



FRESHWATER & PARTNERSHIPS

1 ACTIVITY OVERVIEW

- 1.1.1 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.
- 1.1.2 The team draw on the scientific monitoring work carried out by Horizons and other agencies to prioritise and focus implementation efforts. The programme actively seeks funding from other sources, allowing the acceleration of works. Activities include riparian fencing and planting for water quality improvement and fish habitat enhancement, the identification and enhancement of whitebait spawning habitat and fish passage improvement, sewage treatment plant upgrades, work with horticulture growers and lake weed harvesting.
- 1.1.3 The Freshwater and Partnerships Activity is presented in six sections:
- The Regional Freshwater programme
 - The Manawatu Accord/ Manawatu FIF project;
 - The Whangaehu Catchment FIF project
 - The Lake Waipu (Rātana) FIF project; and
 - The Lake Horowhenua Accord & FIF project; and
 - Freshwater improvement work with horticulture growers.

2 ANNUAL PLAN TARGETS

2.1.1 The annual plan targets are aggregated in Table 1 below and shown individually in the sections below. Overall the programme has achieved some targets already and is on track to meet all of its targets. Most aspects of the programme are oversubscribed this year and work is being allocated into next financial year. A map of the work allocated for this year is provided in Map 1.

Table 1: Freshwater & Partnerships programme progress on the 2019-20 Annual Plan targets as at 31 December 2019. NB: the reporting targets to provide Council annual reports on serious projects are not reported on here as they were provided in Environment Committee reporting in August 2019^{1,2}

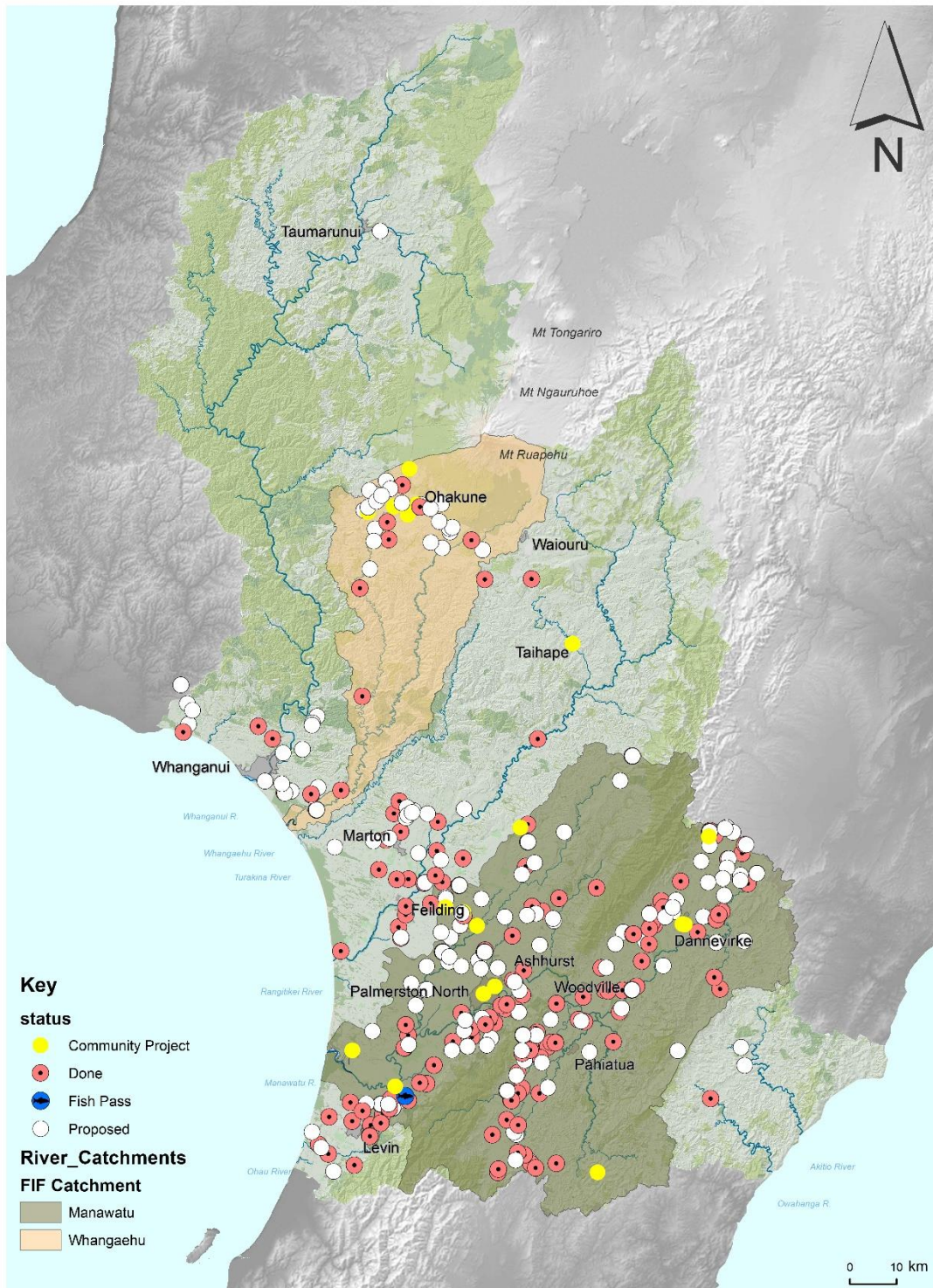
	Riparian fencing (kms)				Riparian planting			
	Target	Complete	Allocated	% complete	Target	Complete	Allocated	% complete
Regional	12	4.585	27.784	38%	20,000	16,133	43,375	81%
Manawatū	50	26.320	94.823	53%	40,000	70,506	105,080	176%
Whangaehu	17	7.332	39.095	43%	3,333	0	8,515	0%
Total³	79	38.237	161.702	48%	63,333	86,639	159,970	136%

	Fish passes				Community projects			
	Target	Complete	Allocated	% complete	Target	Complete	Allocated	% complete
Regional	1	1	2	100%	1	1	2	100%
Manawatū	4	0	4	0%	9	0	14	0%
Whangaehu	2	0	2	0%	4	0	6	0%
Total³	7	1	8	14%	14	1	22	7%

¹ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Natural%20Resources%20%20Partnerships%20Report.pdf>

² <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Environment-Committee-2019-14-08/19118%20Annex%20A%20Freshwater%20Activity.pdf>

³ 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 Programme January 2020

Map prepared by L Ferguson, NRP Group on 9 January 2020

Map 1 Locations of Freshwater Grants allocated and completed in 2019-20, including the Regional, Manawātū and Whangaehu programmes. Each point on the map represents one fencing, planting, fish pass or community project.

3 REGIONAL FRESHWATER PROGRAMME

3.1 Programme Overview

3.1.1 This programme focuses on the protection and enhancement of waterways across the region, excluding the Manawatū and Whangaehu FIF projects. The main component of the Regional Freshwater Programme is supporting stock exclusion from waterways via Freshwater Grants, advice and education, riparian enhancement and planting where desirable, aquatic habitat enhancement and supporting industry and community-led initiatives.

3.2 Annual Plan Targets

3.2.1 A summary of progress against the Annual Plan targets is provided in Table 2.

Table 2 Progress reporting for Regional Freshwater programme Annual Plan targets for 2019-20.

	Target	Allocated	% allocated	Completed	% completed	Status
Stream fencing	12 km	27,784	232%	4,585	38%	On track
Riparian planting	20,000	43,375	217%	16,133	81%	On track
Fish passes	1	2	200%	1	100%	Completed
Community projects	1	2	200%	1	100%	Complete

3.3 Activity Update

3.3.1 Any new enquiries and applications are being pushed into the new financial year. Budget constraints and staff capacity mean that no new works can be signed up for completion in this financial year.

Dudding Lake

3.3.2 After the discovery of grass carp in Dudding Lake, near Whanganui, a further survey was undertaken by NZ Waterway Restoration to estimate the number of grass carp that could be present in the lake. Monitoring was completed over two nights was undertaken during the week starting 16 September 2019 with four grass carp, 145 perch, 29 goldfish and four shortfin eels captured. The team from NZ Waterway Restoration estimated that the likely number of grass carp in the lake was 10. This information has been provided to the expert working group that was pulled together to develop restoration options for the lake, which will develop an updated set of conclusions and potential restoration options based on currently available information.

3.3.3 Coastal lakes and outlets

3.3.4 The Horizons region is home to 57 coastal lakes, some of which had weirs installed on their outlets to maintain water levels and the Freshwater team are undertaking a stock take of the state of the outlet structures from these lakes. This includes visiting all lakes that have identifiable outlets and documenting the type of outlet i.e. natural, culvert or weir and its current state. Initial work suggests that a number of lakes have weirs that are at risk of collapsing and for some of the dune lakes this may result in the loss of the lake due to their shallow nature e.g. Lake Kaitoke. Once the stock take is completed the results will be reported to Council.

Fish passage

3.3.5 The Akitio River has two significant weirs on the mainstem which effectively prevent the migration of the majority of fish species into the Akitio catchment, especially given the placement of the lower weir in the tidal zone of the river. The potential removal of these weirs would open up the entire catchment to all migratory fish species (except to the area above the natural barrier in the headwater of the Waihi Stream - the Waihi Falls), which would bring significant benefit to native fish populations in the Akitio catchment.

3.3.6 It was identified that removing the two weirs on Akitio River would significantly benefit fish passage into the river. During the reporting period a site visit was undertaken to the two weirs with a geomorphologist from Tonkin and Taylor to look at potential effects if the weirs were to be removed. A report outlining some potential effects and recommended monitoring to further inform these effects prior to and after their potential removal is due in the new year. A salt water wedge investigation is being completed in January 2020 with NIWA to see if the wedge reaches the base of the lower weir. The lowest weir in the catchment was originally installed to prevent salt water migrating inland causing water to become unsuitable for stock. The base of the weir definitely experiences tidal fluctuations but it is unknown if the salt water pushes this far back inland. Depending on the answer from this work, it may alleviate some of the concerns that surrounding landowners have around their ability to continue to take stock water.

3.3.7 During the reporting period the team meet with Ruapehu and Rangitikei district councils' roading representatives to discuss fish barriers on the roading network that they administer. Staff are working with these Councils to develop a template that will allow them to assess fish passage at culverts as part of their maintenance checks. Once these have been completed they will work with Horizons to prioritise fixes to enable fish passage.



Figure 1: Akitio weirs – left, the rabbit weir (NB no water flows over the weir during low flows, only under it) and right, the salt water wedge weir.

3.3.8 During the reporting period Horizons and Whanganui District Council representatives met to discuss improving fish passage at a newly installed culvert on the Awarua Stream, which flows beneath Wikitoria Rd at Putiki, Whanganui. Both the existing and now new culvert are in the tidal zone of the Awarua Stream, and therefore there are high numbers of whitebait downstream of culvert, evidenced by the number of whitebaiters downstream of the culvert. The onsite meeting resulted in an agreement to install a “leaky weir” consisting of large rocks being placed approximately 20 metres downstream to allow the stream to back up, flooding the culvert. Horizons conducted pre- and post-weir installation monitoring with results indicating an improvement in the ability of migratory galaxiids (whitebait) to swim upstream through the culvert.



Figure 2: Awarua Stream fish passage restoration by culvert replacement. Photo on the left taken in 2013 and the right in December 2019 after replacement of the culvert and installation of a leaky weir downstream of the culvert.

4 MANAWATU RIVER ACCORD/FIF PROJECT

4.1 Activity Overview

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

4.1.2 During this financial year and the following three years the targeted rate is to be used as Horizons' contribution to the Manawatū Catchment Freshwater Improvement Fund project that is managed by Horizons Freshwater and Partnerships Team.

4.2 Annual Plan Targets

4.2.1 A summary of progress against the Annual Plan targets is provided in Table 3.

Table 3 Progress reporting for Manawatū Freshwater Improvement Fund Annual Plan targets. The totals for completed work are as at 31 December 2019.

	Target	Allocated	% allocated	Completed	% completed	Status
Stream fencing	50km	94.823	190%	26.320 km	53%	On-track
Riparian planting	40,000 plants	105,080	263%	70,506	176%	Target achieved
Fish passes	4	4	100%	0	0%	On track
Community projects	9	14	156%	0	0%	On track
Annual report	1	1	100%	1	100%	Target achieved

4.3 Activity Update

4.3.1 Any new enquiries and applications are being pushed into the new financial year because budget constraints and staff capacity mean that no new works can be signed up for completion in this financial year.

4.3.2 During the November-December reporting period staff attended a plantain field day hosted by DairyNZ as part of a Sustainable Farming Fund project in the Tararua district. The field day provided some initial results from the work occurring as part of the project, looking at the potential for plantain to reduce Nitrogen leaching from farmland.

4.3.3 A Manawatu Accord Leaders Forum was held on 12 December 2019 with two main presentations, one from Fonterra about some of its environmental initiatives and the other from

the New Zealand Transport Authority providing an update on the Gorge replacement project. In addition, the forum welcomed MidCentral District Health Board as a new member.

5 WHANGAEHU FIF PROJECT

5.1 Activity Overview

5.1.1 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 and supporting industry and community-led initiatives. The following report provides the annual summary to Council on the Ngā Wai Ora o te Whangaehu Awa Freshwater Improvement Fund project as required by a Long-term Plan target.

5.2 Annual Plan Targets

5.2.1 A summary of progress against the Annual Plan targets is provided in Table 4.

Table 4 Progress reporting for Whangaehu Freshwater Improvement Fund Annual Plan targets.

	Target	Allocated	% allocated	Completed	% completed	Status
Stream fencing	17 km	39.095	230%	7.332	43%	On track
Riparian planting	3,333 plants	8,515	255%	0	0%	On track
Fish passes	2	2	0%	0	0%	On track
Community projects	4	6	150%	0	0%	On track
Annual report	1	1	100%	1	100%	Target achieved

5.3 Activity Update

5.3.1 During the November-December reporting period Central YMCA withdrew the Community project for its camp at Raukawa Falls, Kakatahi, due to the Mangawhero slip blocking SH 4 (the Parapara) and a change in caretakers at the site leaving them without the capacity to be able to complete the works.

6 LAKE HOROWHENUA ACCORD AND FIF PROJECT

6.1 Activity Overview

6.1.1 The Lake Horowhenua Accord is a partnership between the Lake Horowhenua Trust, Horowhenua Lake Domain Board, Horowhenua District Council, Horizons Regional Council and the Department of Conservation. Its purpose is to address water quality issues in Lake Horowhenua.

6.1.2 The FIF project is led by the Horowhenua II Part Reservation Trust (the Lake Horowhenua Trust). The project is in three parts comprising stormwater upgrades, cultural monitoring and groundwater research. Horizons' involvement is a sub-project related to groundwater research. The sub-project seeks to develop a better understanding of the water balance of Lake Horowhenua and the groundwater quality entering the lake to inform water allocation and water quality management decisions.

6.2 Annual Plan Targets

6.2.1 A summary of progress against the Annual Plan targets is provided in Table 5. An annual report was provided to Council regarding Lake Horowhenua in September 2018⁴ and further updates have been provided to subsequent Environment Committee meetings.

Table 5 Progress reporting for the Lake Horowhenua Accord Annual Plan Targets.

Annual Plan target	Year to date	Target	% Complete	Status
Annual report to Council on lake restoration activity including the Freshwater Improvement Fund project for Lake Horowhenua.	0	1	0%	On track

6.3 Activity Update

6.3.1 The Freshwater Improvement Fund project was intended to start on 1 July 2018 but was delayed due to some legal matters relating to the confirmation of the trustees after the last Lake

⁴ <http://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Regional-Council-Meeting-2018-25-09/18157%20Lake%20Horowhenua%20Update.pdf>, the appendices to this report can be downloaded at the following link <http://www.horizons.govt.nz/calendar/regional-council-meeting-2018-25-09.aspx>

Horowhenua Trust elections. However, a meeting held prior to Christmas has decided to proceed with the project, with a project manager to be appointed by March 2020.

- 6.3.2 During the November-December 2019 reporting period the access road for the Lake Horowhenua boat ramp was completed. This work was able to be completed after the Maori Appellate Court hearing dismissed the appeal to the Court, reconfirmation from the Lake Trust to complete the works, permissions from Kohuturoa Marae, and following the guidance of Heritage New Zealand to ensure the works were completed without the need for an authority to disturb. The completion of this work provides a further step in progressing weed harvesting at the lake. The next step is the construction of the boat ramp.
- 6.3.3 During the reporting period weed control was completed on the area between the access track and below Kohuturoa Marae. This weed control will continue until winter 2020 and will enable the planting of the bank with native vegetation as agreed with the marae, as a part of the package of restoration works for Lake Horowhenua.

7 FRESHWATER IMPROVEMENT WORK WITH THE HORTICULTURAL SECTOR

7.1 Activity Overview

- 7.1.1 Building on previous work with the Tararua Growers Association as part of the Freshwater Clean-Up Fund project, Horizons established new funding of \$70,000 per year for work with the horticulture sector to reduce nutrient and sediment loss from horticulture operations. This funding is being used in part to contribute to a **Sustainable Farming Fund** (SFF) project future-proofing vegetable production.
- 7.1.2 The balance of the funding will be prioritised for implementation of work to reduce nutrient and sediment losses from horticultural operation, including establishment of sediment traps, similar to the way freshwater grants are paid for fencing and planting of waterways. This funding may be utilised to design the proposed interventions.

7.2 Annual Plan Targets

- 7.2.1 A summary of progress against the Annual Plan targets is provided in Table 6.

Table 6 Annual Plan performance measures for Freshwater Improvement Work with the horticulture sector.

Annual plan target	Year to date	Target	% Complete	Status
--------------------	--------------	--------	------------	--------

Annual report on work with the horticulture sector through the freshwater and partnerships programme to improve water quality.	0	1	0%	On track
--	---	---	----	----------

7.3 Activity Update

7.3.1 During the November-December reporting period staff have received enquiries about the potential construction of a wetland/sediment trap in the Ōhau catchment and any advice/assistance that Horizons might be able to contribute. Staff are in the process of working with the landowner and will be engaging an expert in constructed wetlands to upskill staff in constructed wetlands, the theory behind them and appropriate designs. The farm will be used as a case study along with another farm in the Tararua district.

Future-proofing vegetable production

7.3.2 This project⁵ is mainly funded through the **Sustainable Farming Fund** (SFF) with a number of other co-funders, including Horizons. It is not specific to the Lake Horowhenua catchment, although a lot of the ground work and trials are to occur within the catchment where relationships have already been established through other work programmes such as the Clean-Up Fund. The intent is that once these projects have been trialed in the Lake Horowhenua catchment they can be moved out into other parts of Horizons' 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 change for the better happening on farms.

7.3.3 During the previous reporting period, the first quarterly report for year two from LandWise was submitted to the **Ministry of Business, Innovation and Employment** (MBIE), as administrators of the SFF. A copy was also provided to Horizons. A brief summary follows:

- Further monitoring has been established in collaboration with Horizons. This monitoring has been undertaken throughout the Arawhata Stream network to try to identify nutrient "hot spots", to help identify spots where bioreactor/s could be installed in the catchment;
- Work is continuing on the "Community Management of Common Pool Resources" project with much discussion occurring outside of the project;

⁵ <http://www.landwise.org.nz/projects/future-proofing-vegetable-production/>

- Workshops were held covering soil sampling, soil test results and fertiliser in Levin and Gisborne on 16-17 July 2019; and
- Work has continued on the calibration of fertiliser application equipment and a range of grower trials focusing on matching fertiliser usage with crop demand for nutrients.

8 LAKE WAIPU FIF PROJECT

8.1 Activity Overview

8.1.1 The Lake Waipu FIF project specifically seeks to remove the discharge into the lake from the Rātana Wastewater Treatment Plant. This is to be led by Rangitikei District Council (RDC) as the consent holder and Horizons' project relates to monitoring the effect of the removal of discharge from the lake and to understand the lake's internal processes. The aim is to develop a restoration plan that includes addressing the legacy issue resulting from the current discharge. The following report provides the annual summary to Council on the Lake Waipu FIF project as required by an Annual Plan target.

8.2 Annual Plan Targets

8.2.1 A summary of progress against the Annual Plan targets is provided in Table 7.

Table 7 Annual Plan performance measures for Freshwater Improvement Fund for Lake Waipu.

Annual plan target	Year to date	Target	% Complete	Status
Annual report to Council on the Waipu Catchment Freshwater Improvement Fund project	1	1	100%	Target achieved

8.3 Activity Update

8.3.1 This project officially commenced on 1 July 2019. A draft of a sub-contract between Rangitikei District Council (RDC) and Horizons has been provided to RDC for feedback.

8.3.2 Horizons has installed a continuous monitoring buoy on the lake and is collecting data on temperature, dissolved oxygen, pH, conductivity and turbidity at 15-minute intervals which is being telemetered back to Horizons office in Palmerston North.

8.3.3 RDC is investigating potential discharge-to-land locations in close proximity to the waste water treatment plant. This may involve the purchase or long-term lease of land.

8.3.4 The **National Institute of Water and Atmospheric Research** (NIWA) will be undertaking a kakahi (freshwater mussel) survey of Lake Waipu in February 2020, with a specific focus on whether the kakahi population is recruiting.

8.3.5 A Governance Group meeting was held on 12 December 2019.

Logan Brown
FRESHWATER & PARTNERSHIPS MANAGER

Jon Roygard
GROUP MANAGER NATURAL RESOURCES AND PARTNERSHIPS