting plants in the ground during the planting season.

LAKE WAIPU/RĀTANA FRESHWATER IMPROVEMENT FUND PROJECT

- 2.5.5 NIWA have been engaged to undertake a native and pest fish survey of Lake Waipu which has been programmed for December 2020 although its completion depends on weather. This work is important to understand the availability of host species for kakahi recruitment within the lake and the on-going sustainability of the kakahi population.
- 2.5.6 Horizons' staff have been working with Rangitikei District Council and Manawatū District Council to update the project plan for the wastewater management component of this project which is seeking to cease the discharge to water (to Lake Waipu) and to fully land apply the wastewater. Rangitikei District Council are focusing on two potential land areas and are undertaking further technical work on these options. A report on the options to inform a decision on which option to proceed with and what the revised project plan for the remaining

few years of the project is expected to be finalised by Rangitikei District Council in November 2020. This will then be discussed with the Ministry for the Environment.

2.6 Manawatū FMU

MANAWATU FRESHWATER IMPROVEMENT FUND PROJECT

- 2.6.1 The first quarter of year three has been a busy one with the riparian planting season coming to an end, the third round of community led projects have been received and enquiries for stream fencing and riparian planting continue to come in with an increase noted around the time of the new stock exclusion regulations being introduced. With current allocation for stream fencing and riparian planting new applications are no longer being sought for this financial year and are being allocated to next financial year.
- 2.6.2 After a resource consent hearing during July 2020, Horowhenua District Council have been granted a short term resource consent (from Horizons Regional Council) to continue with the discharge from the Tokomaru waste water treatment plant (WWTP) to water until the upgrade project is completed in 2023. This upgrade will see the treated waste water removed from the river and being irrigated to land.
- 2.6.3 The urban streams project continues to progress with further planting and an extension of the walkway. The urban eel's project was completed in quarter four of last financial year and a dawn ceremony was held to bless the site on the Turitea Stream near the confluence with the Manawatū River on the 31st July 2020.



Figure 9: Dawn blessing of the eel observation platform on the Turitea Stream in early July 2020. Photo provided by Palmerston North City Council.

2.7 Horowhenua FMU

2.7.1 Several research and monitoring programmes have been carried out in the Horowhenua FMU but there are still research gaps that need to be remedied to enable us to prepare for implementation of the 'Action for Healthy Waterways' package, inform the ten-year review of Horizons' One Plan, and inform interventions for water quality improvement in the FMU. This programme will take stock of all previous and ongoing work and address gaps in our knowledge. Work in this space either underway or recently completed includes:

- Integrated sediment and drainage management plan for the Arawhata catchment (contracted to Tonkin + Taylor; due for completion November 2020). More information below;
- Land-use map (Manaaki Whenua, completed July 2020).
- Sustainable Farming Fund – Future Proofing Vegetable Production (LandWISE – three-year project to end June 2021).
- Work has continued in preparation for the commencement of the construction of the boat ramp. Staff and contractors that are involved in the project and some councillors attended a wananga held at Kohuturoa marae in early October. This wananga was the continuation of the sharing of information between the parties to the project and laying some foundations to ensure that the works are undertaken in a culturally appropriate manner.

2.7.2 The following are planned projects and monitoring programmes for 2020-21 in the Horowhenua FMU to further address knowledge gaps:

- Conceptual model for the Horowhenua FMU to provide the baseline for our understanding of groundwater movement in the FMU.
- S-Map soil mapping to inform contaminant models and catchment analysis, and improve OVERSEER inputs.
- Summer monitoring survey to address any immediate gaps in spatial coverage for water quality and quantity, to inform catchment characterisation.
- Implementation of a new monitoring programme to provide sufficient information for consent decision-making, the development of catchment interventions and NPS-FM implementation.

2.7.3 The above programme for the 2020-21 year will align with, support or be part of the recent "Jobs for Nature" funding for the development of interventions within the Horowhenua catchment.

JOBS FOR NATURE

2.7.4 Work continues with the MfE and other partners, stakeholders, and parties around progressing the Jobs for Nature project in the Lake Horowhenua catchment. A key part of the work to date on this project is establishing a contract with MfE. HRC and MfE staff are working to establish the contract as soon as possible aiming for completion of this part of project establishment in November 2020. Work is occurring on pulling together the project work programme for the four year project and the annual work plan into a Deed of Funding.

- 2.7.5 Part of the origin of the Jobs for Nature project was a project Horizons already had underway to develop an integrated sediment and drainage management plan for the Arawhata Catchment. This project was commissioned in 2019-20 to develop interventions throughout the catchment, to reduce sediment loss to the Arawhata Stream and improve drainage. With the introduction of the Jobs for Nature funding, an additional module for interventions for nutrient loss has been added to the project. Initial high-level interventions were analysed and reviewed using a multi-criteria analysis (MCA) framework. Site visits have also been conducted to ground-truth understanding of flow and sediment loss pathways. The final report is due in November 2020.
- 2.7.6 Through the Jobs for Nature funding, the Lake Horowhenua Wetlands Project seeks to establish a wetlands complex and an associated works programme of other water quality interventions around the lake to improve water quality and aquatic health in the catchment and the lake. A wetland feasibility study to scope potential designs for a wetland complex in the Horowhenua catchment was commissioned to Jacobs. Conceptual draft designs are in progress and the final report is due in November. This project works alongside and in collaboration with the T+T project in this sub-catchment.
- 2.7.7 The development of a new monitoring and science programme to support the Jobs for Nature activities and NPS-FM implementation in the Horowhenua is underway with a focus on informing potential wetland design and refining our understanding of nutrient and sediment load and flow pathways. This will include a conceptual model of the Horowhenua FMU, new groundwater monitoring sites and summer monitoring surveys to address any immediate gaps in spatial coverage for water quality and quantity to inform catchment characterisation to begin in the 2020-21 summer. Lake nutrient budgets and improved understanding of the relative contributions of contaminants to the lake are also planned as a part of the project.

WAIKAWA STREAM COMMUNITY CATCHMENT PROJECT

- 2.7.8 In 2019 the Community Environment Fund, administered through the MfE, announced the success of an application led by Landcare Trust for the Waikawa catchment. The programme is to be delivered over a three-year period and involves:
- Forming a project group representing all interests, to help guide the direction of the project.
 - Build a 'whole of catchment' strategy and action plan together with the wider community, with leadership, guidance and co-development with local iwi/hapū.
 - Bringing farmers together and supporting them to help lead the way. Providing additional resources and incentives for environmental enhancement to farmers and other landowners, above and beyond what was on offer from local authorities.
 - Bring all groups within the community together to have a wider conversation than has been occurring to date.

2.7.9 The project has a stream fencing and riparian planting component to it which is being led by Horizons. Over the life of the project to date, 1.371 km of stream fencing and planting of 1,766 riparian plants has been achieved with co-funding between landowners, Horizons, and the MfE.

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