

OURS.

THE **MANAWATŪ** RIVER
LEADERS' ACCORD

PROGRESS REPORT

APRIL 2014



Foreword

Kia ora. Welcome to the second public report into progress made under the Manawatū River Leaders' Accord and the first to be published in this format.

Like the path of the river itself, the journey to improve its state has not been short of twists and turns. When the leaders first came together in 2010 the River had become a symbol for the challenges facing fresh water quality in New Zealand. National media labelled it "the worst in the Western World" and, while the reports were not entirely accurate, it became evident action was needed.

A group of iwi, industry, council, environmental, recreational and farming representatives were brought together by the Chairman of Horizons Regional Council to form the Manawatū River Leaders' Forum. It was a group that began with divergent opinions on the River's state and causes as well as how it might be solved. The Forum's infancy was marked by fierce debate. However, the group came to realise that blame alone would not yield progress. It was time to stand up and take ownership and over the next six months the group agreed on a shared vision, purpose and goals for the future of their river.

The Action Plan forged from this process and launched in 2011 is a roadmap for achieving the Forum's goals. Identifying six key action areas and 131 tasks, it set some clear direction around what the Forum will do and when it will be achieved. Over time, some of these actions have proved unworkable, others have been added and a significant injection of funding from Central Government's Fresh Start for Fresh Water Clean-Up Fund has added impetus to a suite of eight. This funding has redirected energy into bigger and bolder projects, the results of which are starting to show through two years down the track.



Improving the state of the Manawatū River is very much a long-term project. No single action led to its current state and no single solution will fix it.

What we do know is that the Manawatū River and its catchment is one of the most heavily monitored in New Zealand. We have an in-depth understanding of the challenges it faces, allowing funding and effort to be directed to where it's needed most. We know there is plenty more work to do across the Catchment and results of many of the initiatives reported on will take years to show through. We also know this project is not one for Forum members alone. The River flows through us all and only through collective action will we make a lasting difference.

I urge you to take the time to read through this report. Look at what has been achieved, what is still to come and how you could play your part. The Forum has endeavoured to present a transparent and complete picture through its reporting. However, if you would like further information on any aspect please don't hesitate to get in touch via email to info@manawaturiver.co.nz and we will work to get this for you. On that note, I also encourage you to join the conversation via the Manawatū River Facebook page and Twitter feed.

You are a part of this journey. We are all part of the River and I look forward to being able to look back in the years to come at what has been achieved.

Richard Thompson
Independent Chair
Manawatū River Leaders' Forum





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Background

Early in 2010 the Chairman of Horizons Regional Council invited key leaders with an interest in the Manawatū River to meet and discuss its state. The leaders represented those sectors and groups that have an impact on or interest in the river including local government, iwi, farming, industry and environmental groups.

In August 2010 the members of the Manawatū River Leaders' Forum signed an Accord to take action to improve the state of the Manawatū River. The overall goal being to improve the Manawatū River, the mauri (life force) of the Manawatū River Catchment, such that it sustains fish species, and is suitable for contact recreation, in balance with the social, cultural and economic activities of the catchment community. This goal represents a community opportunity to develop leadership in catchment improvement and capture the social and economic benefits of such leadership.

SPECIFIC GOALS SET OUT IN THE ACCORD ARE:

- The Manawatū River becomes a source of regional pride and mana.
- Waterways in the Manawatū Catchment are safe, accessible, swimmable, and provide good recreation and food resources.
- The Manawatū Catchment and waterways are returned to a healthy condition.
- Sustainable use of the land and water resources of the Manawatū Catchment continues to underpin the economic prosperity of the Region.

One of the commitments set out in the Accord was to produce an Action Plan to be implemented by the Forum and its respective organisations. Developing this Action Plan required a significant investment of time, energy, resources and collaboration from the Forum members.



THE LEADERS IDENTIFIED SIX KEY PRIORITIES FOR THE RIVER:

- Sediment;
- Nutrients and bacteria from point source discharges;
- Nutrients and pathogens from agricultural run-off;
- Physical changes from flood control work;
- Protection of native fish and birds; and
- Management of water allocation.

From these six priorities an Action Plan of 131 tasks was developed and in June 2011 the Leaders launched their Action Plan to the community. More information on the Manawatū River Leaders' Accord, the Action Plan and the Freshwater Clean-Up Fund project for the Manawatū is available via the website www.manawaturiver.co.nz

To facilitate further water quality improvement work as a part of the Accord and Action Plan, Horizons Regional Council established a new targeted rate for the Manawatū Catchment. This provided for \$400,000 of new work per year to deliver on the goals of the Accord.

The first year of work using this rate was July 2011 to June 2012. In the second and third year of the rate being in existence this money leveraged further new money for activities to improve the water quality of the Manawatū.

The majority of the money for the Clean-Up Fund projects is coming from the three territorial authorities involved (Tararua, Manawatu and Horowhenua District Councils). These councils are completing sewage treatment plant upgrades including applying effluent to land. Horizons Regional Council and Dairy NZ are the other major funding partners.

Further co-funding is being provided by land owners and a range of other organisations to complete on the ground works as a part of the Clean-Up Fund. For example, over 60% of the cost for stream fencing projects in 2012-13 was met by landowners, with the remainder coming from the Clean-Up Fund programme funding from Horizons and the Ministry for Environment (MfE).



Our River, Our Stories

Since the launch of the Action Plan in 2011, a number of groups have worked in partnership to improve the state of our River. The next few pages highlight just a few of these projects with more information available at www.manawaturiver.co.nz

WHITEBAIT HABITAT RESTORATION AT WHIROKINO

Horizons and DOC are working with local iwi and landowners to restore precious whitebait habitat along the Manawātū River at Whirokino.

The inangā spawning site was identified during a workshop in March 2013 and is the largest known site in the North Island. Since this initial workshop, the parties have worked together to plant over 3,000 plants; providing shade and wind protection for the precious eggs.

Adult inangā migrate downstream during February and March to lay their eggs in the dense long grass along the river's edge. The eggs hatch during higher spring tides and are carried out to sea.

Several months later juvenile whitebait make their way back to the river where they live until they are ready to produce their own eggs.

However, it's not just whitebait that have benefitted from work at Whirokino. Horowhenua District Council has also installed two picnic tables downstream of the boat ramp and a sign is in place informing visitors about the project and inangā lifecycle.

Find out more about whitebait habitat restoration at Whirokino and see how you can get involved at www.manawaturiver.co.nz



Above: Muaupoko led planting day at Whirokino



STEWARDS OF THE LAND

Over the past few decades there's been a huge shift in the mindset of farmers around the impact of farming on water quality. All 930 dairy farms throughout the Manawatu-Wanganui Region have moved away from discharging treated effluent to rivers and streams in favour of land-based treatment and the significant contributions being made by landowners have boosted a stream fencing project on sheep and beef farms in the upper Manawatū and Makakahi sub-catchments.

The stream fencing project is one of a suite of eight River Accord projects to receive funding from Central Government's Fresh Start for Fresh Water Clean-Up Fund. It aims to complement work being carried out on dairy farms and its success to date has seen the project receive further funding achieved through efficiencies in other areas.

Overall the stream fencing project has completed 85.77 km of fencing across 70 jobs. Of this fencing, 46 percent is one, two or three wire and 54 percent is more substantial fencing. In the first 18 months, landowner contributions averaged 59% which is nearly double the predicted 33%.

Compliance among dairy farmers is on the rise, with 91% compliance achieved in 2011/12 and 93% in 2012/13. Horizons is also working in partnership with Dairy NZ and fertiliser companies, Ravensdown and Ballance, to help farmers achieve best practice nutrient management.

More information about the stream fencing project is contained within the Clean-Up Fund section of this report.



Above: An irrigator bucket test being carried out on the farm of Federated Farmers Dairy Vice-Chairman Andrew Hoggard.

Our River, Our Stories

ACCORD SCOOPS AWARD

The Manawatū River Leaders' Accord was recognised for its contribution to the environment as a winner in the 2013 Ministry for the Environment's Green Ribbon Awards.

The annual awards celebrate outstanding contributions by individuals, organisations, businesses and communities to restore and enhance New Zealand's environment.

As leaders of the Accord, Horizons Regional Council took out the Public Sector Leadership category. This is awarded for a project within the public sector that has made a measurable difference and/or resulted in environmental behaviour change.

Horizons chairman Bruce Gordon described the award as "representative of hard work by both Horizons Regional Council and the wider community through the Manawatū River Leaders' Accord".

"While changes in water quality are not quick to be measured, what we can measure are the actions taken by the community over the past two years.

"In this time we have seen parties with diverse interests come together, lay individual agendas to one side and unite with a shared vision of improving the Manawatū River. This collaboration is an achievement in itself and work is already well underway across the catchment to improve the state of our river," he said.



Above: At the Green Ribbon Awards, from left to right: MP for Palmerston North Iain Lees-Galloway, Horizons Chief Executive Michael McCartney, Manawatu River Leaders' Accord Chairman Richard Thompson, Horizons Chairman Bruce Gordon, Minister for the Environment Amy Adams.



OUR RIVER, OUR PEOPLE

Numerous projects are underway throughout the Catchment to improve the state of our River. Below are just a few images of the work that's being carried out.



Above: Chairman of the Manawatu River Leaders' Forum Richard Thompson takes a tour of the Dannevirke wastewater treatment plant



Above: International Conservation Volunteers work to help restore native habitat at Whitebait Creek



Above: Participants in the Tokomaru hikoi pause to take a photo

Fresh Start for Fresh Water

CLEAN-UP FUND PROJECTS

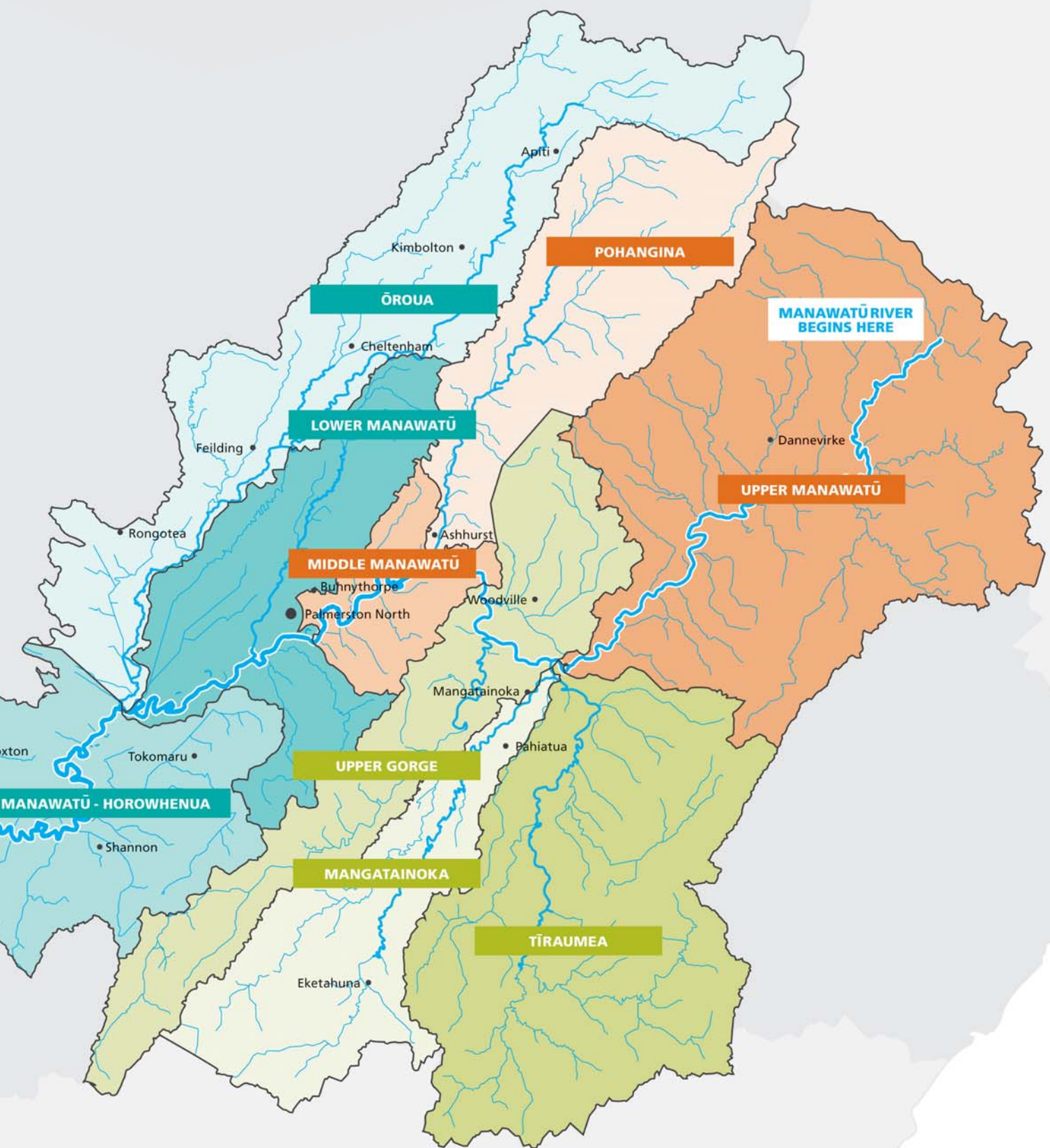
In March 2012 the Manawatū River Leaders' Forum was successful in its bid to Central Government's Fresh Start for Fresh Water Clean-Up Fund; receiving \$5.2 million worth of funding to assist in improving the River over a two-year period. This funding has been spread across a suite of eight projects selected for their capacity to make the biggest difference towards meeting Accord goals and ability to meet funding criteria. Many were chosen as they target tipping points in catchments where water quality standards are met upstream but not downstream of an activity.

The projects included in the final package had to meet strict criteria to receive funding. These selection criteria included:

- 50% co-funding between MfE and another agency such as Horizons, districts councils or Dairy NZ.
- Deliverable over a two year period.
- Able to deliver tangible outcomes determined through measurement and monitoring.

In its initial application, the Forum also requested funding for community and cultural health monitoring and for completing land treatment option assessments. These parts of the application were turned down as they did not meet the funding selection criteria. However, a number of iwi-led initiatives have received funding and support under the community involvement project.





CLEAN-UP FUND PROJECTS (CONTINUED)

1. TARARUA DISTRICT COUNCIL TOTAL COST: \$6,450,000

The Woodville, Dannevirke and Pahiatua wastewater treatment plants were targeted for improvement as they are major contributors to water quality in the streams or rivers to which they discharge. Work being undertaken at these sites includes lining ponds, installing additional treatment infrastructure and assessing options for land treatment with the overall aim of improving water quality downstream.

Where are things at?

Tararua District Council has commented that these upgrades are akin to completing 10 years worth of work in just three years. To date, pond lining has been completed at Woodville and baffles were installed there in early February 2014. Pond four is lined at Dannevirke and work on pond three is in progress. The resource consent for Woodville has been lodged and the consent for Pahiatua is on track to be lodged in April this year.

Options for land treatment have been investigated for all three sites and this is looking like a feasible option for Dannevirke. The Tararua District Council-owned aerodrome site was deemed unsuitable for land-based treatment due to limited land area, restrictions around operation of the adjoining airstrip and the topography between this site and wastewater treatment plant. However, the District Council has been following up other options on privately owned farmland and is currently working with two landowners along Dannevirke's Weber Road.

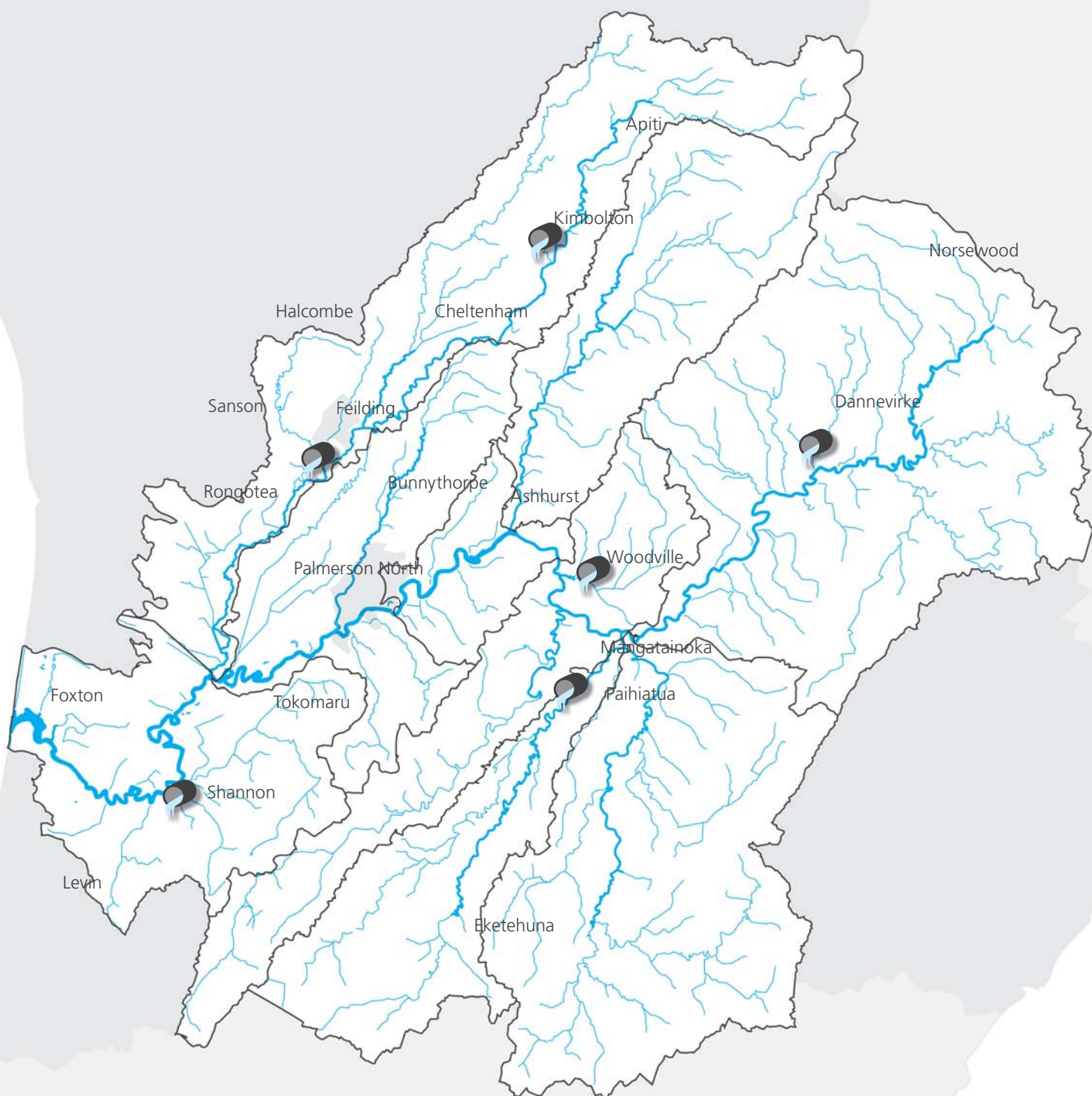
Additional funding through savings and interest accrued has been put into Tararua District Council projects. This will fund disc filter type treatment equipment for all three sites as well as further aerators at the sites. Ponds will also be deepened at the Dannevirke wastewater treatment plant, enabling wastewater to be stored during critical low flow periods rather than being discharged to the River. The deadline for completion has also been extended to November 2014 in recognition of the scale of these works.

2. MANAWATU DISTRICT COUNCIL TOTAL COST: \$11,350,000

The Kimbolton and Feilding wastewater treatment plants were targeted for improvement as they are two major point source discharges with measurable impact on water quality in the Ōroua catchment. Upgrades to these plants include the installation of two Actiflo clarifiers and a disc filter at the Feilding plant as well as process improvements and reed beds on the effluent pond at Kimbolton.

Where are things at?

A discharge consent application for the Feilding wastewater treatment plant was lodged in December 2013 with a hearing due July/August 2014. The conditions around effluent quality contained within this new resource consent for discharge into the Ōroua River will be significantly more stringent than current consent conditions to aid water quality downstream. In light of this, Manawatu District Council is currently undertaking a capital expenditure programme and land purchase to improve effluent quality; particularly in relation to nitrogen levels. They have completed all Ministry for the Environment (MfE) co-funded milestones for the Feilding plant and the additional treatment systems are performing well. Early monitoring results show improvement in levels of treatment at both sites.



KEY



Sewage Treatment Plant Upgrades

CLEAN-UP FUND PROJECTS (CONTINUED)

3. HOROWHENUA DISTRICT COUNCIL TOTAL COST: \$10,594,000

This project aimed to see discharge from the Shannon wastewater treatment plant go to land during low flows.

This project will lead to the Shannon discharge no longer having an effect on the River during low flows.

Where are things at?

Horowhenua District Council purchased Velvaleen Farm in 2012 for the purpose of land-based treatment. A consent application has been lodged for the Shannon wastewater treatment plant, submissions have now closed and this has been directly referred to the Environment Court. The Council has shifted its focus from only discharging to land during low flows to discharging to land during nearly all flows.

Following strong technical investigation and analysis, the Council concluded there would still be a need for some treated wastewater to be discharged to surface water. This is because the storage requirements to enable a full discharge to land are prohibitively expensive as they must cater for a worst case storm event. However, Horowhenua District Council is fully committed to optimising the amount of treated wastewater it can practically irrigate to land. The Council is committed to working with the community around this and have completed all MfE co-funded milestones for the Shannon project.

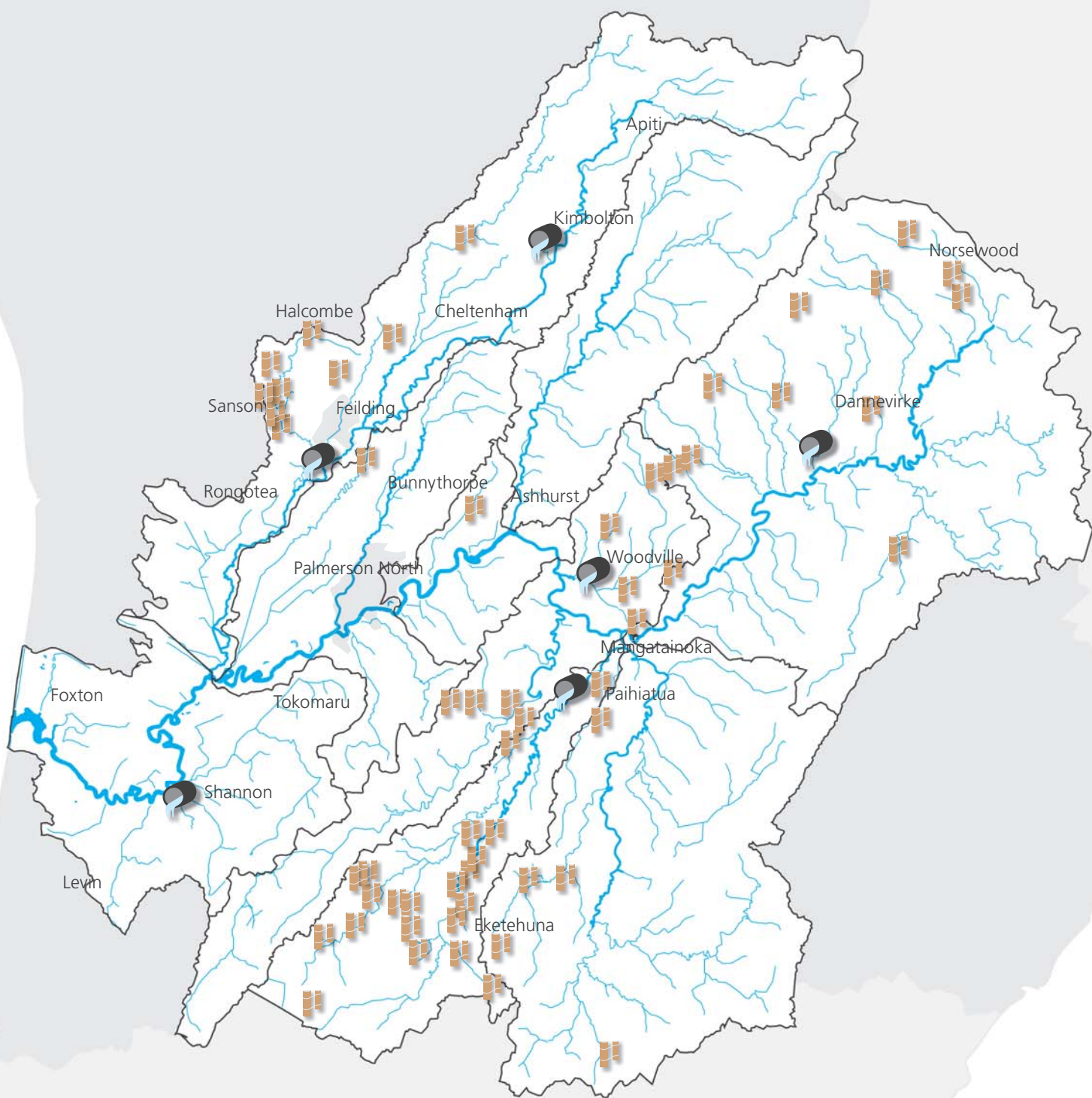
4. STREAM FENCING TOTAL COST: \$600,000

This project aims to exclude sheep and cattle from 200 km of waterways with the goal of lowering levels of bacteria, nutrients and sediment as well as improving native fish and trout populations. The 200 km target is based on two-wire fencing in the knowledge that if fencing is more substantial, less than 200 km may be delivered. There are a range of programmes to reduce bacteria levels in the Manawatū Catchment. However, there was no programme targeting the exclusion of non-dairy cattle from waterways in lowland areas. This project seeks to fill that gap and complement dairy initiatives by implementing a stream fencing programme targeting primarily sheep/beef farmers in the upper Manawatū and Makakahi and sub-catchments. These areas were identified as places where cattle access was causing elevated bacteria levels and where fencing would have additional benefits for important areas of aquatic habitat.

Where are things at?

Overall the stream fencing project has completed 85.77 km of fencing across 70 jobs. 46% of this fencing is one, two or three wire and 54% is more substantial fencing. This compares well to the target of 100 km/year of one or two wire fencing, or less fencing if more substantial fencing is installed. Landowner/external contributions in the 18 months of the project have averaged 59% which is nearly double the 33% forecast.

This means more physical works are being achieved per dollar of MfE and Horizons Regional Council investment. Commitments have been made to a further 95.7 km within the next six months with the project 103.4% subscribed in terms of funding available, (as at 31 December 2014). Experience shows that some jobs do not get completed and there is a waiting list of jobs ready to go as funding becomes available. Further funding achieved through savings in other areas has been made available for this project due to its significant positive impact and the substantial contributions being made by landowners.



KEY



Sewage Treatment Plant Upgrades



Stream Fencing

CLEAN-UP FUND PROJECTS (CONTINUED)

5. NATIVE FISH HABITAT RESTORATION TOTAL COST: \$160,000

The native fish habitat restoration project aimed to target at least two sub-catchments through the fencing of streams, removal of fish barriers and stream bank planting and maintenance. The project seeks an improvement in the number of native fish living in these areas.

Where are things at?

While this project initially set out to restore native fish habitat in two sub-catchments, it has gone well beyond this scope with 29 jobs completed across a range of sub-catchments. This work has involved 5.4 km of stream fencing and the planting of 31,532 plants including 10,000 eco-sourced plants grown for planting later in 2014. The project is well on track to hit the 6 km fencing target and has surpassed the target of 5000 native plants within the first 18 months. Over the next six months commitments include 6 fish pass projects, a further 5 km of fencing and planting of 15,355 plants.

6. WHITEBAIT HABITAT RESTORATION TOTAL COST: \$160,000

The whitebait habitat restoration project targeted habitat in at least two sub-catchments through the fencing of streams, removal of fish barriers and stream bank planting and maintenance.

This project will lead to more abundant whitebait populations and, in turn, an increase in the number of native adult fish.

Where are things at?

Again, this project has extended well beyond its initial scope to target both whitebait spawning and adult habitat across a range of sub-catchments. 28 jobs have been completed under the whitebait habitat restoration project

involving a total of 3.72 km of fencing, 7,800 native plants planted and one fish friendly flood gate installed. In the next six months a further 12 km of fencing is planned, 16,868 plants are scheduled to go in and three fish friendly flood gates will be installed. Work is continuing at the spawning site at Whirokino. Whirokino is the largest known whitebait spawning site in the North Island with enhancement efforts going into weed control and quality of spawning vegetation as well as ongoing maintenance to the plantings undertaken last winter. The whitebait budget is 105.7% allocated.

7. ENVIRONMENTAL FARM PLANS TOTAL COST: \$630,000

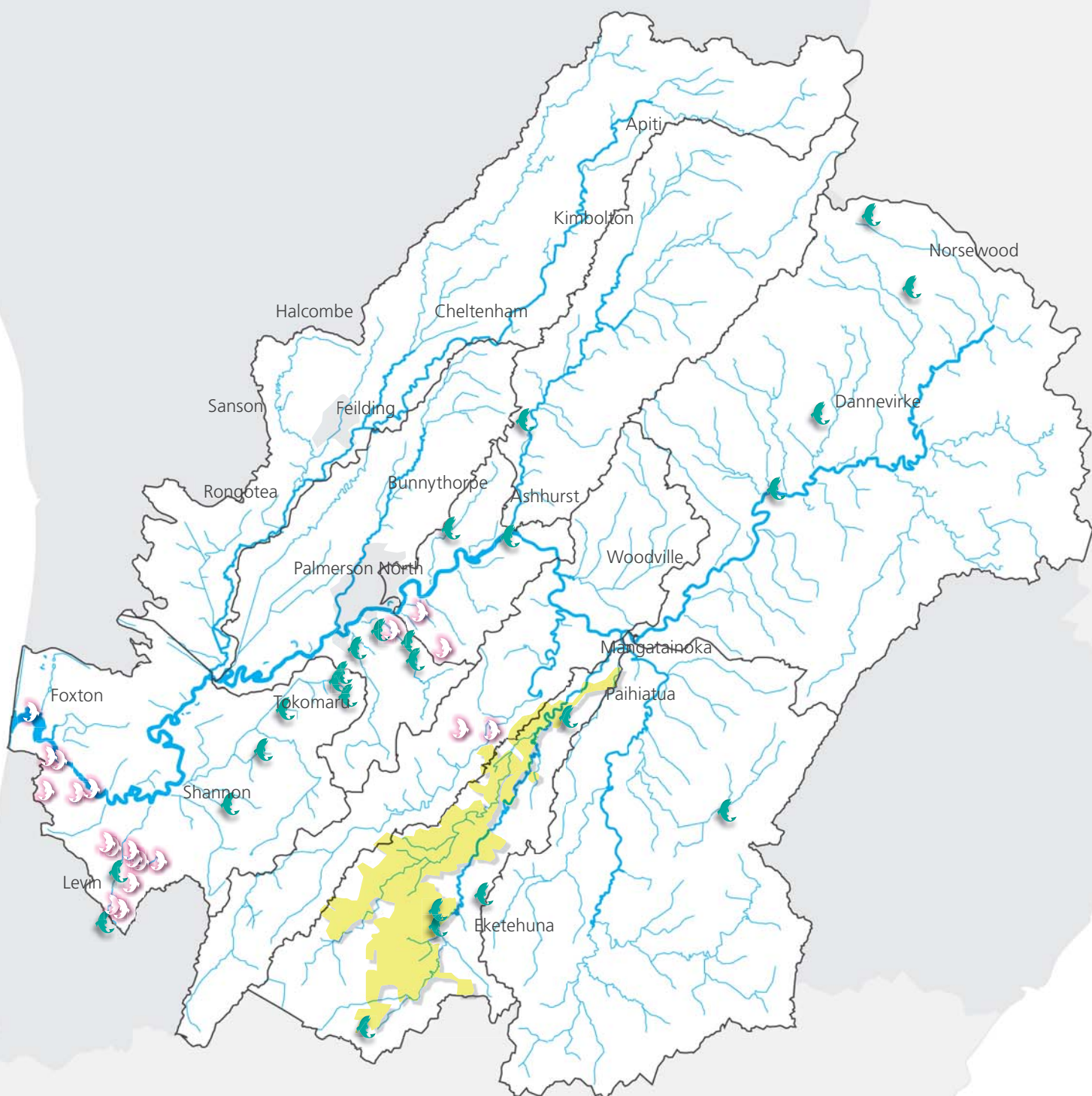
This project aimed to work with 60-80 dairy farmers in priority areas of the Manawatū catchment to help farmers achieve best practice in terms of nutrient management, water efficiency and riparian management.

Through the farm plans we expect to see a reduction in nutrient, bacteria and sediment loss from dairy farms which will lead to improved water quality in the catchment's waterways.

Where are things at?

This project targeted the Mangatainoka catchment to accelerate some of the regulatory requirements of the One Plan. The target of completing 80 Environmental Farm Plans by 31 March 2014 has been met and surpassed. Of the 85 dairy farms in the Mangatainoka catchment, 83 have signed up for Environmental Farm Plans. This project has also benefited from Dairy NZ funding and in-kind support from landowners and fertiliser companies Ballance and Ravensdown.

These farm plans have been produced more efficiently than initially thought, allowing Horizons' Rural Advisory and Dairy NZ staff to now work with farmers in Tiraumea and Pohangina to complete further plans.



KEY



Native Fish Habitat Restoration



Whitebait Habitat Restoration



Signed Up Environmental Farm Plans

CLEAN-UP FUND PROJECTS (CONTINUED)

8. COMMUNITY INVOLVEMENT

TOTAL COST: \$210,000

This project aimed to support at least eight community projects that are working towards improving the health and mauri of the Manawātū River.

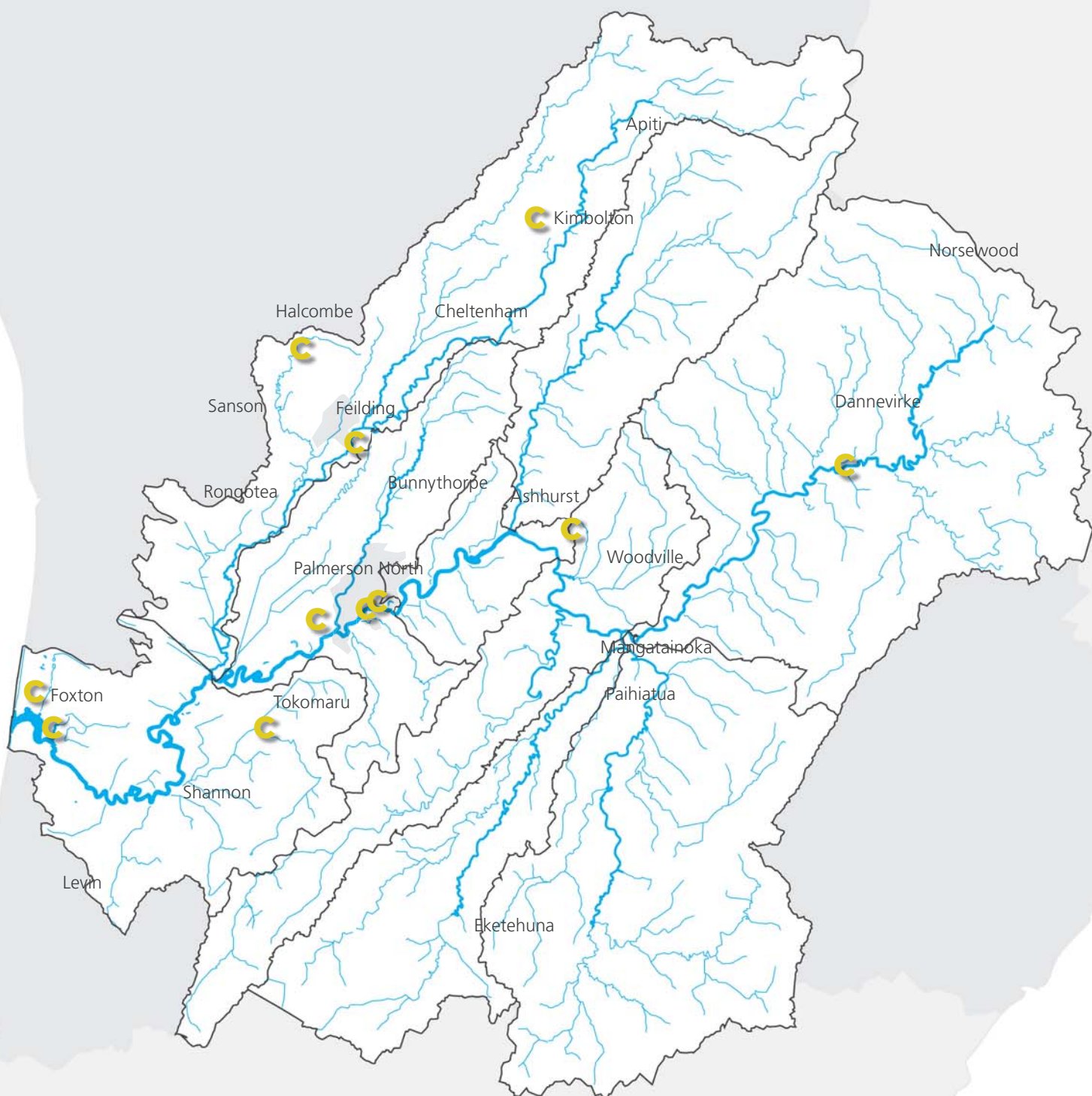
These projects provide the opportunity for the community to engage in the clean-up, tap into support and advice and accelerate the Forum's progress towards achieving the goals set out in the Accord.

Where are things at?


Ten community projects were funded in round one and a further five projects funded in round two (target four in year one, eight over two years). One of the community groups from round one has decided not to continue with their project so there is now a total of 14 community projects underway. Three projects have now been completed and reports have been received. The pressure is on for the remaining groups to complete their projects by June 30, 2014.

Projects that received funding are:

- Tanenuiarangi Manawatu Inc – River access enhancement project
- Reel Earth Film Festival – Te Awa education and awareness campaign – Complete
- NZ Landcare Trust – Mangaone catchment care project
- Taiao Ruakawa Environmental Resource Unit – Tokomaru hikoi
- Save Our River Trust – Planting of giant flax in the Foxton Loop
- Nga Kaitiaki o Ngati Kauwhata Inc – Pataka Kai-A Tuna project
- Nga Kaitiaki o Ngati Kauwhata Inc – Haynes Creek riparian planting project
- Te Kauru – Parahaki Island clean-up – Complete
- Tararua College – Mangatainoka propagation and planting project – Complete
- NZ Landcare Trust – Stoney Creek Riparian Enhancement and Community Involvement Project
- NZ Landcare Trust – Conservation Volunteers in the Manawatu
- Save Our River Trust – Native Planting Following Weed and Willow Removal
- Te Kauru – Parahaki Island Clean-up Phase 2
- Te Kauru – Kaitoki Weed Clearance and Walkway Establishment



KEY

 Community Projects



The Science

WATER QUALITY IN THE MANAWATŪ:

HOW DOES IT REALLY STACK UP?

As a part of the report back on progress made under the Manawatū River Leaders Accord, Horizons commissioned an independent report on the state and trends of water quality in the Manawatū Catchment. The authors of this report from Aqualinc, NIWA and Cawthron Institute were asked to determine whether the state of water quality was getting better or worse, to compare the state of the Manawatū Catchment's water quality with other sites around the country and to compare this with targets in regional planning documents or relevant national level documents.

The following pages provide a snapshot from this report. If you would like to read the full report please visit www.manawaturiver.co.nz or contact Horizons' Science Team on toll free 0508 800 800.

To view river information in relation to the Manawatū or other catchments please visit new national website www.lawa.org.nz. More information on Horizons' monitoring and the state of the Region's environment is available at www.horizons.govt.nz

Monitoring in the Manawatū

The Manawatū Catchment is one of the most heavily monitored and studied catchments in the country. While this hasn't always been the case, the expansion of Horizons Regional Council's monitoring network in 2007 is now providing valuable information on water quality and the pressures it is under.

The primary water quality monitoring network in the Manawatū collects monthly samples at 76 sites. Of these sites, 17 are positioned directly downstream of major point source discharges such as treated wastewater from towns or industrial discharges. The monitoring upstream and downstream of discharge points provides information for scientists to determine the impact of the point source discharges and if the discharges are improving in quality. It also enables calculation of how much of the nutrient in the river comes from these point sources and how much comes from other sources such as run-off from farms or other parts of the landscape, and whether the amount from these sources is getting better or worse.

Horizons also measures the amount of algae or periphyton present in rivers or streams. This is measured at 32 sites on a monthly basis and includes measurement of the potentially toxic cyanobacteria or blue-green algae. Bugs and insects are another important indicator of river health and annual monitoring is carried out at 31 sites to look at the number and type of invertebrates present.



To complement monthly and annual sampling, Horizons measures some aspects of water quality in the Manawatū on a continuous basis (every 15 minutes). This captures the daily variation in measures like water temperature (31 sites), dissolved oxygen (4 sites) and sediment (8 sites).

It is worth noting that some measures that were previously considered an issue in the Catchment, such as biological oxygen demand from discharges, are no longer measured on a widespread basis. This is because previous efforts to restore water quality have targeted this concern and several years of monitoring have confirmed it is no longer an issue other than for a few discrete point source sites in the Manawatū.

FINDINGS:

The report found some very clear patterns in the water quality data for the Manawatū Catchment.

Nutrients

The independent report showed that, overall, levels of nitrate and ammonia toxicity effects on aquatic life are not an issue in the Manawatū Catchment except at a few specific sites associated with point sources on occasion.

However, nutrient measures that are managed to control the growth of algae, such as periphyton, almost uniformly did not meet the targets in Horizons' regional plan, the One Plan. Of the sites measured, 77% failed to meet the targets for soluble inorganic nitrogen (SIN) and 71% failed to meet the targets for dissolved reactive phosphorus (DRP).

There was some good news about nutrients levels in the trend results. Of the six sites that had sufficient data to analyse trends over 20 years, three showed significant improvements in ammoniacal nitrogen, SIN and DRP and there was only one degrading trend which was for ammonia. Most of the sites analysed for 5 year trends also showed improvements in the SIN and DRP levels.

This is consistent with previous studies that have shown improving trends for these nutrients in the Manawatu-Wanganui Region. It is noted that improving phosphorus concentrations have been observed at many sites across New Zealand. However, decreasing nitrogen trends are relatively uncommon as nitrogen generally increases in response to increasing land use intensity such as conversion of sheep and beef to dairy farming.

Periphyton

The high proportion of sites failing to meet nutrient targets was consistent with the broad majority of sites failing to meet targets for two types of periphyton abundance (chlorophyll a and filamentous cover).

The overall periphyton trends for the last 5 years showed increasing levels of periphyton in the Catchment. This indicates degrading water quality. It is difficult to explain why periphyton abundance is increasing when nutrient levels, one of the primary drivers of periphyton abundance, are decreasing. Further analysis of some of the other primary drivers of periphyton abundance such as light temperature and flow may shed light on the causes of the observed trends.



The Science (continued)

Cyanobacteria

Cyanobacteria or blue-green algae in rivers can be toxic, particularly to dogs but can also be harmful to humans. In the Manawatū, 79% of the sites met the guidelines and all sites that failed had previously been identified as having experienced prolonged or intermittent benthic cyanobacteria blooms.

Toxicity testing has detected high levels of toxins. Monitoring in the Manawatū has determined that cyanobacteria blooms typically occur during stable flows (more than 10 days) combined with low phosphorus and elevated soluble inorganic nitrogen conditions in-river. Horizons is working closely with Cawthron Institute to further understand the mechanisms that influence cyanobacteria growth.

The data sets for cyanobacteria are only around 3 years old and are not sufficient to determine if cyanobacteria is becoming more prevalent.

Bugs and insects

The amount and types of insects living in the river are used to provide a score for the health of the river using a measure known as the macroinvertebrate community index or MCI. The Manawatū data showed 52% of the sites failed to meet the targets in the One Plan for this measure and the sites that failed were spread broadly throughout the catchment. It was notable that all of the sites in the Middle Manawatū and Pohangina sub-catchments meet the MCI targets.

Temperature

Analysis of the continuous temperature data was completed using methods proposed for the national objective framework.

The majority of sites were graded as State C in an average year which translates to being likely to exhibit some thermal stress that may affect the survival of certain sensitive insects and the absence of sensitive fish species. Five sites were categorised as below the proposed national bottom line in an average year.

The temperature results reflect the importance of managing temperature in the Catchment and that many of the monitoring sites are on relatively wide and shallow gravel-bed streams that have little effective shading and are prone to heating in summer.

Dissolved Oxygen

In 2007, the Dominion Post ran an article naming the Manawatū River as the worst in the Western World. This comment was based on modelling of information collected from a faulty dissolved oxygen sensor that, when used in ecosystem modelling, suggested very high levels of water pollution.

Current dissolved oxygen concentrations at the same site, as analysed in the independent report, indicate that it is affected by oxygen-demanding



substances but it is not grossly contaminated as previously reported. Results over the four continuous dissolved oxygen monitoring sites indicate occasional minor stress or a moderate level of stress associated with low dissolved oxygen levels in summer, with some risk to sensitive fish and invertebrate species.

Bacteria

The independent science report found bacteria levels do show an overall decreasing trend at state of environment monitoring sites.

When assessing bacteria levels, the report used a very strict assessment against the regional plan targets where if a site had tested above the threshold for *Escherichia coli* at any point during its five year sampling history it was deemed to fail. In light of this, only one site within the Manawatū Catchment met *E. coli* guidelines for the swimming season and the majority did not meet guidelines for year-round results.

The results show that bacteria is a key issue for the Manawatū River system, however they do not imply that the Manawatū is unsafe to swim in at all times. Being a larger river the Manawatū can take some time to recover after rainfall, but can still be suitable for swimming much of the time. More information on suitability for swimming can be found on Horizons' website www.horizons.govt.nz Search "safe swim spots" to locate results from the summer swim spots monitoring programme.

Water Clarity

Water clarity provides a measure of how far we can see through the water and is also important the ecology of the river particularly fish that rely on sight to find food.

Clarity also provides an indicator of the amount of sediment that is in the river. The analysis showed water clarity is an issue for the Manawatū, with all sites failing to meet the water clarity targets with no trends in the data other than one site showing degrading water clarity.

Comparison with other rivers nationally

Comparison of the data from the Manawatū Catchment with data from the 77 sites in the National Rivers Water Quality Monitoring Network (NRWQN) indicated that Manawatū sites have relatively poor water quality.

This is unsurprising and reflects that the NRWQN is broadly representative of large rivers in New Zealand. However, by comparison to many rivers in the national network the Manawatū has a very high proportion of land in productive use, towns and factories.

He manga wai koia kia kore e whitikia? Nothing ventured, nothing gained

KEY ACTIONS AND ACTIVITIES

Achieving the goals of the Accord, and making progress towards addressing the problems present in the Manawatū Catchment, will require considerable effort over a number of years.

We believe delivery of the following key actions across the Catchment will result in significant progress towards rehabilitation of the Manawatū River.

We will measure the effectiveness of these actions by maintaining and enhancing existing monitoring programmes.

THE KEY ACTIONS ARE:



Reduce sediment run-off from erosion prone farmland, the rural road network, and areas of major earthworks through:

- Implementation of the Sustainable Land Use Initiative (SLUI),
- Meeting resource consent conditions, compliance monitoring and enforcement, and
- Use of earthworks and road maintenance best management practices.



Reduce the nutrient and bacteria load from point source discharges through:

- Resolution of outstanding resource consent applications,
- Ensuring consented discharges meet regional plan water quality targets,
- Meeting resource consent conditions, compliance monitoring and enforcement, and
- Requiring and obtaining resource consents for storm water discharges.



Reduce the run-off of sediment, nutrients and pathogens from intensive land-uses such as dairying, horticulture and cropping through:

- Meeting resource consent conditions, compliance monitoring and enforcement,
- Meeting the Clean Streams Accord targets and successive schemes introduced by the dairy sector¹, and
- Adoption of Nutrient Management Plans and promotion of nutrient use efficiency.



Reduce the impact of flood control and drainage schemes on the physical character and natural processes of the Manawatū Catchment by:

- Ensuring all works are undertaken in accordance with relevant Codes of Practice,
- Meeting resource consent conditions, compliance monitoring and enforcement, and
- Making greater use of plants (particularly natives) in riparian zones.



Protect areas of habitat for native fish, birds and trout, and enable movement between these areas:

- Fencing and planting streams and bush/wetland areas, and controlling pests,
- Removing fish barriers (unless there are likely to be negative effects on native fish populations)²,
- Meeting resource consent conditions, compliance monitoring and enforcement.



Prevent over-allocation and use of the water resource by:

- Ensuring consented takes meet regional plan water allocation and efficiency of use standards,
- Meeting resource consent conditions, compliance monitoring and enforcement, and
- Metering and tele-metering of all major takes.

¹ The Dairying and Clean Streams Accord finished in 2012 and has been replaced by the Sustainable Dairying Water Accord

² In some cases fish barriers can help maintain native fish populations

ALLOCATION OF KEY ACTIONS TO SUB-CATCHMENTS

The Manawātū Catchment has been split into nine sub-catchments as set out below. These sub-catchments are all quite different in terms of their water quality, catchment health, and the factors influencing them.

Accordingly, it makes sense to vary how and where the key actions are applied across the Manawātū Catchment. The table below sets out what key actions are being applied in each sub-catchment.

KEY ACTIONS TO DEAL WITH CHALLENGES						
SUB-CATCHMENT	Sediment run-off	Point source discharges	Non-point source run-off	Loss of habitat for native fish, birds, and trout	Increasing demand for water	Physical modification of the river system
Upper Manawātū	✓	✓	✓	✓	✓	✓
Tiraumea	✓			✓		
Mangatainoka		✓	✓	✓	✓	✓
Upper Gorge		✓	✓	✓	✓	✓
Pohangina	✓		✓	✓	✓	✓
Middle Manawātū		✓	✓	✓	✓	✓
Lower Manawātū		✓	✓	✓	✓	✓
Ōroua	✓	✓	✓	✓	✓	✓
Coastal Manawātū-Horowhenua		✓	✓	✓	✓	✓

TASKS TO SUPPORT THE KEY ACTIONS AND ACCORD GOALS

The following table sets out the 131 tasks identified during the development of the Action Plan. The majority are currently underway and, in the pursuit of continual improvement, many of them are ongoing.

Over time, some of these actions have proved unworkable, others have been added and a significant injection of funding from Central

Government's Fresh Start for Fresh Water Clean-Up Fund has added impetus to a suite of eight.

This funding has redirected energy into bigger and bolder projects, the results of which are starting to show through two years down the track.





COLLABORATION

TASK	PARTNERS	PROGRESS	COMMENTS
<p>1. Explore opportunities for improved collaboration for river management. Examples where this could occur are:</p> <ul style="list-style-type: none"> • Providing a framework for river management schemes incorporating, for example, channelling/ water flows, limited modification of the River and consolidation of extraction sites, • Catchment care groups (see next task below), • Representation of hapū /iwi (see involvement of hapū/iwi below) • Joint projects • Shared research and monitoring 	<p>Horizons Regional Council, hapū/iwi, Fish & Game, and other Forum members. Leadership will vary depending on the project.</p>	<p>Hapū/iwi and Landcare <50% Complete,</p> <p>HRC >50% Complete,</p> <p>Integrated Freshwater Solutions >100% Complete, Action ongoing</p>	<p>Quarterly hui-a-iwi have been established for all hapū/iwi representatives on the Manawatū River Leaders' Forum with meetings held 3-4 times a year. These enable korero with Horizons Regional Council and facilitate opportunities for collaboration.</p> <p>A number of iwi and community projects, including the Taiao Raukawa-led Tokomaru River hikoi (including Ngāti Whakare of Shannon) and three Te Kauru projects, have received funding from the Forum and drawn on the knowledge of Forum members including Fish & Game, DOC and NZ Landcare Trust. Many of these projects are ongoing. Improved collaboration and river management has also been achieved through the Rangitaane o Manawatū Treaty of Waitangi settlement and Joint River Management Group.</p> <p>Massey University's 132.705 Applied Ecological Economics paper was based on the Manawatū River in 2013. This provided Masters students with information on issues associated with degraded water quality and mediated modelling (MM). Heike Schiele of the Massey based Intergrated Freshwater Solutions project has been involved in the development of a river management planning framework.</p> <p>Ngāti Kauwhata led the formation of a Catchment Car Group for the Ōroua River in April 2012 with the support of Manawatū District Mayor Margaret Kouvellis. Elected members of this group now meet bi-monthly in Feilding.</p> <p>Horizons Regional Council continues to facilitate the Manawatū River Leaders' Forum, contributes funding to community projects and led a successful bid to Central Government's Fresh Start for Fresh Water Clean-Up Fund.</p>

COLLABORATION (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
2. Establish a "Catchment Care Group" for each sub-catchment made up of key stakeholders from within the Accord partners and other parties that have an interest in those respective sub-catchment units. This Catchment Care Group (CCG) would be mandated by its respective community and would help prepare and assist with the implementation of a Catchment Management Plan.	<p>Federated Farmers (lead a pilot project in rural area in Taranaki district), Te Kāuru</p> <p>Hapū/iwi (lead a pilot project in Ōroua. Iwi with interests in this catchment include; Rangitāne o Manawatū and Ngāti Kauwhata)</p> <p>Vision Manawatū (explore options where facilitation might help)</p>	<p>Hapū/iwi <50% Complete, Federated Farmers</p> <p>- Not Started, Vision Manawatū</p> <p>- No Active Involvement, Action ongoing</p>	<p>Ngāti Kauwhata initiated the formation of the Ōroua Catchment Care Group (CCG) with support from Taiao Raukawa and Ngāti Raukawa ki te Tongā. This group meets bi-monthly and has instigated four major projects involving iwi, schools, community members, Federated Farmers, local and regional councils, Massey University and local businesses.</p> <p>Taiao Raukawa and Ngā Kaitiaki o Ngāti Kauwhata were active participants in a three year Integrated Freshwater Solutions project with Massey University. Key kaupapa included: increasing the number of hapū members interested in restoring the mauri and contributing to the monitoring programme and data collected formed the baseline for an action plan to improve the mauri of the Ōroua River through the CCG.</p> <p>Te Kauru is also in the early stages of forming a Catchment Car Group for the Kaitoki Stream.</p>
3. Discuss development of an Upper Gorge Management Plan.	Te Kāuru, Horizons Regional Council	HRC, Te Kāuru - <50% Complete, Action ongoing	This Te Kauru-led initiative is currently in the planning stages. Hui have been held and the plan will be shared with other iwi as a potential template for river management plans.
4. Discuss development of a Pohangina Catchment Management Plan in line with its cultural significance.	Rangitāne o Manawatū, Horizons Regional Council, hapū/iwi	<50% Complete, Action ongoing	<p>An advisory group has been established to oversee the affairs of Totara Reserve Regional Park.</p> <p>This group is made up of two Horizons elected members, two community members from the Pohangina Valley Community Board, two to three non-voting Horizons staff and two iwi members representing Rangitāne and Tanenuiarangi Manawatū Incorporated (TMI). More members can be co-opted as and when required. Cultural issues have been discussed in the asset management plan for Totara Reserve. The plan has been through a public submissions process and is ready for sign off by the Minister of Conservation.</p>
5. Investigate the establishment of community working groups for all town Sewage Treatment Plants and point source discharges by 2012	City and district councils	<p>MDC - Action no longer being undertaken,</p> <p>Other Councils <50% Complete</p>	Palmerston North City Council (PNCC) established a Wastewater Monitoring Group in 2004 for the Totara Rd Wastewater Treatment Plant and consent. A Community Focus Group has also been formed for Foxton to consider treatment and disposal options for the Foxton Sewage Treatment Plant. Community liaison for the Shannon Wastewater Treatment Plant has improved with key stakeholders and iwi now being engaged to consider the treatment upgrade for Shannon Wastewater.

COLLABORATION (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
6. Information sharing on best farm practices (nutrient management, stock exclusion, riparian planting).	Forum members	Integrated Freshwater Solutions - 100% Complete, Landcare Trust <50% Complete, TMI - Not Started, Action ongoing	Under the Integrated Freshwater Solutions project, Massey University students visited the No 1 Dairy Farm and heard from farmers around the Sustainable Land Use Initiative (SLUI) implementation and approach. Horizons Regional Council's Rural Advice, Land Management and Consents Monitoring teams are in constant conversation with landowners and industry around best practice as part of day-to-day activity. Landcare Trust and other Forum members are also heavily engaged in this task.

INVOLVEMENT OF HAPŪ/IWI

TASK	PARTNERS	PROGRESS	COMMENTS
7. Explore opportunities for better representation by hapū/iwi around the Manawatū River. Through this process specific hapū/iwi can and will be identified for specific reaches as determined by hapū/iwi and supported by Iwi Leadership Group members.	Horizons Regional Council, hapū/iwi, Office of Treaty Settlements, Department of Conservation	HRC, TMI and Te Kauru, DOC >50% Complete	<p>Manawatū hui-a-iwi are held 3-4 times a year, providing an opportunity for hapū/iwi to korero with Horizons Regional Council. Iwi have also held separate hui to develop a cultural management plan.</p> <p>Te Kauru have developed a river management planning framework which has been signed off by hapū. The Department of Conservation is continuing to engage with hapū/iwi. The Department is working alongside the Manawatū Kūkutuaki No.3 Sec. 2E5 Trust with the restoration work at Kereru Covenant which is a wetland site alongside the Koputaroa Stream. However, DOC intends to refocus its efforts on engaging with hapū/iwi around the Manawatū River.</p>
8. Discuss hapū/iwi resourcing of on-going involvement in improving water quality in the Manawatū Catchment.	hapū/iwi, Horizons Regional Council	Te Kauru and HRC >50% Complete	<p>A variety of community projects are underway and discussions have occurred both as part of hui-a-iwi and individually through the development of Memorandum of Partnerships. Resourcing has included sponsorship from Horizons for iwi to hold their own hui as part of developing a shared cultural area management plan. Iwi have also been successful in securing funding for projects under the Clean-Up Fund. However, there is still some frustration amongst iwi around the level of resourcing available for iwi involvement.</p> <p>The Forum's original application to Central Government's Fresh Start for Freshwater Clean-Up Fund did seek funding for initiatives such as cultural and community monitoring. Unfortunately these did not meet the criteria of the Fund.</p>

INVOLVEMENT OF HAPŪ/ IWI (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>9. Commence discussion within 12 months with the aim of completing discussion within 2 years and producing a Cultural Area Management Plan. This could involve:</p> <ul style="list-style-type: none"> Identifying area of cultural significance by 2012, Identifying threats/decline issues in respect to significant cultural areas by 2012, Developing a ranking system for culturally significant sites and implementing a restoration programme where practicable by 2014. (This is linked to implementation of significant site protection action below), Collaboration with other agencies/groups undertaking restoration projects started by 2011 and ongoing, Developing mechanisms to increase access to the river for recreation by 2015, Implementation of iwi protocols e.g. Rāhui by 2015, Implementation of new initiatives celebrating culture – e.g. the running of the eel by 2015 Keeping abreast with global best practice for waste water management and treatment, and Facilitation of hapū/iwi participation in research and promotion. 	Hapū/iwi, Horizons Regional Council, other councils	<p>MDC < 50% Complete,</p> <p>HRC > 50% Complete,</p> <p>Te Kauru and TMI - Not started, Action ongoing</p>	While a single Cultural Area Management Plan has not yet been developed, iwi are engaged and active at an individual level and as a wider group. Initiatives such as hui-a-iwi have facilitated discussion between hapū/iwi and Horizons. Horizons has also sponsored hui at an individual iwi level to identify what should be included in the development of a shared plan.

INVOLVEMENT OF HAPŪ/IWI (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
10. Discuss how to: <ul style="list-style-type: none"> Facilitate hapū/iwi participation in discussions around water allocation and ongoing consents management, Develop processes for inclusion of hapū/iwi engagement and Cultural Impacts Assessments in resource consents. Identification and implementation of wāhi tapu site protections actions by 2013. 	Hapū/iwi, Horizons Regional Council	Te Kauru - Not started, TMI and HRC >50% Complete, Action ongoing	The appointment of a new Horizons Policy Analyst – Iwi will aid iwi participation in discussions around water allocation and consents management. Iwi have been engaged around pending resource consent applications for Shannon's wastewater treatment plant and Manawatū District Council's wastewater treatment plant.
11. Discuss further ways to implement an absolute protection mechanism for wāhi tapu sites by 2011	Hapū/iwi, Horizons Regional Council	Te Kauru and TMI - Not Started, HRC >50% Complete, Action ongoing	Sites of Significance – Cultural have been identified in the development of Horizons' Regional Policy Statement the One Plan. While this mechanism for identifying culturally significant sites has been created it hasn't been widely taken up, likely because it was developed in advance of the River Accord. There is more work to do in this area as iwi work to clarify historical narratives and more sites can be added over time. This work can draw upon the series of hui from all iwi participants that occurred in late 2013.
12. Foster TLA collaboration on discharge management and minimisation by 2012/13. Implement hapū/iwi-TLA discharge collaborative framework	Hapū/iwi, Horizons Regional Council, other councils	MDC < 50% Complete, HRC >50% Complete, TMI - Not started, Action ongoing	Non-regulatory methods are being employed to aid discussion between territorial authorities and Horizons Regional Council such as the Regional Planning Forum held in February 2014. Horizons is also continuing to work with iwi around advice on consent applications.
13. Provide advice and financial assistance.	Horizons Regional Council	100% Complete, Action ongoing	Providing advice is part of Horizons' general business. Financial assistance is offered through community projects and memorandum of partnerships funding.
14. Upper Manawatū, Tiraumea, Mangatainoka and Upper Gorge: identify hapū and communication directory by 2012.	Hapū/iwi	Te Kauru - not started, TMI <50% Complete, Action ongoing	Iwi are continuing to work through this task.

SEDIMENT RUN-OFF

TASK	PARTNERS	PROGRESS	COMMENTS
15. Provide advice, Whole Farm Plans and financial assistance to farmers as part of the Sustainable Land Use Initiative (SLUI). The priority sub-catchments are: <ul style="list-style-type: none"> • Upper Manawatū • Tiraumea • Pohangina, and • Ōroua 	Horizons Regional Council, Te Kāuru, Rangitāne o Manawatū, Ngā Kaitiaki O Ngāti Kauwhata	HRC - 100% Complete, Rangitāne o Manawatū/TMI - Not started, Action ongoing	SLUI is an ongoing programme. Since its inception in 2006 this programme has completed over 500 Whole Farm Plans, 18,000 ha of works including 545 km of fencing. The four catchments mentioned are part of the top priority catchments for work under the SLUI programme.
16. Reduce sediment run-off from erosion prone land by using SLUI and other methods.	Hill country farmers		See above.
17. Promote the benefits and encourage uptake of SLUI to farmers.	Federated Farmers, Horizons Regional Council, other councils, all members of the Leaders' Forum	HRC - 100% Complete, Federated Farmers >50% Complete, Action ongoing	Horizons staff have the primary responsibility for promotion of this programme to landowners. Staff are supported by a SLUI Advisory Group (farming leaders, Fed Farmers, CRI, TLA mayors and others) who give advice to SLUI and feedback to landowners.
18. Manage the willow growth along the main stem of the Tiraumea River.	Horizons Regional Council, landowners	Not started	The original intention was to develop a "scheme or group" for willow control. However, due to a lack of community support this has not eventuated and willow control may end up being carried out on an ad hoc basis under landowners' individual SLUI Whole Farm Plans. This is unlikely to result in full river treatment.
19. Reduce sediment inputs from stream bank erosion through management of flood and erosion control schemes.	Horizons Regional Council	Action ongoing	Best practice 'practicable' sediment management is applied with all works. Sediment Management Plans are prepared and implemented in all schemes where consent conditions require.
20. Ensure all major earthworks activities (industrial and residential subdivisions, wind farm developments, etc) operate within resource consent conditions and to industry best practice guidelines	Horizons Regional Council	HRC >50% Complete, Action ongoing	In addition to certifying Erosion and Sediment Control Plans to ensure best practice is being proposed, Horizons staff also undertake periodic inspections of consented earthworks operations.
21. Maintain/reduce sediment run-off from Crown land through plant and animal pest control.	Department of Conservation	>50% Complete, Action ongoing	Since the signing of the Accord DOC has maintained its goat control regime across 20,000 ha of the Manawatū Headwaters and has maintained animal pest control in the Manawatū Gorge. DOC has also maintained plant and animal pest control in Koputaroa Scientific Reserve, Kereru Covenant and Awahou Conservation Area.

SEDIMENT RUN-OFF (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
22. Use good farm management practices.	Landowners	Action ongoing	
23. Maintain woody cover on erosion prone land (with policies and programmes).	Horizons Regional Council	100% Complete, Action ongoing	The rules in the One Plan around cultivation, vegetation clearance and land disturbance are being implemented.
24. Reduce sediment inputs from the rural road network as a result of storm events: <ul style="list-style-type: none"> • Improve stability of rural road network (dependent upon available funds), and • Continue to prevent slip debris being tipped into waterways. 	Tararua District Council and Manawatū District Council	MDC <50% Complete, Action ongoing	This is carried out within the confines of roading budgets and subject to maintenance and renewal programmes.

POINT SOURCE DISCHARGES

TASK	PARTNERS	PROGRESS	COMMENTS
25. Ensure all new resource consents for discharges to water are practical, enforceable, and meet current Regional Plan water quality requirements	Horizons Regional Council	100% Complete, Action ongoing	Carried out as part of standard practice.
26. All 10 consent applications for the larger discharges to the Manawatū River are resolved within 12 months of the Accord Action Plan becoming operative: <ul style="list-style-type: none"> • Eketahuna, Pāhiatua, Woodville wastewater, • DB Breweries Mangātainoka site, • Fonterra Pāhiatua site, • Aokautere wastewater, • Feilding, Longburn wastewater, • AFFCO Feilding site, and • Shannon wastewater. 	Horizons Regional Council, Tararua District Council, hapū/ iwi, DB Breweries, Fonterra, Te Kāuru, Palmerston North City Council, Manawatū District Council, AFFCO, Ngā Kaitiaki O Ngāti Kauwhata, Rangitāne o Manawatū, Horowhenua District Council, Ngāti Whakatere, Taiao Raukawa Environmental Trust	Fonterra and DB Breweries - 100% Complete - MDC, Rangitāne o Manawatū/TMI >50% Complete, HRC, HDC <50% - Complete, Action ongoing	This has not yet been achieved but work is progressing as follows: <ul style="list-style-type: none"> • Eketahuna wastewater - consent granted • Pāhiatua wastewater - revised application expected to be lodged in April • Woodville wastewater - application in, consent not yet granted • DB Breweries Mangātainoka site - complete • Fonterra Pāhiatua site - complete • Aokautere wastewater - joined to PNCC STP • Feilding wastewater - in progress • Longburn wastewater - to be joined to PNCC network by July • AFFCO Feilding site - application not yet in; substantial progress made to take discharge to land • Shannon wastewater - application in, at Environment Court.

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
27. Require all major discharges (>300m ³ /day) to be metered and tele-metered.	Horizons Regional Council	100% Complete	This has been implemented as a requirement of One Plan Policy 13-4.
28. Recent and ongoing PNCC actions that assist in improving the quality of the Manawatū river. Improvements to Wastewater Treatment and Disposal: <ul style="list-style-type: none"> • April 2011 - Connection of Aokautere Village to the City's wastewater network and decommissioning of oxidation ponds discharging to the river, • June 2011 - Connection of Longburn township ponds to the City's treatment plant, • July 2011 - Introduction of DRP charging for trade waste (commercial) users, • 2011/12 - Investigation of options for improving the impact of the Ashhurst wastewater discharge in line with consent ending in 2013, • 2011/12 - Actions implemented from Ashhurst wastewater investigation, • 2016 - Review of the Best Practicable Option (BPO) for treating and disposing of the City's wastewater with reporting to the Council and the public. (Half way through the consent period), • 2017-18 - Actions arising from the review of BPO, and • 2023- 28 - Consideration of the city's next developments in wastewater discharge and treatment in line with the prevailing water quality plan and land plan standards. 	Palmerston North City Council	>50% Complete	Connection to Aokautere Village - Complete Connection of Longburn township - Design complete - construction scheduled for July/August 2014 Introduction of DRP charging - in place Ashhurst Wastewater - New pipeline connection to city and decommissioning of river discharge - Scheduled for completion April 2014 Review BPO - to be undertaken in 2016

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>29. Specific point discharges:</p> <ul style="list-style-type: none"> Evaluating options for low flow/summer based ground disposal or irrigation of treated discharge for Dannevirke Wastewater Treatment system. The likely site is land owned by Council at the aerodrome (2010-11 year investigation, construction dependent on new Annual Plan), also the upgrade of the treatment process at Dannevirke to improve the quality of the discharge effluent, Removing one discharge point by combining the two treatment systems at Eketahuna into one (2010-11 Funded), This project is well underway and the Imhoff tank discharge will be removed by end of January 2011 meaning all Eketahuna waste stream will be processed through the ponds. They have the capacity to accommodate this, Renewal of discharge consents for Pāhiatua, Woodville and Eketahuna, that all involve upgrades to previous treatment (2010-11 Funded) Woodville Consent well underway with Consent renewal lodged with Horizons and work is continuing with the others, Separation of stormwater infiltration from SH drainage into Woodville's Wastewater network, as part of Woodville Main Street upgrade (2011-12 Funded) Conversion of Norsewood treated wastewater discharge from stream based to ground based discharge (2010-11 Funded). This project is underway along with a small pond upgrade, Working with Fonterra on Condensate Discharge Consent renewal – whether best practicable option is combining both treatment systems into one Discharge via Pāhiatua Wastewater Treatment. 	Tararua District Council	<50% Complete, Action ongoing	<p>After a series of investigations, the aerodrome site was deemed unsuitable due to the limited land area, the restrictions operating the adjoining airstrip and the topography between it and the WWTP. Tararua District Council has spent the last nine months following up other options on privately owned farmland.</p> <p>The Council currently working with two landowners on Weber Road, Dannevirke. They're also working to reline ponds. Dannevirke Pond 4 is complete. Pond 3 is in progress. Woodville Pond 2 is complete.</p> <p>The project to remove one discharge point by combining the two treatment systems at Eketahuna is complete.</p> <p>Woodville – Consent lodged Pahiatua – Consent will be lodged in April</p> <p>The separation of storm water infiltration from the SH network into Woodville's wastewater network is complete</p> <p>The remaining activities have not been started due to the demands of other wastewater projects.</p>

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>29. Specific point discharges: (continued)</p> <ul style="list-style-type: none"> Assessing all Urban Stormwater point discharges to allow an understanding of how many, where and what opportunities exist to combine and reduce number. We will be considering improvements to this outfall within the next LTP process. <p>Asset Management and operations:</p> <ul style="list-style-type: none"> Recruiting a 3 person operations and maintenance team in house for day-day operation and enhancement of wastewater and water treatment plants. Whilst the bulk of these roles is daily operation of each treatment plant, they will also ensure operational reporting under the relevant consents is up to date, implement on the ground the Draft and water demand management strategy for the relevant schemes, and carry out proactive maintenance such as scheme wide hydrant flushing (Air scouring, Pigging) as a programmed process once the Water networks are understood. (2010-11 Funded). 			<p>WECA have visited both the Woodville and Pahiatua sites to see current and planned improvements. They found these visits most informative and are looking forward to the next stage of resource consent applications.</p>
<p>30. Council has 2 wastewater treatment plants that currently discharge effluent to the Manawatū River. In recent months there has been a good level of technical and procedure discussion between staff at Horizons Regional Council and Horowhenua District Council.</p> <p><u>Shannon</u></p> <p>The actions specific to the consent for the Shannon wastewater treatment plant are:</p> <ul style="list-style-type: none"> Staff are to finalise the resource consent application for submission in mid April 2011, 	Horowhenua District Council	<50% Complete	<p>Shannon - HDC purchased Valvaleen Farm in 2012 for the purposes of land based treatment. The Best Practical Option (BPO) process concluded that regardless of the land area used for irrigation on Valvaleen Farm there would be a need to discharge some treated wastewater to a river tributary. Storage requirements enabling a full discharge to land are prohibitively expensive as they must cater for a worst case storm event. However HDC is committed to optimising the amount of treated wastewater it can practically irrigate to land.</p> <p>The timeframe to implement and gather data to assess the scope for system optimisation is one year because of the two year term of the consent sought to discharge to Stansell's Drain. This term cannot be extended under the RMA.</p>

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>30. (continued)</p> <ul style="list-style-type: none"> • The general format for the application will be for a short term consent to allow for development of a long term consent, and • The term of this consent is likely to be dependent on the findings of the modeling and how much land is required. • Consideration will be given to the availability of land for the purposes of land based treatment: • Consideration also needs to be given to the requirements of dairy companies, land based discharge on or adjacent to productive dairy units, and • Financial models to determine levels of affordability will be produced. <p><u>Foxton</u></p> <p>This plant serves a community of approximately 2,700 persons. A consent hearing with regard to this plant was held a couple of years prior to the development of the Action Plan with the requirement on HDC to ascertain the availability of land with a view to ensuing land based treatment within a three year period.</p> <p>There are no capacity constraints for the plant. Discussions have continued in earnest between staff of HDC and Horizons.</p> <p>HDC continues to confront the same issues as we do for Shannon with regard to availability of land and aspects of affordability.</p>	Horowhenua District Council	<50% Complete	Water and Environmental Care Association Inc (WECA) object to the current resource consent application on the grounds that it proposes a partial land-based system only, continues to seek a pipe into the river and seeks to irrigate a known flood-prone area. However, they feel HDC has been listening and support the trial of an irrigation system over a larger area of land. They do feel that this trial should be five years at minimum rather than the one year proposed to produce meaningful results.

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>31. Manawatū District Council is working with Palmerston North City Council to connect the Longburn wastewater to PNCC Wastewater Treatment Plant for treatment and disposal. The intention is to cease the point source discharge at the Longburn site once this connection is in place.</p> <p>MDC is applying for resource consent for the Feilding WWTP with the view of:</p> <ul style="list-style-type: none"> • Upgrading the Feilding Wastewater Treatment Plant to ensure reduction in ammonia and nitrogen levels, • Irrigating effluent during low river flows in the Ōroua River, thus reducing discharge into waterways, and • Obtaining additional land for effluent discharge/irrigation in the long-term. 	Manawatū District Council	>50% Complete	A discharge consent application was lodged for the Feilding WWTP in December 2013 with a hearing due July/August 2014. A CAPEX programme and land purchase is underway to improve effluent quality (nitrogen in particular). Post the boundary adjustment with PNCC, MDC is no longer involved with the connection of the Longburn wastewater system to PNCC.
<p>32. Set targets towards 100% compliance with resource consent conditions 100% of the time.</p>	City and district councils, industry	Manawatū District Council and Palmerston North City Council - 100% Complete, Action ongoing	TLAs and industry are working towards 100% compliance at all times. In the case of city and district councils, these targets are set out in Annual and Long-term Plans.
<p>33. Undertake resource consent compliance monitoring (quarterly for major discharges) and take enforcement action where breaches are detected.</p>	Horizons Regional Council	>50% Complete, Action ongoing	Discharges are monitored as per the compliance programme and conditions of resource consent
<p>34. Ensure all major urban areas have or obtain resource consent for their storm water discharge:</p> <ul style="list-style-type: none"> • Dannevirke, Pāhiatua, Woodville, • Ashhurst, Palmerston North, • Feilding, Longburn, and • Tokomaru, Shannon, Foxton and Foxton Beach. 	Horizons Regional Council and: Tararua District Council Palmerston North City Council Manawatū District Council Horowhenua District Council	<p>"MDC >50% Complete,</p> <p>HRC <50% Complete, Action ongoing</p>	This has not been achieved however progress is underway in some areas. Manawatū District Council lodged a discharge consent application for its Feilding wastewater treatment plant in December 2013 with a hearing scheduled for July/August 2013. Palmerston North City Council is also in discussions with Horizons about a global storm water consent for the city.

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
35. Upper Manawatū – investigate improvement for all sewage treatment on this part of the river with a particular focus on Dannevirke’s Sewage Treatment Plan.	Horizons Regional Council, Te Kāuru, Tararua District Council	HRC - 100% Complete, Te Kāuru <50% Complete, Action ongoing”	Iwi and councils agree this is progressing well. Investigation of possible improvements for Dannevirke and other plants are being carried out as part of the Clean-up Fund and specific investigations by Horizons.
36. Upper Gorge – investigate action required to improve high bacteria levels downstream of Woodville Sewage Treatment Plant.	Horizons Regional Council, Tararua District Council	HRC >50% Complete, Action ongoing	An upgrade of the Woodville Sewage Treatment Plant is in progress. The pond has been lined and the plant upgrade will be completed by the end of June. This includes the addition of UV disinfection.
37. Middle Manawatū - Investigate options to reduce influence of Ashhurst Sewage Treatment Plant on DRP levels at low flows.	Horizons Regional Council, PNCC	HRC >50% Complete, Action ongoing	PNCC have started work to transfer effluent from Ashhurst to Palmerston North. Pipes have been ordered and these are on their way.
38. Address the occurrence of toxic levels of ammonia downstream of the Feilding Sewage Treatment Plant. Manawatū District Council is applying for resource consent for the Feilding Wastewater Treatment Plant with the view of: <ul style="list-style-type: none"> Upgrading the Feilding WWTP to ensure reduction in ammonia and nitrogen levels, Irrigating effluent to land during low river flows in the Ōroua River, thus reducing discharge into waterways, and Obtaining additional land for effluent discharge/irrigation in the long-term. 	Horizons Regional Council, Manawatū District Council, NgāKaitiaki O Ngāti Kauwhata	MDC and HRC >50% Complete, Action ongoing	Manawatū District Council has invested heavily in upgrades to their sewage treatment plant, aided by Clean-Up Fund funding. A resource consent application was lodged with Horizons in December 2013 with a hearing due to take place in July/August 2014. A CAPEX programme and land purchase are underway to improve effluent quality (nitrogen in particular). Ngāti Kauwhata has expressed concerns regarding this latest application for continued discharge into the Ōroua River. However, they are willing to work collaboratively on sustainable solutions to improve the water quality of the Ōroua River to meet Iwi tikangā (values) me kawa (protocols).
39. Complete the renewal of land discharge consent for irrigation of factory wastewater including: <ul style="list-style-type: none"> Reduce predicted leaching of nitrogen to ground water by 48% at Longburn from 2012, Reduce protein losses in or wastewater discharge to the Manawatū River by 30% from 2012, Installation of additional treatment to remove phosphorus from discharges by 2014, and Utilisation of nitrogen inhibitors to further reduce nitrate leaching from the irrigation farms. Cost to Fonterra \$2m plus \$80k per annum.	Fonterra Longburn	100% Complete, Action ongoing	Renewal of land discharge consent for irrigation was completed in 2011 and Fonterra has complied with the consent conditions since its start. Targets around nitrogen to groundwater are part of these consent conditions. Research and trials are currently being undertaken for the removal of phosphorus and Fonterra Longburn is on track for compliance with target. Consent conditions state that nitrogen leaching inhibitors must be used if the application levels exceed 250 kg / ha. These levels have not been exceeded to date.

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
40. Complete the renewal of the condensate discharge consent. <ul style="list-style-type: none"> Propose to irrigate condensate during summer months. Discharge of condensate to the Mangātainoka during winter only. Reduce temperature of condensate from 50 to 35 degrees. Cost to Fonterra \$500k	Fonterra Pāhiatua	100% Complete, Action ongoing	Installation of new outfall currently is underway. A cooling facility is due for commissioning September 2014.
41. Continue to: <ul style="list-style-type: none"> Ensure complete compliance with resource consents, Actively review chemical use on site, Continue to look at initiatives to reduce losses of fats and proteins to wastewater, and Manage wastewater irrigation operations to ensure maximum treatment in the soil profile and reduce leaching. 	Fonterra	100% Complete, Action ongoing	Undertaken as part of ongoing management of consent conditions.
42. Silver Fern Farms Shannon will: <ul style="list-style-type: none"> Continue to comply with conditions of the recently improved consent to discharge treated wastewater to water (Consent No. 103931, year 2008), Continue to provide focus on the continuous improvement process as locked in the consent to discharge treated wastewater to water (Consent No. 103931, year 2008) by building on recent improvements to wastewater systems, and Bring forward the next scheduled independent assessment on Best Practicable Option as defined by condition 20A in the consent to discharge treated wastewater to water (Consent No. 103931, year 2008) 	Silver Fern Farms	N/A	Silver Fern Farms have been active members of the River Leaders' Forum but have now withdrawn with the closure of their plant at Shannon.

POINT SOURCE DISCHARGES (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>43. Complete the renewal of discharge consents for Tui Brewery within applicable time periods. Comply with resource consent conditions. Continue to:</p> <ul style="list-style-type: none"> • Work towards using phosphate free cleaning agents as technology evolves, • Actively reduce water consumption which reduces waste volumes, • Actively reduce effluent loading by removing surplus by-products, and • Improve management of the wastewater treatment plant to achieve further organic breakdown, nutrient absorption and aeration efficiencies. 	DB Breweries	>50% Complete, Action ongoing	Renewal of this consent has been completed and a 2020 renewal plan is in progress. Environmental effects, water conservation, by-product opportunities and energy efficiencies are all areas under continuous improvement and supported by DB Breweries' head office.
<p>44. Establish asset managers' forum to drive best practice. Could establish an ongoing continuous improvement project.</p> <p>Commitment to on-going exploration and use of appropriate knowledge, science and technology to improve wastewater treatment and improve water quality outcomes</p>	Industry, Horizons Regional Council, other councils	MDC - 100% Complete, HRC < 50% Complete, Action ongoing	No formal forum has been established. However, as wastewater treatment plants are upgraded asset managers are networking with one another, Water NZ and IPWEA (NZ).

NON-POINT SOURCE RUN OFF

TASK	PARTNERS	PROGRESS	COMMENTS
45. Continue discharging dairy shed effluent to land and retaining valuable nutrients to land previously lost to water. Work towards 100% compliance with resource consent conditions 100% of the time	Dairy farmers	50%, Action ongoing	100% of dairy farms within the Manawatū catchment have moved away from discharging dairy shed effluent to waterways in favour of land-based treatment. Dairy farmers within the Horizons Region achieved 93% compliance in 2012/13.
46. Initiate a pilot Landcare Trust catchment care project within the Tararua District. An initial meeting of landowners has been proposed for the 12 April 2011 to socialize the idea. A letter advising of the initial meeting was sent on the 30th March 2011. Follow up actions will depend on outcomes of the initial meeting.	Federated Farmers, NZ Landcare Trust, Te Kāuru	Action no longer being undertaken	<p>A meeting was held at Kumeroa School on 12 April 2011 where the decision was made to try and find a suitable smaller catchment instead of the proposal to plant on the Manawatū main stem. This was due to the unmeasurable nature of these plantings to water quality improvement.</p> <p>A second meeting was held in the Oroukiritaki catchment on 12 December 2011. This identified some individual landowners who were interested in planting, along with landowners who were struggling to see how planting and fencing work could be undertaken given the nature of their properties and the myriad of feeder streams in this area.</p> <p>Future work would require more in depth assessment of how to undertake work in a cost effective manner, ensuring no negative effects on existing infrastructure, while being sympathetic to farming operations in this catchment. Strong leadership and significant time commitment would be necessary to make something happen within this tributary. This is beyond the current regional capabilities of those involved.</p>
47. Ensure all resource consents for discharges of dairy shed effluent are practical, enforceable, and meet regulatory performance standards Undertake resource consent compliance monitoring (every dairy farm, every year) and take enforcement action where breaches are detected	Horizons Regional Council	100% Complete, Action ongoing	Standard conditions are used. All Farm Dairy Effluent consents are due to be inspected this year (2014).
48. Provide advice to dairy farmers on: <ul style="list-style-type: none"> • How to comply with their resource consent conditions, • How to exclude stock, and • Nutrient management. 	Horizons Regional Council	100% Complete, Action ongoing	This is an established Rural Advice Team service.

NON-POINT SOURCE RUN OFF (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
49. Every Farm Every Year programme will provide one-on-one support and advice for farmers that are identified as being at risk of non-compliance including advice on the capacity of the storage that may be required to reduce the risk of non-compliance.	Fonterra, DairyNZ	100% Complete, Action ongoing	Every Farm Every Year is now Supply Fonterra; a programme of on-farm initiatives to help grow and maintain a sustainable milk supply.
50. Appoint a new Fonterra Sustainable Dairying Advisor and a new Dairy NZ Effluent Specialist in the Horizons Region.	Fonterra, DairyNZ	100% Complete, Action ongoing	These appointments have been made.
51. Continue Dairy Link's programme of work including field days, communications and one-on-one support and advice.	Dairy Link	<50% Complete	The collective called "DairyLink" ceased 2012.
52. Promote the need to comply with resource consent conditions to dairy farmers.	Federated Farmers	>50% Complete, Action ongoing	Federated Farmers worked with Horizons on a number of articles and joint press releases in 2013 around the benefits of low application effluent systems.
53. Promote the benefits and encourage uptake of stock exclusion from waterways – particularly when accompanied by riparian planting	Federated Farmers	>50% Complete, Action ongoing	This is communicated as a regular message to members of Federated Farmers. It is now mandatory for all Fonterra Suppliers.
54. Provide funding assistance/incentives to dairy farmers to exclude stock from waterways	Horizons Regional Council	100% Complete	Horizons is still providing advice but not financial assistance with fencing on milking platforms.
55. Promote the need to meet Dairying and Clean Stream Accord targets and monitor the extent of progress towards them	Fonterra (with assistance in promotion from Federated Farmers)	Federated Farmers > 50% Complete, Fonterra - 100% Complete, Action ongoing	The Sustainable Dairying Water Accord is the successor to the Dairying Clean Streams Accord. Most of the Accord targets are included as conditions of supply to Fonterra.
56. Aim to reduce nutrient losses to streams and ground water to acceptable levels	Landowners and land users	Action ongoing	
57. Collect the existing nutrient management data from all farms in the Manawātū catchment (approx 600 farms) to develop a clear picture of where nutrient loss and nutrient use efficiency sits currently within the entire catchment. This will be achieved through using existing data from FMRA[2], using modelled data, or obtaining the information directly from the farmers. Commencing August 2011	Fonterra and Dairy NZ	>50% Complete, Action ongoing	This was launched on a voluntary basis in 2012 through Supply Fonterra.

NON-POINT SOURCE RUN OFF (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
58. Run a pilot programme in the Mangātainoka Catchment (approximately 60 farms) to validate the process of auditing the inputs of Overseer nutrient budgets. Information will be gathered from existing nutrient budgets and compared against audited nutrient budgets. Commencing August 2011	Fonterra and Dairy NZ	100% Complete	This will become a requirement for all suppliers via the Supply Fonterra Nitrogen Management Programme.
59. DairyLink Focus Farms: Run a project on 2 or 3 farms within the Manawatū catchment to demonstrate the implementation of best management practice across the farm system. The purpose of this project is to develop farmer understanding of best practice, create case studies that explore the cost-benefit of different mitigation technologies, and to engage farmers with practical examples of nutrient management in action. Commencing August 2011	Dairy Link	<50% Complete	This project ceased in late 2012/early 2013 prior to its completion.
60. Agree acceptable nutrient loss levels Agree a Nutrient Management Plan (NMP) template	Fonterra, DairyNZ, Federated Farmers, Horizons Regional Council	100% Complete, Action ongoing	A workable framework has been developed off the back of final One Plan deliberations. Many discussions were held between Horizons Regional Council and industry, particularly Dairy NZ, and refinement from experience is expected. One Plan rules around nutrient management are now being implemented.
61. Promote the benefits and uptake of Nutrient Management Plans (NMPs).	Fonterra, DairyNZ, Federated Farmers, other agencies (e.g: Horticulture NZ, Foundation for Arable Research)	>50% Complete, Action ongoing	NMPs are actively encouraged via work programmes by both Fonterra and DairyNZ. Benefits are communicated as a regular message to members of Federated Farmers and other agencies.

NON-POINT SOURCE RUN OFF (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
62. Continue other parts of the industry Effluent Management Programme. These include: <ul style="list-style-type: none"> • Implementation of a Code of Practice and Standards for effluent system design and installation across the effluent supply industry. • The development of an accreditation programme which will enable farmers to select service providers based on their ability to comply with the Code and Standards. • A similar Code is under development for the design and installation of storage facilities. • Develop a joint ownership model for the Horizons Storage Calculator on the proviso that this model underpins policy development going forward. 	Fonterra, Dairy NZ	100% Complete, Ongoing	DairyNZ developed the effluent industry design standards and a Code of Practice for on-farm effluent systems.
63. Investigate causes of high levels of bacteria in the Mākāhahi	Horizons Regional Council	100% Complete	A report of findings is currently in its draft form.

WATER ALLOCATION

TASK	PARTNERS	PROGRESS	COMMENTS
64. Ensure resource consents to take water are practical, enforceable, are within allocation limits, and meet regulatory efficiency standards	Horizons Regional Council	>50% Complete, Action ongoing	Horizons Regional Council ensures all new resource consents to take water are practical, enforceable and meet regulatory efficiency standards. Horizons has established allocation limits and water use efficiency criteria in the One Plan. The majority of the Manawatū Catchment is within water allocation limits and this proportion is increasing through work to resolve water management sub zones that are overallocated.
65. Require all major takes (>750m ³ /day) to be metered and tele-metered	Horizons Regional Council	100% Complete	<p>Horizons Regional Council requires all major takes to be telemetered under One Plan Policy 15-4. Horizons has an active programme to increase the number of takes that are telemetered. At a regional level over 70% of the consented allocation (excluding hydroelectricity) is automatically monitored via telemetry or other automated system.</p> <p>On a daily basis the water use information from these consents is transferred to Horizons, assessed for compliance and automated reporting is completed (including via publicly available websites).</p>

WATER ALLOCATION (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
66. Undertake resource consent compliance monitoring and take enforcement action where breaches are detected.	Horizons Regional Council	100% complete ongoing	This is standard practice for the Horizons Regional Council's Strategy and Regulation Team.
67. Provide advice to farmers on how to comply with their resource consent conditions. Promote use of the Smart Water on Dairy Farms kit.	Dairy NZ, Horizons	>50% Complete, Action ongoing	<p>Advice to farmers on how to comply with their resource consent conditions is provided by a range of Horizons staff. Primarily Horizons provides this advice through its Rural Advice Team that was established in October 2009. Since its inception, the Rural Advice Team has fielded 895 requests for advice, an average of 17 per month.</p> <p>Water use on dairy farm work has been through two major mechanisms. The first has been establishing consents for Dairy Farms water takes for stockwater and washdown where required. The second has been to support a PhD student investigating water use on dairy farms, this PhD work is led by Massey and DairyNZ. This PhD Student is aiming to measure water use on approximately 30 farms in each of three regions including the Manawatu-Wanganui Region.</p>
68. Recognise the Ōroua is under pressure from allocation. Investigate the opportunities for water harvesting etc. with the target of improving the fisheries of the Ōroua. Explore common catchment consent process through a Catchment Care Group.	Horizons Regional Council, hapū/iwi, Ōroua Catchment Care Group	>50% Complete	<p>Horizons Regional Council has established a new water allocation framework as part of One Plan. This has updated allocation limits and minimum flows for the Ōroua. The allocation framework for the Ōroua provides mechanisms for water storage and has a common catchment expiry mechanism for all water management zones of the Region.</p> <p>Ngāti Kauwhata/iwi commented they agree that the Ōroua is under pressure and are willing to work on positive solutions for the Ōroua River.</p>
69. Establish an advisory service to provide advice on efficiency of dairy shed effluent and irrigation systems.	Horizons Regional Council (in collaboration with other agencies e.g. Fonterra/ DairyLink/ Irrigation NZ)	100% Complete, Action ongoing	<p>An advisory service has been established. Horizons, DairyNZ and Fonterra have representatives available to provide this advice and the various agencies are in regular contact to ensure consistent advice is provided.</p> <p>Dairy Effluent application efficiency is now being measured as a standard part of some compliance visits and where farmers request it. Regular interaction with dairy industry on effective delivery.</p>

WATER ALLOCATION (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>70. Specific Takes:</p> <ul style="list-style-type: none"> Construction of >130,000m³ impounded supply for Dannevirke water supply, that forms part of renewed water consent (2010-11 Funded, Construction underway). This will allow the opportunity to take water in normal flows and buffer both the very turbid high flow and the short term low flow periods by using the capacity stored within the new impounded supply. Completion of the pipe connection to the new Pāhiatua Bore to minimise use of current stream intake from Mangātainoka River (2010-11 Funded). This project is underway and will be the main supply resource for Pāhiatua and therefore reduce both the demand and dependence on the river gallery take which will help to maintain river flows. Bringing Eketahuna Raw Water pipeline users back to original easement water use. 	Tararua District Council	>50% complete ongoing	<p>An impounded water supply has been completed and operational since November 2013</p> <p>Completed – Number 2 bore will be initiated later in 2014 and a storage reservoir also.</p> <p>TDC are working through Council decisions on the Eketahuna raw water pipeline made in the first half of 2014.</p>
<p>71. Complete draft Water Demand Management Strategies, that also pick up the move to include water harvesting, and more metering where practical for new properties, these will also have a public education component (leaflets, stalls at shows, school packs) all could be part of the process (2010-11 Funded).</p> <p>Under Asset Management to develop simple models of each network to allow demand, leakage, fire-flow, drinking water standards assessment and renewals programs to be developed with better understanding.</p>	Tararua District Council	>50% complete ongoing	<p>A Demand Management Water Conservation Plan has been completed. Education has been undertaken via a range of mechanisms including displays at the recent AMP show around water tanks for the collection of rainwater, along with promotion of water tanks in TDC Offices – on display and for sale.</p> <p>Dannevirke and Eketahuna have had leak detection work completed on intake line and urban reticulation.</p> <p>Woodville is in progress - awaiting a report.</p> <p>Pahiatua to be actioned 2014/15</p>

FLOOD AND DRAINAGE CONTROL SCHEMES

TASK	PARTNERS	PROGRESS	COMMENTS
72. Works undertaken as part of flood and erosion control schemes and drainage schemes will be done in accordance with regulatory standards and/or the minor river works and drain maintenance Codes of Practice	Horizons Regional Council, hapū/iwi	HRC, 100% Complete hapū/iwi <50% Complete, Action ongoing	Horizons Regional Council use either One Plan rules or Environmental Code of Practice for River Works guidelines in all works. There have been no breaches of conditions over the past 12 months Taiao Raukawa report this is not achieved yet with them. TMI report they have some pre-existing MOU's with Horizons in regards to the flood management works and consents. Ngāti Kauwhata report they agreed with this action and note the areas Armadale, Timoana, Aorangi & Kopane areas on the Ōroua River.
73. In river management consider the values (such as recreational, cultural, wāhi taongā, ecological) of the river as well as flood protection.	Horizons Regional Council, hapū/iwi	HRC >50% Complete, Te Kauru - Not Started, Action ongoing	Horizons has reviewed the policies and methods around management of flood protection and drainage works in the Region through the One Plan. This included establishing a comprehensive Environmental code of practice for management works in flood protection schemes.
74. Continue resource consent compliance monitoring, and take enforcement action where breaches are detected	Horizons Regional Council	<50% Complete, Action ongoing	Current monitoring is focusing on Horizons Operations stopbank works.
75. Expect 100% compliance with resource consent conditions and Code of Practice standards 100% of the time	Horizons Regional Council	100% Complete, Action ongoing	There has been no non-compliance within the past 12 months.
76. Enhance the use of suitable plants in riparian areas where they contribute to the achievement of the Accord goals.	Horizons Regional Council, landowners	Action ongoing	Extensive annual planting of willows and alders for lateral erosion control.
77. Make greater use of native species in plantings where possible, rather than just willows	Horizons Regional Council	Action ongoing	Approximately 12,500 native shrubs/trees have been planted in conjunction with river management activity within the past 12 months.

DEGRADED NATIVE BIRD AND FISH, AND TROUT HABITAT

TASK	PARTNERS	PROGRESS	COMMENTS
78. Establish a fresh water fishery group to advocate and advise on cultural and recreational fisheries and habitat in 2011	Hapū/iwi, Department of Conservation, Fish & Game, (Horizons Regional Council information only)	DOC <50% Complete, TMI - Not Started, Action ongoing	<p>Taiao Raukawa report this has been achieved to some degree</p> <p>Ngāti Kauwhata Iwi reports it has Iwi Management Plans to complete. Te Kauru report knowledge holders have been identified and the hui are yet to be arranged. TMI report they have not started.</p> <p>DOC report they have not established a specific group. However, DOC has strongly supported the work of the NZ Landcare Trust and Horizons in whitebait habitat restoration at Foxton Beach.</p> <p>DOC has also worked with Horizons to provide expertise on whitebait habitat restoration and identification and restoration of inangā spawning habitat. This included identifying the extent of the “saltwater wedge” in the Manawatū, to enable better identification and protection of whitebait spawning habitat.</p>
79. Where a Catchment Care Group (CCG) is established it is recommended they consider the following actions: <ul style="list-style-type: none"> • Identify an environmental indicator of river health in 2011 • Develop a program to restore the health of aquatic life in the river in 2011-2012 • Identify lowland habitat and develop an aquatic restoration plans at key sites (in place by 2020) • Implement habitat restoration programme at native fish spawning sites • Identify habitat on Department of Conservation held land and develop management plans • Improve habitat and remove fish barriers by 2012 • Maintain and create wetlands in targeted headwaters of the catchment and in river/stream environ floodways (in place by 2020) 	Catchment Care Group (where established)	>50% Complete, Action ongoing	<p>The Ōroua Catchment Care Group has been established for several years. The group holds regular meetings including reporting back to the community in public meetings.</p> <p>The group has established its priorities and has several projects underway through funding from landowners and the Freshwater Clean-up Fund community projects funding including the “Haynes Creek Project” and pataka kai-a-tuna projects both led by Ngāti Kauwhata and two projects led by NZ Landcare Trust “Mangāone West project” and the “Stoney Creek” project. He Tini Awa Trust have also supported work on the Colyton Stream that is being led by Ngāti Kauwhata.</p>

DEGRADED NATIVE BIRD AND FISH, AND TROUT HABITAT (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
80. Identify suitable mahingā kai restoration native fishery sites and implement restoration programs under Rangitāne O Manawatū tikangā and other hapū/iwi tikangā by 2014	CCG Rangitāne O Manawatū, Te Kāuru, hapū/iwi	<50% Complete Action ongoing	Achieved to some degree with Taiao Raukawa for Whitebait Creek. Te Kauru - Knowledge holders have been identified and hui to be arranged. Educational package proposal to be developed and put forward to Kura. TK is currently working on a Mahingā Kai site and restoration program at Parahaki Island. Restoration at Kaitoki and Bluff Rd Reserve. TMI - Initial discussions over the Kahuterawa yet no resourcing or funding to implement.
81. Ensure all resource consents issued for activities that have potential to impact on native fish and bird, and trout habitat are practical, enforceable, and meet regulatory performance standards	Horizons Regional Council	100% Complete, Action ongoing	Standard practice, native fish and trout habitat identified in the One Plan.
82. Continue resource consent compliance monitoring, and take enforcement action where breaches are detected.	Horizons Regional Council	<50% Complete, Action ongoing	Monitor WWTP discharges as part of compliance programme. Undertake periodic monitoring of gravel operations.
83. Protect and improve important in stream values including important native fish habitat (adult and spawning habitat)	Landowners	Action ongoing	Landowners have completed a lot of fencing work in the Manawatū Catchment including work by Dairy Farmers through the Clean Streams Accord and through the Tararua Fencing Campaign that Horizons led. Landowners have also been key contributors to work as a part of the Freshwater Clean-up Fund Stream Fencing, Native Fish and Whitebait habitat restoration projects completing over 90 kilometers of fencing and planting over 39,000 plants over the 18 months from July 2013 to December 2013. Landowners have also contributed via Horizons Sustainable Land Use Initiative which is working to reduce hill country erosion and its impacts on waterways of the Region.

DEGRADED NATIVE BIRD AND FISH, AND TROUT HABITAT (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>84. Identify native fish migration barriers and prioritise remediation unless likely to have negative effects on native fish populations.</p> <p>Relevant hapū/iwi to work with:</p> <p>(Upper Gorge) Makerua, Tokomaru and Mangāore Streams by 2014</p> <p>(Pohangina) by 2014</p>	<p>Horizons Regional Council, Department of Conservation, Catchment Care Groups (where established).</p> <p>Te Kāuru and Ngāti Whakare of Shannon, Rangitāne O Manawatū</p>	<p>Te Kauru - Not Started, DOC and HRC >50% Complete, Action ongoing</p>	<p>Horizons has completed a fish barriers identification report for the Manawatū Catchment in association with Massey University. The work identified around 95 fish barriers of which 16 were identified as high priority. Works to remediate these 16 have been undertaken in 2011/12. Further work has been undertaken by Horizons to identify fish barriers in the Manawatū over the 2012/2013 year via walking streams and prioritisation. Fish friendly gates and fish pass restoration is planned for eight locations in the Manawatū by June 2014.</p> <p>Te Kauru - Conversations have been had in this area, but it is still in the early phases of planning.</p> <p>TMI - Have not entered into discussions with Horizons.</p> <p>DOC has supported Taiao Raukawa leadership of 'Hapaitia te Mauri o te Wai' a collaborative community initiative to assess impacts on Tokomaru stream system and prepare management plan.</p>
<p>85. Provide advice and financial assistance to barrier owners to remove/overcome native fish migration barriers</p>	<p>Horizons Regional Council, Department of Conservation</p>	<p>DOC <50% complete, HRC -100% complete, ongoing</p>	<p>Horizons has committed \$160,000 toward Native fish and whitebait habitat restoration projects and recieved a further \$160,000 as a part of the Freshwater Clean-up Fund. This is topped up by Landowners and other agencies such a DOC and He Tini Awa Trust to complete work over the July 2012 to June 2014 period. Works completed to date reported elsewhere.</p> <p>In this report Horizons has eight fish barriers in the Manawatū programmed to be fixed by June 2014 and will continue to identify further barriers. Further to this, the funding by Horizons and the Clean-up Fund is contributing to a range of community projects. DOC is supporting Landcare Trust led projects at Whitebait Creek; Mangāone West Stream; Stoney Creek catchment.</p>
<p>86. Identify and prioritise for protection important native fish habitat</p>	<p>Horizons Regional Council, Department of Conservation, Fish & Game</p>	<p>DOC <50% Complete, HRC - 100% Complete, Action ongoing</p>	<p>DOC carried out Inangā spawning site surveys with Horizons in April 2013. Horizons is working in Kahuterawa, Turitea, Tokomaru and Koputaroa catchments as a priority for native fish habitat restoration but also completing work across the catchment as reported elsewhere in this document.</p>

DEGRADED NATIVE BIRD AND FISH, AND TROUT HABITAT (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
87. Promote the benefits and need to protect native fish	Horizons Regional Council, Department of Conservation, Fish & Game, Federated Farmers	Federated Farmers and DOC <50% Complete, HRC - 100% Complete, Action ongoing	DOC has provided some advocacy and education for native fish species as part of business as usual. e.g. through RMA processes, whitebait season communications and compliance, signage about native fish in the Manawatū Gorge, 'Fish feeding' sessions at Te Manawa as part of Conservation Week and providing education material about tuna for Ohingiati Kids Hunt. However, DOC has not undertaken any that focused solely on the Manawatū River. All Horizons-funded fencing and planting projects are done in a way to promote and protect native fish habitat. Opportunities have been taken to speak to a Forest & Bird evening to promote the protection of native fish.
88. Provide advice and assistance to landowners to protect areas of high priority native fish habitat	Horizons Regional Council, Department of Conservation	DOC <50% complete, HRC -100% complete, ongoing	Horizons is working with numerous landowners on habitat restoration projects for whitebait and native fish. 57 fencing and planting jobs have been completed as a part of the Clean-Up Fund project for Whitebait and Native Fish habitat projects over the 18 months from July 2012 to December 2013. DOC has no specific programme operating but has worked in with Horizons and landowners on some of the projects outlined above including the Whirokino inangā spawning ground which has been identified as likely to be the largest known spawning area in the country. DOC also has a national pest fish response programme and has undertaken significant work in the Region in the past. There are steps that DOC has in place and will follow if pest fish populations are encountered.
89. Identify Public Conservation Land adjoining the Manawatū River and its tributaries that is currently used for grazing, and examine the current fencing and riparian protection required in the relevant leases. Monitor and enforce white baiting regulations	Department of Conservation	<50% complete ongoing	Public conservation land and adjoining landowners identified. Some fencing issues identified and resolved (e.g. Moutoa), but work still required.

DEGRADED NATIVE BIRD AND FISH, AND TROUT HABITAT (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
90. Identify and prioritise high value bush remnants and wetlands	Horizons Regional Council, Department of Conservation	DOC < 50% Complete, HRC -100% Complete, Action ongoing	Nationally DOC has identified high value bush remnants and wetlands and pest management is being prioritised accordingly. The information as it relates to the Manawatū Accord River area has not yet been separately captured and provided to the Accord members. Horizons: <ul style="list-style-type: none"> Comprehensive assessments of the Manawatū for wetlands (2002-2004) and bush remnants (2007-2011) have been carried out and all of those sites have been prioritised. Since that time, the programme continues to identify new (to Horizons' knowledge) wetlands and bush remnants on an ad hoc basis and the sites are slotted into the priority list based on prioritisation systems for wetlands and bush remnants
91. Promote the benefits and need to protect bush remnants and wetlands	Federated Farmers, Horizons Regional Council, Department of Conservation, Fish & Game	Federated Farmers and DOC <50% Complete, HRC 100% Complete, Action ongoing	DOC regularly promotes the benefits and need to protect existing native habitats. DOC has undertaken some targeted engagement for Manawatū catchment members. One small example is a stall at the Manawatū Harvest Festival about restoration on private land (advice on pest & weed control, planting, etc). Horizons promotes benefits at Central Districts Field Days, Te Manawa exhibition, school visits and talks with individual landowners.
92. Provide advice and assistance to landowners to protect and manage high value bush remnants and wetlands	Horizons Regional Council, Department of Conservation, and other agencies e.g.: QEII Trust, He Tini Awa Trust	DOC < 50% Complete, HRC 100% Complete, Action ongoing	DOC can and does provide ad hoc advice to individuals who seek advice and assistance. See other action points also for specific examples. In the last 12 months, three high value bush remnants in the Manawatū Catchment have been added to Horizons' protected and managed list. They are Durie Bush, Kingsdale Bush and Midland Road Bush.
93. Provide advice and assistance to landowners wanting to create new wetland habitat	Fish & Game, Gamebird Habitat Trust	100%, Complete, Action ongoing	Fish & Game is providing advice to a number of sites on private land that are undertaking wetland enhancements. The sites in the Manawatū Catchment have received funding from Gamebird Habitat Trust.
94. Identify and prioritise important trout spawning habitat	Fish & Game, Horizons Regional Council	>50% Complete, Action ongoing	Trout spawning reaches are identified within the One Plan. These have not been prioritised.

DEGRADED NATIVE BIRD AND FISH, AND TROUT HABITAT (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
95. Provide advice and assistance to landowners to protect areas of high priority trout spawning habitat	Fish & Game, Horizons Regional Council	100% Complete, Action ongoing	Trout spawning areas have been identified in the One Plan so river works etc are excluded from these at spawning times. When requested advice is also provided to landowners about how to protect spawning habitat.
96. Continue project to protect blue duck (whio) in upper Ōroua sub-catchment	Department of Conservation in association with Manawatū Deerstalkers Association (and volunteers)	100% Complete, Action ongoing	DOC has continued to work with volunteers to protect the blue duck (whio) in the upper Ōroua sub-catchment. DOC has been providing bait, traps and funding advice for the group. DOC has also assisted with facilitation to get the involvement of the NZ Airforce for particularly difficult and/or remote drops. A census was carried out in the Ōroua and Pohangina Rivers, and shows numbers have increased by approximately 10% in the last 2 years. Young whio are now regularly seen on both rivers, and in other parts of the Ranges outside the Manawatū Catchment.

EDUCATION AND COMMUNITY AWARENESS

TASK	PARTNERS	PROGRESS	COMMENTS
97. Consult the community about the Accord and Action Plan during 2011	Horizons Regional Council	100% Complete	Consultation meetings were carried out at Massey University to establish the Action Plan in 2011. The community is also encouraged to provide comments and feedback via the Manawatū River website and Facebook page.
98. Update the community on progress with the Action Plan - ongoing	Leaders' Forum, Horizons Regional Council	100% Complete, Action ongoing	Progress updates have been communicated to the community via media releases, advertising features, the Manawatū River website, social media and events. Community meetings are also held, with a public meeting in Feilding every six months.
99. Establish an education programme. (Note this could include a programme targeted at behavioural changes on river use and encouraging protective management practices. A possible goal of this program could be a 50% increase of riverside natural habitat by 2020-2021.) Consider approaching Te Manawa regarding aspects of the exhibition on the Manawatū River and whether it can incorporate social and cultural values and be linked to the Accord goals.	Horizons Regional Council	>50% Complete, Action ongoing	The Waiora Resource booklet has been updated with the Waiora programme facilitated by Horizons. In 2012/13 seven schools participated in the programme with nine schools in 2013/14. Regular communication with Te Manawa and open events held there including the State of the Environment launch and the 2014 Progress Report Manawatū River Accord meeting.

EDUCATION AND COMMUNITY AWARENESS (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
100. Nominate the Leaders' Forum, Accord and Action Plan for a Green Ribbon Award	Leaders' Forum	100% Complete	The Green Ribbon Award was received for the Manawatū River Leaders' Accord in 2013.
101. Establish a Manawatū River website	Horizons Regional Council	100% Complete, Action ongoing	The Manawatū River website can be viewed at www.manawatūriver.co.nz
102. Make resource consent compliance results and rate information available to the public	Horizons Regional Council	100% Complete, Action ongoing	Reporting of resource consent compliance results and rate information is carried out via Horizons' Environment Committee reports.
103. Continue public education programme on native fish with a focus on the Manawatū River	Department of Conservation, hapū/iwi, Fish & Game	DOC <50% Complete, TMI - Not Started, Action ongoing	Public signage has been placed at Whitebait Creek. The DOC-led Manawatū Gorge Kiwi Ranger programme includes activities based on the river and education is a component of much outreach and volunteer work. DOC does not have a specific structured education programme about native fish.
104. Distribute information on the river, Accord and Action Plan through own networks	Department of Conservation, hapū/iwi, Fish & Game, Forest & Bird etc	Te Kauru > 50% Complete, DOC <50% Complete, Action ongoing"	Information is promoted via local newsletter and community networks (e.g. Environment Network Manawatū updates).
105. Run Federated Farmers Farm Days to show the sustainable environmental improvement work happening on farms.	Federated Farmers	100% Complete, Action ongoing	Federated Farmers ran several farm days, but these are now only held near the major cities.
106. Organise annual recreational / fishing days promoting Manawatū Catchment and advertise to wider public to encourage participation	Fish & Game	100% Complete, Action ongoing	A Childrens' Fish Out Day is held annually in Palmerston North (Hokowhitu Lagoon) to give junior anglers a taste of fishing for trout. The event is held over two days and in 2013 nearly 500 children caught a trout. Supervision was also provided by the Manawatū Freshwater Anglers for the next two weeks in the afternoon – which proved popular for young anglers. It also provided a focus for appreciating the wider environment of the Manawatū River and its fishing resources.

ACCESSIBILITY

TASK	PARTNERS	PROGRESS	COMMENTS
107. Promote the river access points that already exist (e.g. re-brand Fish & Game access signs and access maps, ensure maps are widely distributed and publicly available) and continue to improve access to outdoor recreation areas	Horizons Regional Council, city and district councils, Fish & Game, Vision Manawatū, Department of Conservation	MDC - <50% Complete and Action ongoing DOC, Fish & Game and HRC >50% Complete, Action ongoing	Manawatū District Council has a walkway/cycleway project underway in Feilding which will include enhanced signage and access to waterways - particularly the Ōroua River. Within the Ruahine Forest Park, DOC has put considerable effort into formalising access across private land over the past five years. There are over 20 “official” access points to the part of the Park within the Manawatū Catchment, and at least half of these cross private land. Most of these have formalised access, and those that don’t have strong informal agreements with DOC and landowners. These access points are well used by trampers and hunters. In 2011 Horizons created 10 signs in conjunction with Fish & Game and Iwi. These are located at river access points within the Manawatū catchment. Fish & Game also maintain a network of signs and information referring to public access sites that provide access to the river. While primarily focused on angling opportunity, the wider public also use this information to define public access opportunities. This information has also been incorporated onto the Fish & Game website maps and the Walking Access Commission’s website.
108. Identify where the community would like additional river access points, and work to make these a reality	City and district councils, Horizons Regional Council, landowners	<50% Complete, Action ongoing	Steps to the river have been installed in Palmerston North as part of the City Reach scheme. The community also has ample opportunity to submit to councils for additional river access. Requests will be dealt with on a case by case basis.
109. Apply to NZ Walking Access Commission Enhanced Access Fund for enhanced or new riverside walkways	Leaders’ Forum, Fish & Game Councils	<50% Complete, Action ongoing	Funding opportunities will be investigated as part of the Feilding walkway/cycleway project. Other funding avenues have been sought in the past including PNCC for the walkway to Ashhurst and through the City Reach scheme.

SAFETY

TASK	PARTNERS	PROGRESS	COMMENTS
110. Ensure that identified community swimming and boating spots are kept safe through the identification and removal of man-made hazards	Horizons Regional Council	100% Complete Action ongoing	Inspection of the navigable section of Manawatū River and tributaries is undertaken annually and various man-made hazards are removed. Recreational safety signage is maintained.
111. Issue warnings when water quality is unsafe for swimming	Horizons Regional Council	100% Complete Action ongoing	Warnings have been communicated as and when needed.
112. Analyse cyanobacteria samples from the catchment to assess toxicity to humans and animals	Horizons Regional Council	100% Complete Action ongoing	Analysis is completed in June of each financial year.
113. Undertake research to understand the conditions under which cyanobacteria blooms occur	Horizons Regional Council	100% Complete Action ongoing	Research has been undertaken.

INDICATORS AND MONITORING

TASK	PARTNERS	PROGRESS	COMMENTS
114. Continue to monitor water quality (physio-chemical and biological)	Horizons Regional Council	100% Complete Action ongoing	Monitoring at 76 River and Stream sites and 17 treated wastewater effluent systems is ongoing.
115. Increase monitoring in the catchment to include the KIWITEA, Mākino, Mangāone, lower Ōroua and Maewa Stream	Fish & Game, Ngā Kaitiaki O Ngāti Kauwhata Rangitāne O Manawatū, hapū/iwi	Not Started, Action ongoing	Ngā Kaitiaki O Ngāti Kauwhata -Agreed. The Maewa Stream up Makino Road has also been included. Rangitāne O Manawatū - TMI have not entered into discussions with other parties.
116. Develop a Cultural Health Index (CHI) for the Manawatū Catchment	Hapū/iwi with assistance of HRC	Taiao Raukawa, Ngāti Kauwhata, Te Kauru - Not Started, TMI >50% Complete, Action ongoing	TMI have an established cultural monitoring programme for several sites in the Manawatū Catchment through a programme developed with assistance from Landcare Research and Horizons. Taiao Raukawa - Not achieved as yet with Taiao Raukawa Ngāti Kauwhata - Agreed but must have iwi input!
117. Establishment of CHI sites and associated database by 2013	Hapū/iwi	Te Kauru <50% Complete, TMI >50% Complete, Action ongoing	TMI monitoring of several locations in the Manawatū Catchment underway. Taiao Raukawa - Not achieved as yet with Taiao Raukawa Ngāti Kauwhata - Agreed - for hapū and Iwi to decide and confirm

INDICATORS AND MONITORING (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
118. Implement groundwater monitoring programs to manage abstractions at wāhi tapu sites with populations of rare native fish e.g. Ōmarupāpako (Round Bush) reserve.	Catchment Care Group (when established), Rangitāne O Manawatū, Ngā hapū O Himatangi and Taiao Raukawa Environmental Trust	TMI - Not Started, Action ongoing	<p>Ngā Kaitiaki O Ngāti Kauwhata - As the Iwi authority - Ngā Kaitiaki Inc, on behalf of the Iwi members, in conjunction with neighbouring hapū and Iwi, desire to achieve their strategic goals and objectives to Y 2040</p> <p>Ngāti Kauwhata's strategic aspirations towards Y 2040, are based on four (4) pou pou or goals: namely Mana Ake, Mana Whenua, Mana Tangāta me Mana Iwi</p> <p>Ngāti Kauwhata and Ngā Kaitiaki Inc lacks capacity and resources to achieve their goals and aspirations, and would support HRC efforts to secure new funding for the Area</p> <p>Rangitāne O Manawatū / TMI - Have not entered into discussions with other parties.</p>
119. Utilise tools and resources such as the SHMAK (Stream Health Monitoring Kit) for community monitoring	Catchment Care Groups (where established)	Action ongoing	
120. Continue to build the MM (Mediated Modelling) and BBN (Bayesian Belief Model) models. For more info: www.ifs.org.nz	Integrated Freshwater Solutions research project	100% Complete	The MM has been used with students on the 132.705 Applied Ecological Economics. The BBN research did not progress due to lack of data for input. This was replaced with the MIMES model.
121. Refine the MM and BBN models informed by: <ul style="list-style-type: none"> Monitoring results More workshops on Accord goals n-going Forum activity Proposed workshops 2011: 22 June, 21 Sept, 02 Nov.	Integrated Freshwater Solutions research project	100% Complete	Workshops have been completed. Six publications and a PHD relating to the research findings will be finalised in 2014.

INDICATORS AND MONITORING (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
122. Continue to investigate trends in trout population and angler harvest overtime (trout catch rate)	Fish & Game	100% Complete, Action ongoing	<p>Trout populations are counted by drift divers in several of the tributaries of the Manawatū River including the Pohangina, Oroua, Makakahi, and Makuri rivers. This provides an indication of the fluctuations in population numbers of trout over the short and long term.</p> <p>Trout are tagged with a small identifying tag when caught and released. Information gathered when re-caught can give insight into growth rates and movement of trout in a river system. Otoliths (or inner ear bones) of trout are used to age the trout and this can be related to size parameters to get an estimate of growth, which in turn can give an insight into ecological health.</p> <p>Electric fishing sampling of juvenile trout has been undertaken on a number of tributaries of the Manawatū River to provide an indication of growth rates of juvenile fish which will then be potentially related to changes in stream water quality parameters. A quantitative study of fish numbers at sample sites was also undertaken in March 2014. This study is part of a wider study being coordinated by the Cawthron Institute.</p>
123. Enhanced monitoring of fish habitat	Horizons Regional Council, Department of Conservation, Fish & Game, Catchment Care Groups (where established)	HRC - 100% Complete, DOC <50% Complete, Action ongoing	<p>Horizons monitored 114 sites in the Manawatū catchment over the 2011/12 and 2012/13 monitoring seasons - some sites have been visited twice in that period</p> <p>Department of Conservation - DOC has continued monitoring of fish habitats, and enhanced monitoring in support of projects listed elsewhere in this report back.</p>
124. Investigate causes of poor water quality in the Mangātera.	Horizons Regional Council, Te Kāuru	100% Complete	<p>Horizons - Investigation has been undertaken with sampling at multiple locations throughout the Mangātera and its tributaries. The Dannevirke Wastewater ponds were found to be leaking and the lining of these is a part of the Freshwater Clean-up fund project along side other wastewater treatment plant upgrades at that site.</p> <p>Te Kāuru - Have not had any conversations regarding this as yet.</p>
125. Add further monitoring sites/s in reference locations (i.e upstream sites) and a site in the lower Ōroua	Horizons Regional Council	100% Complete, Action ongoing	<p>The Ōroua at Mangāwhata (Lower Ōroua) monitoring site was added in 2012. A new reference site (Makakahi at DOC boundary) was established in September 2013 for periphyton and physico-chemical sampling. Further sites were added between August and November 2013 sites at the bottom of the Turitea, Kahuterawa, Kiwitea, Mangātewainui and Koputaroa sub-zones</p>

INDICATORS AND MONITORING (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
126. Provide spatial information on farm location and stocking rates. The dairy industry is looking at monitoring individually and collectively with every farm monitored against a nutrient management plan so this information will become available.	Dairy NZ	Not reported	
127. Comply with RAMSAR requirements for monitoring the Estuary	Responsible agencies: Horizons Regional Council, Horowhenua District Council and Department of Conservation, with help from other agencies and groups e.g hapū/iwi Ornithological Society	100% Complete, Action ongoing	<p>Taiao Raukawa - Achieved to some degree with Taiao Raukawa Taiao Raukawa supported the Manawatū Estuary Trust's development of a Restoration Plan for the area. The Manawatū Estuary and catchment is ecologically significant to the region and holds considerable cultural significance to hapū of Ngāti Raukawa ki te Tonga. Aspirations of iwi and hapū from this area are to be included.</p> <p>Taiao Raukawa supports SORT and their activities</p> <p>Department of Conservation - All the requirements of the Manawatū Estuary's RAMSAR status were met, and reported to the International RAMSAR Secretariat. The RAMSAR Site Management plan, led by DOC, is near completion.</p> <p>Horizons - Limits for water quality in Estuaries has been set in Schedule H of the One Plan. Inangā spawning sites have been identified and either fencing or planting (or both) has occurred at these areas). Follow up inangā surveys were completed in March 2014.</p>

INDICATORS AND MONITORING (CONTINUED)

TASK	PARTNERS	PROGRESS	COMMENTS
<p>128. Develop suitable economic measures for the 4th Accord Goal:</p> <p>“Sustainable use of the land and water resources of the Manawatū Catchment continues to underpin the economic prosperity of the Region.”</p>	Federated Farmers Vision Manawatū, Fish & Game, hapū/iwi	<p>Federated Farmers, - Not started</p> <p>TMI <50% Complete</p> <p>Vision Manawatū Action ongoing</p> <p>Vision Manawatū TMI, Action not going-</p>	<p>Taiao Raukawa - Not achieved as yet with Taiao Raukawa. However, since developing this goal Taiao Raukawa (through its MTM project) have grown strong working relationship with Senior Landscape Architecture staff at Victoria University, Wellington.</p> <p>The MTM collaborative for freshwater systems into the marine in Horowhenua to Kāpiti are championing the Kei Uta Hinterland project. This research project looks at how we can use natural resources, especially water, to build sustainability, resilience, culture and social capital in the periphery of major cities and large towns.</p> <p>The project is: Holistic- where landscape design looks at the bigger picture and at the human scale concurrently; Integrative- where design integrates information from a wide range of diverse sources and integrates them into a coherent whole; Resilient- where design can future proof the built and natural environments by envisioning multiple scenarios, and Creative - where design encourages innovative thinking.</p> <p>Kei Uta Hinterland has invited Horizons Regional Council and Horowhenua District Council to be involved in the case study region. There are lessons and direct correlations with MRLA Forum and action.</p> <p>Ngāti Kauwhata - Iwi also have economic interests and economic values to add</p> <p>Te Kauru - TK would like to be informed about developments but not actively involved in the process</p> <p>Vision Manawatū - Vision Manawatū has yet to facilitate a meeting with the other parties</p>
<p>129. Make on-going use of the multi-disciplinary Science Advisory Group to improve knowledge base and resolve interpretation differences about data/information</p>	Leaders' Forum and Science Advisory Group		<p>The science advisory group has not been reutilised beyond its initial work to inform the leaders forum during the development of the Accord and the Action Plan. Regular updates on the monitoring information collected by Horizons have been provided to the Leaders' Forum on an annual basis. Iwi monitoring has also been reported to the Forum. A comprehensive independent science report has been commissioned by Horizons in 2014 to provide an update on the state and trends of water quality in the Manawatū Catchment.</p>

FUNDING

TASK	PARTNERS	PROGRESS	COMMENTS
130. Explore existing and potential new funding sources with central government when an opportunity arises	Leaders' Forum	100% Complete, Action ongoing	Fresh Start for Freshwater Funding, valued at \$5.2 million was sourced from Central Government to fund suite of eight projects. Accord partners are constantly seeking ways to further fund regional projects and find funding for groups and individuals so they can reach their environmental goals.
131. Seek alignment with national research programmes as a way to enhance funding	Leaders' Forum, Horizons Regional Council, others?	Integrated Freshwater Solutions <50% Complete, HRC 100% Complete, Action ongoing	Ngāti Kauwhata are seeking alignment with the Taiao Raukawa Environmental Trust and Iwi Leaders' Forum. Integrated Freshwater Solutions are working to include ecosystem services in the National Science Challenges. Horizons Regional Council has aligned with a range of national projects within the Region, for example Cawthron Institute, Landcare Research, Ag Research and Niwa.