

# Dairy Tomorrow environmental commitments:

## Tracking and progress

### Metric One

#### Achieve all farms implementing and reporting under a farm environment plan

Target: 100% by 2025

Progress as of December 2022:



### Metric Two

#### Farmers meeting or exceeding GFP "status"

#### Complete:

An update of the GFP industry guidance material and definitions of minimum standards deemed necessary to meet Good Farming Practice (GFP).

#### Target:

Number (or fraction) of farms at GFP for each Principle at sector and catchment level.

Note: progress information pending.

### Metric Three

#### Farmers with a Purchased Nitrogen Surplus report.

Target/limit: Collection, benchmarking and reporting of Purchased N Surplus across all dairy farmers by 31 May 2025.

Progress as of December 2022:



### Metric Four

#### Farmers monitoring their soil phosphorus status.

Target: All farmers monitoring and reporting soil phosphorus status from May 2023.

Progress as of 2019:  
Samples collected

50,555

### Metric Five

#### Farmers with a Greenhouse Gas Farm emissions report.

Target: All farmers know their greenhouse gas emissions by December 2022.

Progress as of December 2022:



### Metric Six

#### Farmers with a Greenhouse Gas Farm Environmental plan or module.

Target: All farmers have a written plan in place to manage their GHG emission by December 2024.

Progress as of December 2022:



# Dairy Tomorrow environmental commitments:

## Tracking and progress

### Metric One:

Achieve all farms implementing and reporting under a farm environment plan

Target: 100% by 2025

#### What is it and why we chose it:

Freshwater Farm Plans (FW-FPs) are a part of a farmers wider Farm Environment Plan. FWFPs identify activities which pose a risk to water quality, and actions to avoid, remedy or mitigate adverse effects. They are tailored to reflect farm geography, systems and farmer aspirations, and underpinned by sector agreed minimum criteria that should be met by all farmers (GFP status).

#### What we committed to:

- By 2025, achieve all farms implementing and reporting under a farm environment plan
- Number (or fraction) of farms with plans by farm plan status (No, yes, yes updated in last 3 years, yes audited (audit grade/score)) at sector and catchment level

### Progress

69%

December 2022  
7437 of 10765 farms

64%

August 2022  
6913 of 10755 farms

56%

December 2021  
6076 of 10765 farms

48%

August 2021  
5268 of 10892 farms

32%

May 2021  
3525 of 10895 farms

33%

May 2020  
2990 of 9194 farms  
we had data for

21%

May 2019  
1977 of 9446 farms  
we had data for

10%

May 2018  
1011 of 9760 farms  
we had data for

## Metric One continued:

### Key Milestones

By 31 May 2021

# 20%

20% of all dairy farmers have documented and commenced implementation of a FW-FP

Nationally:  
May 2021: 3525 of 10895 = 32%

By 31 May 2022

# 40%

40% of all dairy farmers have documented and commenced implementation of a FW-FP

Nationally:  
Aug 2021: 5268 of 10892 = 48%  
Dec 2021: 6076 of 10765 = 56%

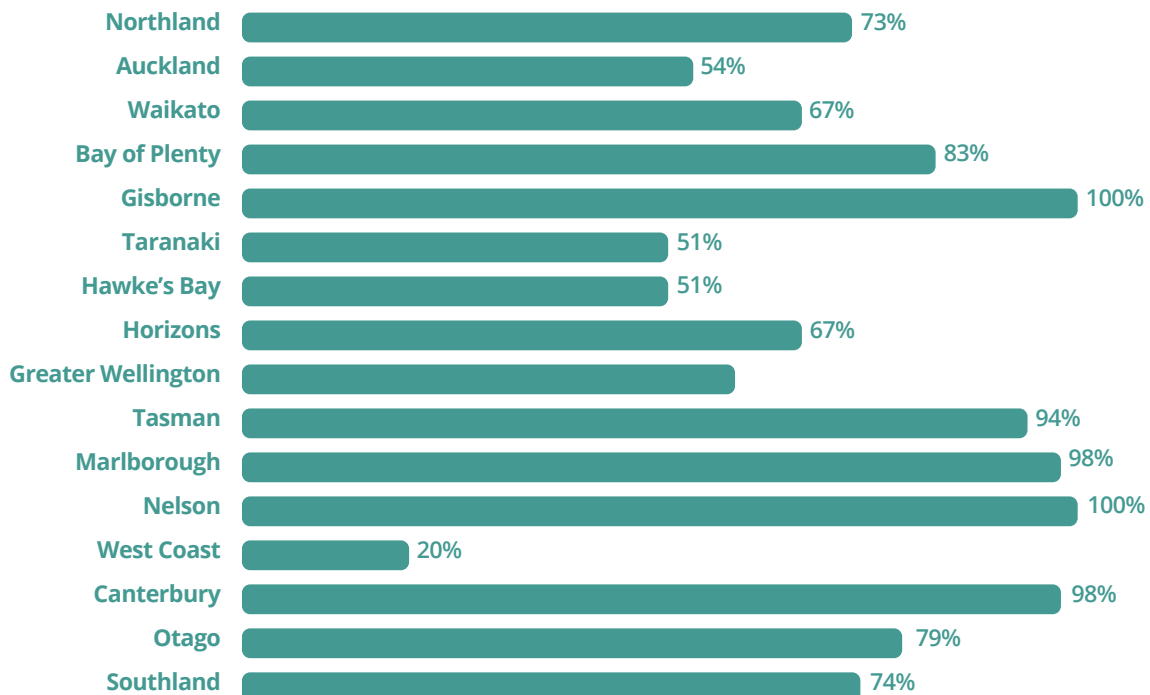
By 31 May 2023

# 60%

60% of all dairy farmers have documented and commenced implementation of a FW-FP

Nationally:  
Aug 2022: 6913 of 10755 = 64%  
Dec 2022: 7437 of 10765 = 69%

**Dec 2022: 7437 of 10765 = 69%**



By 31 May 2024

# 80%

80% of all dairy farmers have documented and commenced implementation of a FW-FP

By 31 May 2025

All dairy farmers have documented and commenced implementation of a FW-FP



# Dairy Tomorrow environmental commitments:

## Tracking and progress

### Metric Two:

### Farmers meeting or exceeding GFP “status”.

#### Target:

An update of the GFP industry guidance material and definitions of minimum standards deemed necessary to meet Good Farming Practice (GFP).

**Milestone: 31 May 2021**

**Progress: Complete**

#### Target:

Number (or fraction) of farms at GFP for each Principle at sector and catchment level.

Note: progress information pending.

#### What is it and why we chose it:

The GFP framework sets out clear requirements farmers need to achieve to meet environmental good farming practice. It links farmers to guidance and advice and gives farmers clarity on how they're performing, where more work is needed, and how they are tracking. It helps us understand how the sector is tracking towards meeting GFP.

It's ambitious – we don't expect all farmers to be at GFP immediately. GFPs focus on 10 key areas for environmental management. Dairy companies, DairyNZ and farm advisers will work with farmers to support them on this journey.

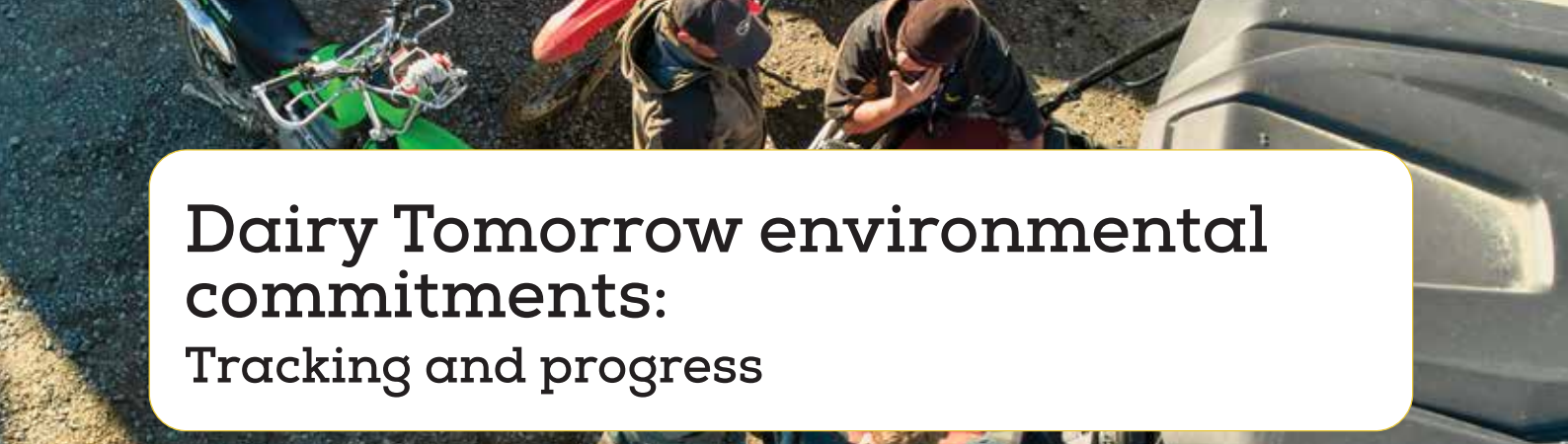
#### What we committed to:

- Development of GFP sector guidance and definitions of standards deemed necessary to measure if a farm meets, or exceeds GFP across 23 management Principles (e.g., effluent management, waterway management, nutrient management)
- Reporting the number (or fraction) of farms at GFP for each Principle at sector and catchment level

#### How are we tracking:

- Completion of dairy specific GFP guidance, definitions and standards across 23 Principles and 10 key areas for environmental management
- Work is underway by all dairy companies to set up their systems and processes through Farm Environment Plans to monitor and report annually farmer progress





# Dairy Tomorrow environmental commitments:

## Tracking and progress

### Metric Three:

#### Farmers with a Purchased Nitrogen Surplus report.

#### Target/limit:

Collection, benchmarking and reporting of Purchased N Surplus across all dairy farmers by 31 May 2025.

#### Purchased Nitrogen surplus limits:

- 80% of farmers are less than the benchmark limit by November 2023
- 85% of farmers are less than the benchmark limit by November 2024
- 90% of farmers are less than the benchmark limit by November 2025
- 95% of farmers are less than the benchmark limit by November 2026

#### What is it and why we chose it:

Purchased Nitrogen Surplus (PNS) is the sum of nitrogen inputs used for production on-farm (e.g., fertiliser, imported feed) minus the nitrogen removed from the farm as products (e.g., milk, meat, crops, supplement sold). It's a simple equation farmers relate to. The greater the surplus, the greater the amount of nitrogen there is to be lost from the system. Our 75th percentile or upper quartile target will mean 25% of dairy farms will have a Purchased Nitrogen Surplus higher than the benchmark and will need to reduce it to be at or below the benchmark.

#### What we committed to:

- collection of data to inform PNS calculation for the proceeding season from 95% of dairy farmers by May 2021
- development of a PNS benchmarking system by November 2021
- PNS information available to 95% of farmers by November 2021
- setting of a PNS limit by November 2021
- 80% of farmers are less than the benchmark limit by November 2023
- 85% of farmers are less than the benchmark limit by November 2024
- 90% of farmers are less than the benchmark limit by November 2025
- 95% of farmers are less than the benchmark limit by November 2026
- Average Purchased N Surplus (and trend) at sector and catchment level.

#### How are we tracking:

- 84% of farmers received a PNS report by November 2021. 94% of farmers received a PNS report by November 2022
- PNS benchmarking system was developed by March 2022
- PNS limit was set by March 2022
- The farms PNS must be at or below the national upper quartile benchmark; an annual value is used for farm calculations and a 3-year fixed average (using national data) from 2019-20 to 2021-22 is used for the upper quartile benchmark
- The PNS target is 141 kg N/ha

## Metric Three Continued:

### Key Milestones

May 2021

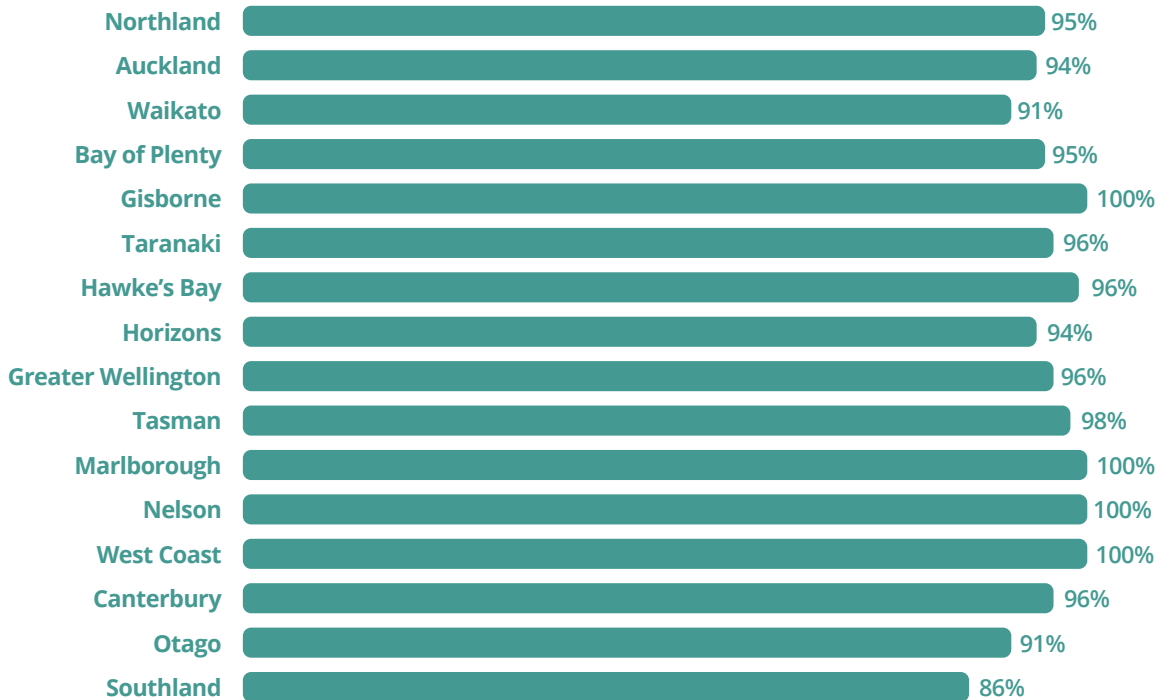
# 95%

PNS information available to 95% of farmers for the proceeding season. Number of farms reporting Purchased N Surplus at sector and catchment level.

**Nationally:**

**May 2021: 3525 of 10895 = 32% • Dec 2022: 10106 of 10756 = 94%**

December 2022:



By Nov 2021

### Development of a PNS benchmarking system

PNS benchmarking system was developed by March 2022.

By Nov 2021

### Setting of a PNS target

PNS benchmarking system was developed by March 2022.

The farms PNS must be at or below the national upper quartile benchmark; an annual value is used for farm calculations and a 3-year fixed average (using national data) from 2019-20 to 2021-22 is used for the upper quartile benchmark. The PNS target is 141 kg N/ha.

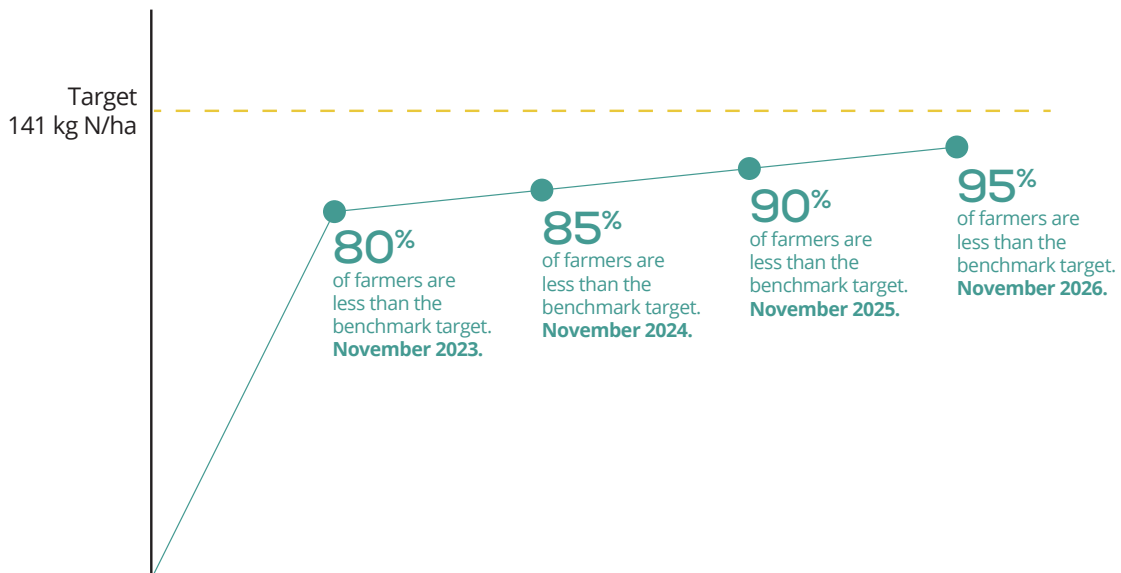
## Metric Three Continued:

### Key Milestones

#### Setting of a PNS target

PNS benchmarking system was developed by March 2022

The farms PNS must be at or below the national upper quartile benchmark; an annual value is used for farm calculations and a 3-year fixed average (using national data) from 2019-20 to 2021-22 is used for the upper quartile benchmark. The PNS target is 141 kg N/ha. Data will be available for the 2022-23 season in October 2023.



Average Purchased N Surplus  
(and trend) at sector and catchment level.

Nationally:  
2019/2020 = 94 kg N/ha  
2020/21 = 93 kg N/ha  
2021/22 = 88 kg N/ha

Farmers with a Purchased  
Nitrogen Surplus less  
than the 75th percentile  
national benchmark.

Data will be available for the  
2022-23 season in October 2023.



# Dairy Tomorrow environmental commitments:

## Tracking and progress

### Metric Four: Farmers monitoring their soil phosphorus status.

**Target: All farmers monitoring and reporting soil phosphorus status from May 2023.**

#### What is it and why we chose it:

Soil phosphorus status is a measure of the level of phosphorus in the soil that is accessible for plant uptake, and is commonly measured through an Olsen P test. The test allows farmers to understand if they have too much, too little, or the right amount of phosphorus for their soil type (agronomic optimum). In general, the higher the soil phosphorus content, the greater the load of phosphorus attached to soil particles, and the greater the opportunity for water moving through the soil to increase dissolved phosphorus concentration that can end up in waterways.

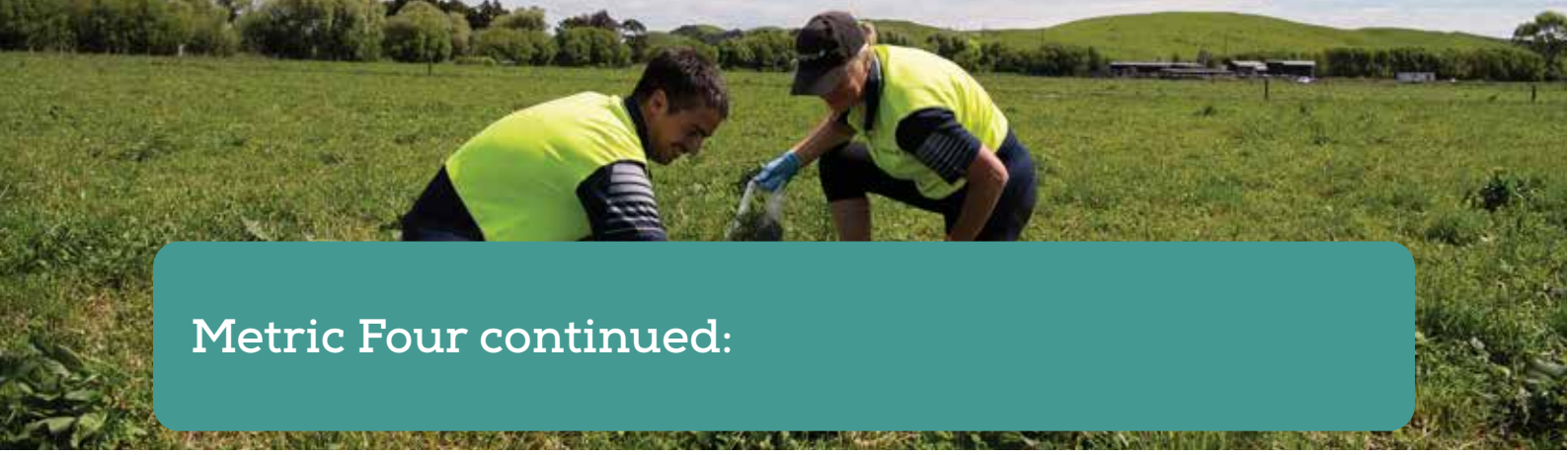
#### What we committed to:

- Reporting number of farms monitoring phosphorus status at sector and catchment levels
- Phosphorus status data available from 20% of dairy farms from May 2021
- Phosphorus status data available from 60% of dairy farms from May 2022
- Phosphorus status data available from 95% of dairy farms from May 2023
- Average phosphorus status (and trend) at sector and catchment levels

#### How are we tracking:

- We are working in collaboration with the New Zealand Fertiliser Association to summarise information on soil phosphorus use and testing on dairy farms.
- A total of 57,252 Olsen P tests were taken from dairy farms during 2018. 50,555 samples were collected in 2019.





# Metric Four continued:

## Key Milestones

From May 2021

# 20%

Phosphorus status data available from 20% of dairy farms. Reported at sector and catchment levels.

From May 2022

# 60%

Phosphorus status data available from 60% of dairy farms. Reported at sector and catchment levels.

From May 2023

# 95%

Phosphorus status data available from 95% of dairy farms. Reported at sector and catchment levels.

## Average phosphorus status (and trend) at sector and catchment levels.

A total of

# 57,252

Olsen P tests were taken from dairy farms during 2018.

# 50,555

Samples were collected in 2019.

**For a more detailed overview of soil phosphorus levels relevant to target range on New Zealand dairy farms, go to the Fertiliser Association website:**



# Dairy Tomorrow environmental commitments:

## Tracking and progress

**Metric Five:**  
**Farmers with a Greenhouse Gas Farm emissions report.**

**Target: All farmers know their greenhouse gas emissions by December 2022.**

### **What is it and why we chose it:**

Knowing a farms greenhouse gas emissions and where they come from is a key step towards reducing them. With half of New Zealand's greenhouse gas emissions coming from agriculture, the dairy sector has a key role to play in helping meet international and domestic commitments.

### **What we committed to:**

- By December 2022 and annually thereafter, all dairy farmers receiving a report estimating their biological (methane and nitrous oxide) emissions
- This commitment is aligned with climate change legislation and the He Waka Eke Noa primary sector climate action partnership

### **How are we tracking:**

- 95 percent of dairy farmers had received an annual methane and nitrous oxide emissions report by December 2022. 92 percent received a report by December 2021



# Metric Five continued:

## Key Milestones

December 2022 and annually thereafter

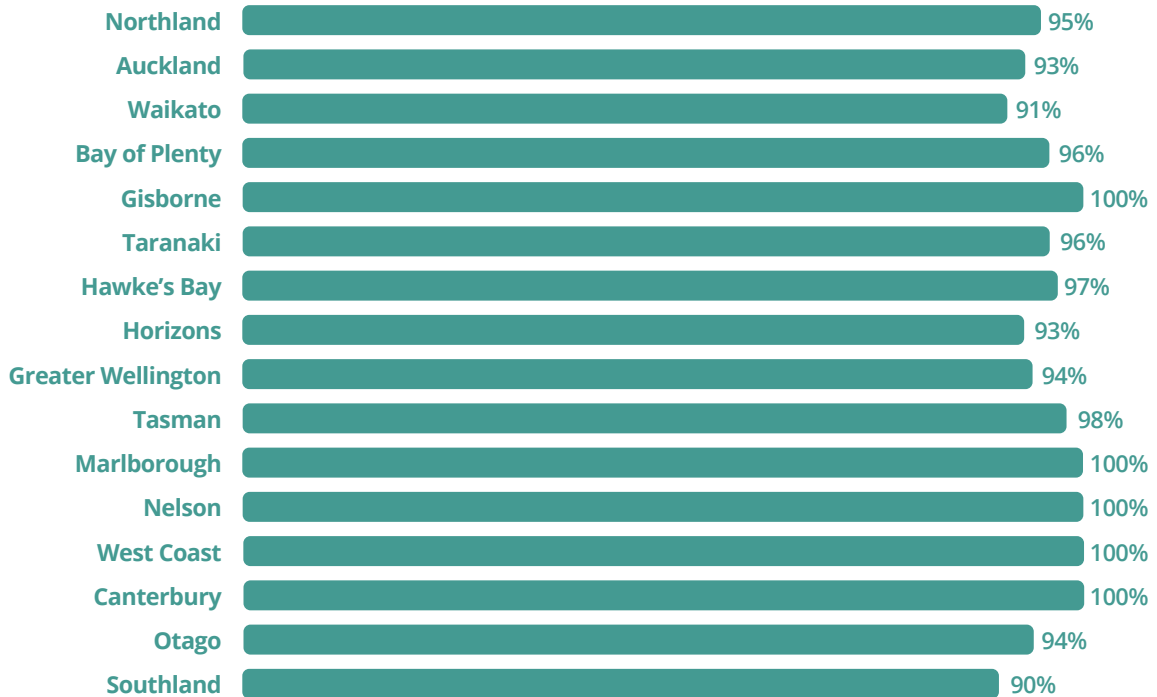
# 100%

All dairy farmers receiving a report estimating their biological (methane and nitrous oxide) emissions

### Progress:

- May 2021: 6539 of 10895 farms = 88%
- Aug 2021: 9815 of 10892 farms = 90%
- Dec 2021: 9884 of 10765 farms = 92%
- Aug 2022: 10006 of 10755 farms = 93%
- Dec 22: 10212 of 10756 farms = 95%

December 2022:





# Dairy Tomorrow environmental commitments:

## Tracking and progress

### Metric Six:

### Farmers with a Greenhouse Gas Farm Environmental plan or module

**Target: All farmers have a written plan in place to manage their GHG emission by December 2024.**

#### **What is it and why we chose it:**

Having a plan in place to manage greenhouse gases is a key step towards committing to actions to reducing emissions.

#### **What we committed to:**

- By December 2024, all dairy farmers having a written plan in place to manage GHG emissions
- This commitment is aligned with climate change legislation and the He Waka Eke Noa primary sector climate action partnership

#### **How are we tracking:**

- 45 percent of farmers had a written plan in place to manage GHG emissions by December 2022. 26 percent had a plan by December 2021.



## Metric Six continued:

### Key Milestones

December 2024

# 100%

All dairy farmers having a written plan in place to manage GHG emissions

#### Progress:

**May 2021: 1657 of 10895 farms = 15%**

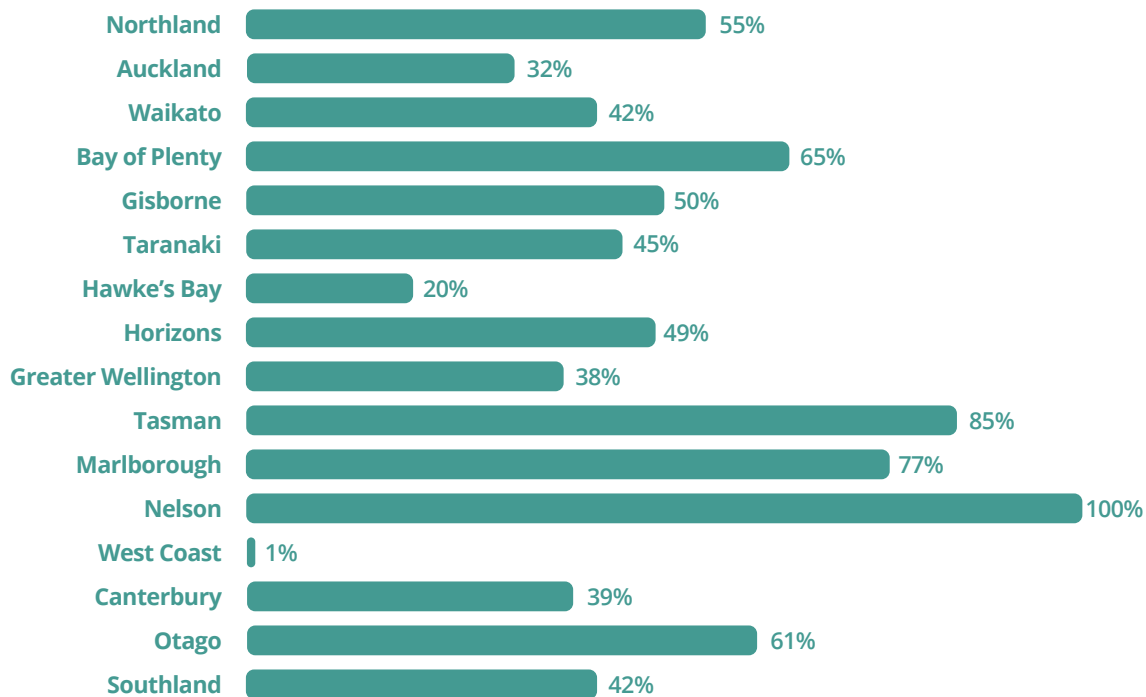
**Aug 2021: 1936 of 10892 farms = 18%**

**Dec 2021: 2785 of 10765 farms = 26%**

**Aug 2022: 4275 of 10755 farms = 40%**

**Dec 2022: 4872 of 10756 farms = 45%**

December 2022:



## Donna Cram Constructed wetland story.

March 2023.

Small wetland makes  
a big difference.



**Philip and Donna Cram at the constructed wetland on their Awatuna farm.**

Taranaki farmers Donna and Philip Cram are helping DairyNZ demonstrate how constructed wetlands can improve water quality.

A wetland built three years ago on Donna and husband Philip's Awatuna farm is a collaboration between DairyNZ, the National Institute of Water and Atmosphere (NIWA) and Taranaki Regional Council (TRC). It is part of DairyNZ's ongoing work to encourage farmers to understand the environmental benefits of wetlands.

Wetlands can significantly reduce nutrient and sediment losses on farms and improve water quality. They also boost biodiversity and can provide habitat for birds and fish.

DairyNZ general manager sustainable dairy, Dr David Burger, says there's growing interest among dairy farmers in re-establishing and constructing wetlands, and this project helps improve understanding of how well they work.

"Partnering with dairy farmers and sector organisations helps us improve practical guidance around the use of constructed wetlands and how they can support the drive towards water quality improvements."

NIWA and TRC monitor the performance of Donna and Philip's wetland to remove nitrogen, phosphorus, sediment and *E. coli*. DairyNZ funded the installation of monitoring systems, which enable real-time measurements of flow and water quality at the wetland inlet and outlet.

The project started after initial discussions between Donna, Philip and TRC, which then approached NIWA for advice and assistance with design. The project grew because, it turned out, NIWA was collaborating with DairyNZ to produce guidance on constructed wetland design and performance, to give the rural sector tools and resources to help improve environmental outcomes.

The Cram wetland has become one of six constructed wetland demonstration sites being studied until June 2024 as part of a collaborative, NIWA-led initiative funded by the Ministry for Primary Industries.

"NIWA staff looked at our farm and where the slopes and run off were, and came up with the site, which was an old, adjusted stream," Donna says.

The wetland comprises two percent (0.45ha) of Donna and Philip's 117ha farm and receives surface and shallow groundwater from 184ha of land. "It's a nice place to be, with amazing views of Mt Taranaki," Donna says.

"We have a path round half of it and it and later on we'll do it all the way around. We have a bit of regenerating bush at the bottom of the wetland that was inaccessible for animals, so there is quite a lot of change happening in that area of the farm."

Dairy farmers around New Zealand are focused on continuing to reduce their environmental impact. Dr Burger says DairyNZ continues to work closely with dairy farmers and other science organisations to increase understanding of wetland performance.

"We are committed to improving water quality and have an extensive range of work underway to achieve this goal."

## Dairy Environment Leaders

March 2023.

Dairy farmer leaders work to improve environment.



DairyNZ general manager sustainable dairy Dr David Burger and DEL chair Melissa Slattery.

A dairy farmer-led network works closely with DairyNZ to improve the environment.

The Dairy Environment Leaders (DEL) network was created by farmers and DairyNZ about 14 years ago and now has more than 300 members around New Zealand. Outgoing chair, Waikato dairy farmer Melissa Slattery, says farmers have a role to play in protecting the environment.

“Now more than ever, the sector needs us to lead the way for the benefit of farmers and for New Zealand.”

DairyNZ general manager sustainable dairy, Dr David Burger, says DEL has a vision of environmental stewardship – farmer-led practical change across individual farms, catchments and regions. “It’s about supporting farmers through their change journey and influencing government and regional leaders to help ensure there’s practical policy in place.

“A lot has been achieved as a result of all this great work. It’s now widely recognised that catchment groups are the way forward for meaningful change. Thanks to all the work farmers have already been doing, the dairy sector is well ahead on the environmental change journey.”

Dairy farmers’ continued contribution to the environment was the key focus at the DEL network’s annual forum, held in March.

The forum enables the sector to plan for change. “Change is a constant in the agricultural sector and it’s important DEL farmers have the opportunity to connect and plan how we will continue to support environmental progress in our communities,” Melissa says.

“The forum is an opportunity for us to come together, share our stories and experiences and help build our environmental leadership around New Zealand. We can then support our communities and continue to help other farmers understand that role and incorporate environmental work into their farm systems. That’s why DEL is so important.”

Dr Burger says there is still work to be done, with DairyNZ having an extensive range of initiatives underway to improve water quality. This includes researching mitigation tools such as constructed wetlands on farms, to treat contaminants before they enter waterways.

DairyNZ works with research organisations to identify water quality issues at a catchment level and uses science to prioritise on-farm actions that lead to significant improvements.

Improving water quality is a priority for the wider dairy sector, too. Through the Dairy Tomorrow strategy, the sector is committed to protecting and nurturing the environment for future generations. As part of this commitment, dairy sector partners are supporting farmers to develop Farm Environment Plans, which include specific actions to address local environmental risks and improve water quality.

More than 5000 dairy farmers now have a Farm Environment Plan in place.

## DairyNZ, iwi and farmers collaborate to revitalise priority catchments.

May 2023.

Bringing farmers, DairyNZ and iwi together.



The Sustainable Catchments programme launched in Tokoroa in May 2023.

A Sustainable Catchments programme is bringing farmers, DairyNZ and iwi together to help improve the health of the Pokaiwhenua catchment in the South Waikato.

This initiative, part of a three-year Sustainable Catchments programme, is delivering work in the Pokaiwhenua (Waikato) and Waimea (Southland) catchments, and across South Canterbury. It is the first project of its kind that sees DairyNZ work closely with iwi, bringing western science and Mātauranga Māori together to better understand catchment ecological health and how to improve it. The Pokaiwhenua Catchment Group is also extensively involved in the project.

DairyNZ general manager for sustainable dairy Dr David Burger says the project is exciting. "It means a lot for DairyNZ to be partnering with organisations that have similar goals and aspirations. We look forward to moving forward with iwi and farmers to make a difference to the environment, and we hope to identify further partnership opportunities as we continue to focus on environmental improvements at a catchment level."

The Sustainable Catchments project includes trialling practical tools and interventions on-farm, such as constructed wetlands, to increase awareness and understanding of ways to improve water quality. The three catchments are identified as priority areas for restoration because monitoring shows they have higher nitrogen concentrations and lower ecosystem health scores than other catchment areas.

"There are opportunities for improvement in each catchment," Dr Burger says. "Each catchment has committed landowners who are passionate about improving water quality, and this work will help accelerate the momentum of current restoration activities," Dr Burger says. "We work closely with local landowners and catchment groups, which already have water quality improvement initiatives underway."

The first year of work will see catchment assessments completed, including designing monitoring programmes to track water quality and hauora (health) change over time. In the second year, on-farm and catchment activity will demonstrate mitigations with proven science to improve the health of catchment waterways.

"Catchment work is widely recognised as the way forward in improving the environment, as it achieves better results than a national one-size-fits-all approach," Dr Burger says.

DairyNZ is partnering with the Raukawa Charitable Trust in the Pokaiwhenua catchment, where the programme was launched. Raukawa Charitable Trust tumu whakarae (general manager) Maria Te Kanawa says her organisation is excited to be involved with this programme.

"Raukawa are committed to our responsibilities as kaitiaki throughout our takiwā (region). As such, we have a key role to play in the revitalisation and restoration of the wider Pōkaiwhenua catchment. We believe, through the inclusion of Mātauranga Māori alongside western science, that we can bring about positive change."

"We are pleased to be partnering with DairyNZ and local farmers as we collectively work towards healthier waterways in this catchment area," she says.

DairyNZ has \$3.4 million in government funding for the programme. This funding comes from the Essential Freshwater Fund (EFF) administered by the Ministry for the Environment (MfE) to help improve water quality and reverse past damage to waterways. DairyNZ is contributing a further \$1.2 million towards the programme.

The Sustainable Catchments programme is one of 11 funded by MfE.



## *E. coli* Project

March 29 2023.

Collaborative catchment project aims to better understand *E. coli*.



**The upper Nguturoa catchment, looking back to where it starts in the Tararua foothills.**

A collaborative project between DairyNZ and the Nguturoa Catchment Group in Manawatu aims to understand, model and manage *E. coli* in rural waterways.

This five-year project will help understand 'source and sinks' of *E. coli* (bacteria). In doing so, it will deliver options for reducing *E. coli* losses from rural land to streams and inform regulations with respect to what mitigation levels of are achievable in pastoral-dominated catchments.

DairyNZ will be involved in all aspects of the project, including research, field work, determining policy implications of findings and engagement with farmers.

DairyNZ general manager sustainable dairy, Dr David Burger, says the project will give DairyNZ a better understanding of *E. coli* processes in farming catchments. "This will mean we can better build models to develop and demonstrate options for farmers to reduce losses and help build regulatory understanding.

"This project is part of DairyNZ's ongoing work to support farmers to reduce environmental footprint while continuing to run successful farming businesses. Farmers and the sector have a wide range of initiatives underway on-farm to improve water quality, and we acknowledge there is more work to be done," Dr Burger says.

The Nguturoa Catchment Group was formed in 2020, after farmers and landowners along the Nguturoa Stream in the Manawatu-Whanganui region began a study into water quality. Terry Parminter of KapAg, who provides technical support to the group, says the farmers and landowners wanted precise information to establish their farming priorities for improving the waterway and monitoring the effects of management changes.

Monthly sampling and testing were carried out across the catchment. Results showed that *E. coli* levels were at times elevated compared to national standards, so solutions to address this were needed.

The Nguturoa catchment runs from the ranges behind Linton to the Tokomaru River and down to the Manawatu River. It comprises dairy, sheep and cattle farmers and lifestyle block owners.

"The Nguturoa catchment group is forward-thinking," Dr Burger says. "Many New Zealand farmers are making management changes to improve the quality of freshwater associated with their farms. Often this occurs in the absence of specific data enabling farmers to understand how their on-farm activities influence water quality or without receiving feedback on how much difference they're making."

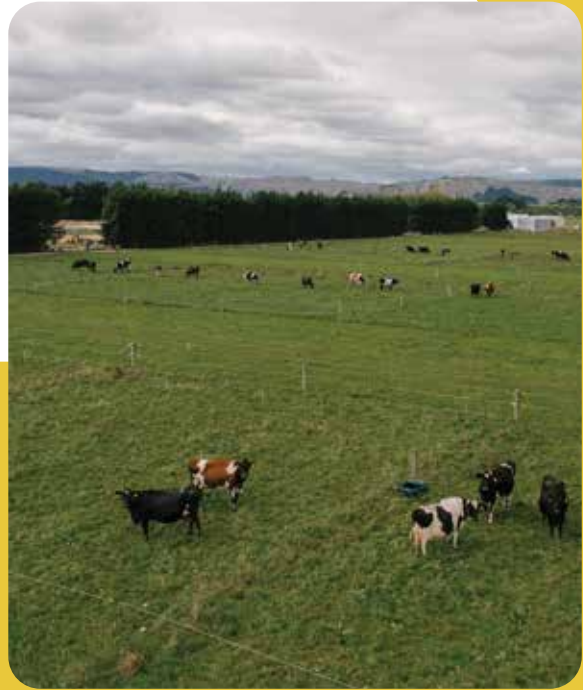
The catchment group works closely with the Horizons Regional Council science team. Its initial funding came from Our Land and Water's Rural Professionals Fund. It has also received funding for waterway testing from Horizons Regional Council, and technical support from Terry Parminter of KapAg.

## Plantain Practice and Potency Programme

February 2023.

Research shows plantain can reduce nitrogen leaching by 20-60 percent.

**The Plantain Potency and Practice Programme's farm trial at Massey University confirms Ecotain plantain can reduce nitrogen loss from dairy farms by 20 to 60 percent.**



Innovative new research has signalled feeding cows the leafy herb plantain can reduce nitrogen leaching from dairy farms by 20 to 60 percent.

The results, from the DairyNZ-led Plantain Potency and Practice (PPP) Programme, prove using Ecotain plantain in pasture can significantly reduce nitrogen entering waterways.

Farm trials at Massey University and initial results from a trial at Lincoln University are showing similar trends. The trials are part of the nationwide PPP research and development programme that partners with dairy farmers, industry and government.

"These are exciting results – we now have robust scientific evidence that Ecotain plantain is an effective solution to help dairy farmers further reduce farm footprint and continue playing their part in improving water quality," says DairyNZ chief executive Dr Tim Mackle.

"Plantain can bring significant benefits to local waterways and communities – we all want healthy freshwater to swim and play in, and dairy farmers can confidently use Ecotain plantain on-farm to support that.

"These research findings are part of a broader programme of work to continue delivering on dairy's commitment to reducing its environmental footprint in our local communities, while maintaining profitable businesses," says Dr Mackle.

The \$22 million seven-year PPP Programme is funded by DairyNZ, by the Government through the Ministry for Primary Industries' Sustainable Food and Fibre Futures fund, PGG Wrightson Seeds and Fonterra, working with six additional research and delivery partners.

The programme uses Ecotain environmental plantain from Agricom because it has proven effectiveness. An evaluation system is available to assess the environmental benefits of all plantain cultivars sold by a range of providers.

At the Massey University farm trial, scientists are measuring nitrogen leaching from paddocks grazed by 80 dairy cows. After two years, the trial results have shown reduced nitrogen leaching by 20 to 60 percent in perennial ryegrass and clover pastures containing 30 to 50 percent Ecotain plantain.

The results are compared to traditional perennial ryegrass and clover paddocks (the most common pasture types in New Zealand). There was no difference in milk production between the plantain and control pastures in the trial.

The amount of reduced nitrogen leaching depends on the quantity of plantain in the pasture, the soil type, climate and farm system. The Massey University trial will continue for a further two years.

Initial results from the programme's Lincoln University study in Canterbury, on lighter soils under irrigation, show similar trends to the Massey University trial, with a 38-50 percent reduction in nitrogen leaching from pasture containing 24 percent Ecotain plantain. More data is being collected to confirm these results.

Massey University Professor Emeritus Peter Kemp and his team have been researching the effects of plantain over several years and the experimental plots were established at the university in 2019.

## Plantain Practice and Potency Programme continued:

“Building on decades of pastoral research at Massey, our team have designed an innovative drainage system that uses the soil structure on the farm to enable measurement of all the nitrogen leaching from each paddock,” he says.

“The four-year trial has had incredible success so far and our trial site allows the results to be directly transferable to current farming systems in New Zealand. Importantly for farmers, transition to plantain pastures results in no loss of production, while simultaneously reducing nitrogen leaching significantly from farms into freshwater.

“This supports current initiatives to protect our natural environment and improve waterways. Significantly, Massey University research has shown that this pasture regime also decreases the greenhouse gas emissions of nitrous oxide, a key issue for climate change,” says Prof Kemp.

PGG Wrightson Seeds (PGW Seeds) chief executive John McKenzie is pleased with the results.

“We are delighted to see these larger scale trial results support the earlier work we undertook in developing and commercialising Ecotain environmental plantain. With the numerous challenges farmers face, being able to provide an effective tool to help reduce nitrogen leaching is something we are immensely proud of.”

Ecotain environmental plantain reduces nitrogen leaching by increasing cows' urine volume, therefore diluting the nitrogen in urine and reducing the total amount of nitrogen excreted in urine. It also retains nitrogen in the soil, preventing it entering waterways.

For more information on the programme, visit: [dairynz.co.nz/plantain-programme](http://dairynz.co.nz/plantain-programme)

For more information on how plantain works, visit: [dairynz.co.nz/plantain-benefits](http://dairynz.co.nz/plantain-benefits)

Plantain Potency and Practice programme partners

Funding partners: DairyNZ, Government (MPI via Sustainable Food and Fibre Futures Fund), PGG Wrightson Seeds and Fonterra.

Delivery partners: DairyNZ, Agricom, Fonterra, Lincoln University, Massey University, Lincoln Agritech, AgResearch, Agricom, Plant & Food Research, Manaaki Whenua - Landcare Research.

Investment

- DairyNZ, PGG Wrightson Seeds and Fonterra are collectively investing \$10.47 million in cash and \$2.8 million in kind in the programme.
- The Government via MPI's Sustainable Food and Fibre Futures fund is investing \$8.98 million.

Background

- The Plantain Potency and Practice (PPP) Programme is working with farmers to develop management strategies and demonstrate how plantain can be successfully integrated into farm systems.
- This includes investigating how farmers can successfully establish and maintain high proportions of plantain in pastures, across a range of different climates.
- The aim is to achieve widespread adoption, with resulting economic and environmental benefits.
- Plantain use is expected to save farmers more than \$1 billion per decade, by farmers spending less on more expensive nitrogen reduction solutions. This will have flow-on benefits to local economies.
- The PPP programme partners with 21 farmers in Waikato, Bay of Plenty, Manawatu, Canterbury and Southland, and will share learnings across all dairy farmers.
- Farmers can use plantain as a component of their pasture species mixture when sowing a new pasture, or can sow it alone as a special-purpose crop. Plantain is a nutritious and palatable herb for cows to eat.
- The PPP programme builds on previous work by the DairyNZ-led Forages for Reduced Nitrate Leaching programme, and a five-year DairyNZ-led Tararua Plantain Project supporting farmers in the Tararua area to adopt plantain on their farms.
- The PPP programme also follows a PGG Wrightson Seeds and Callaghan Innovation-funded project, which identified the four mechanisms by which Ecotain environmental plantain reduces nitrogen leaching on dairy farm

## Taranaki Tarare conservation kiwi work

Inside Dairy, January 2023.

All the (environmental)  
trappings



Southland dairy farmers help  
protect Aparima waterways.

Just 30 years ago, kiwi could be found running through the paddocks in and around Tarere Conservation Area.

“I’ve heard one got picked up for a school show-and-tell back then,” says local dairy farmer Damian Roper. “That’s how common they were. I’m told you could also hear them when checking on the cows at night.”

Avid conservationists Damian and wife Jane own a 273ha (158ha effective) farm in Alton, which backs onto Tarere Conservation Area. They’re part of the Patea River Community Catchment Group, which has a core membership of eight (over half are dairy farmers), with other local farmers, iwi and communities also involved. Its pest and predator control project aims to restore kiwi numbers across the top end of the conservation area - its 2000ha ‘extension’.

The group has an existing trapline, checked fortnightly. Over the next three years, it’ll add another 1200 GPS-linked traps across the area’s ridges and gullies, targeting mustelid pests such as ferrets and stoats, plus rats and hedgehogs.

It’s just one of many projects spread over 14 catchments and overseen by Taranaki Catchment Communities (TCC), an MPI-funded initiative formed in 2021. Patea farmers are trapping pests and helping bring the kiwi back, in one of many catchment projects helping Taranaki locals farm in harmony with the environment.

“TCC supports Taranaki’s rural sector towards a more environmental, economic and socially sustainable future, plus projects aimed at improving farmers’ mental health and financial literacy,” says TCC project lead Paul Turner.

As well as providing Paul with an office, DairyNZ donates time and expertise for the kiwi project, alongside Beef + Lamb NZ, Federated Farmers and Venture Taranaki.

“DairyNZ’s credible and far-reaching channels are helping get the group’s message out there, which is leading to more collaboration and better traction with farmers,” Paul says.

Damian and Jane are thrilled about how the kiwi project is bringing farmers, iwi and the wider community together in a big way. “We’ve had a whole lot of people come out of the woodwork because they share the same passion for biodiversity, for wildlife and the protection of our conservation park,” Damian says.

“We have to protect our valuable flora, fauna and our environment and combat climate change. Not just the farmers, but all of our community.”

Damian Roper in front of his tuwhatawhata [stockade] pa, which he built from a traditional Maori design used to protect gardens. A recent trapping workshop showed the group how to set and bait the traps.



## Whitebait story Ewen Mathieson

Environmental actions  
on-farm bring back  
endangered native fish.



Farmers are seeing endangered native freshwater fish returning to Southland waterways in increasing numbers, thanks to their work alongside iwi and other community members.

Pourakino dairy farmers are pleased to see more whitebait and the lamprey fish kanakana, among others, in their local waterways. The Pourakino Catchment Group has focused on environmental work, and locals say these fish numbers show it's making a difference.

Dairy farmer Ewen Mathieson is part of the catchment group and says it's exciting to see whitebait thriving in a tributary on his farm. "A recent survey on a 150m section of the tributary identified 375 fish including banded kōkopu, kōura, redfin bully and longfin eel, which is great news. It gives us a baseline for future surveys."

Ewen is a Dairy Environment Leader - one of 300 forward-thinking dairy farmers in the network supported by DairyNZ who work with other farmers, their communities and decision-makers to drive positive environmental change. He and his wife Diane and their family have been planting native trees and reducing nitrogen fertiliser use to help improve water quality. They have also reduced their stocking rate.

Ewen says a key factor in the return of whitebait is a project led by Environment Southland to identify, prioritise and restore fish barriers in the region's rivers and streams. The work includes restoring fish ladders and removing in-stream barriers. The project has funding from the Government's Jobs for Nature programme.

Ewen is on the committee of the Aparima Catchment Environment project (ACE), which sees 600 dairy, sheep and beef farmers work together with land managers, advisors and scientists to implement and track environmental actions across a range of farms and land uses.

"We talk about the economic value we deliver to our community," he says. "We now need to play a part in reducing our nutrient and carbon footprint, and in protecting and enhancing biodiversity.

"We've found this journey rewarding and positive as it has meant we've built closer connections with our wider community and the local runanga."

Farmers are leading the ACE project, supported by DairyNZ, Beef + Lamb New Zealand, Environment Southland, Thriving Southland, Fonterra and Open Country Dairy. Most involved farmers have a Farm Environment Plan setting out the steps they're taking to reduce footprint. These plans are tailored to individual farms and local conditions and can be adapted to account for changing land use, water quality improvements and other environmental factors.

Currently, 69 percent of dairy farms nationwide have a Farm Environment Plan. By 2025 all farms will, as outlined in the Dairy Tomorrow sector strategy commitments.