



## **SUBMISSION: Tax Working Group – The Future of Tax**

*Date:* 29/04/2018

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A handwritten signature in black ink, appearing to read "Andy", with a long horizontal stroke extending to the right.

**(Andrew Curtis, CEO Irrigation NZ)**

***IrrigationNZ (INZ) would appreciate the opportunity to engage with the Tax Reference Group around our submission.***

***We would be happy to do this as part of a wider discussion with the primary sector.***

## Summary

1. INZ's submission focuses on the possible introduction of a water tax/ royalty as an environmental tax. We have summarised our comments below.

A water tax would act in opposition to how an environmental tax should work and does not create an incentive to stop pollution

2. Water quality issues like nitrogen, phosphorus and poor macroinvertebrate health affect both regions with significant irrigated land area and regions with little irrigation. While we acknowledge that land use on irrigated land can contribute to poor waterway quality, at a national level the data does not support the idea that irrigation is the main cause of poor river quality throughout New Zealand. In fact, Ministry for the Environment data shows that regions with more irrigation have more swimmable rivers than regions with less irrigation<sup>1</sup>. Other water quality issues (like nitrogen, phosphorus, sediment and heavy metals) affect both regions with more irrigation and with little irrigation<sup>2</sup>.
3. The implementation of an environmental tax should result in the polluters being forced to bear the cost of their activities and the tax should also create an incentive for them to reduce pollution.
4. Over 80% of a water tax on irrigators would be raised in four regions (Canterbury, Otago, Marlborough and Hawkes Bay) which all have rivers rated more swimmable than the New Zealand average. This money would then be transferred to regions with little irrigation (like Auckland, Northland and Waikato) that have less swimmable rivers than the New Zealand average. A water tax would therefore function in opposition to how an environmental tax should work, and results in regions with less swimmable rivers being "rewarded" with a wealth transfer from irrigators in other regions. There are serious equity issues with this.

A water tax may not encourage efficient water use

5. From a 2017 INZ irrigator survey on how irrigators would fund the additional cost of a water tax, there is a significant risk that imposing a water tax may encourage more intensive farming as farmers could change land uses to pay the extra cost. These land use changes often create more environmental challenges and greater demand for water.
6. Irrigators also indicated that they would look to reduce investment in more water efficient modern irrigation systems as the additional cost of a water tax may make the significant capital investment required for this more challenging. The imposition of a water tax may make the switch from older flood and spray irrigation systems to modern spray and drip unaffordable. This is an important consideration as it is well documented a move to more efficient irrigation system is the most significant change irrigators can make to reduce their water use and nutrient losses.

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<sup>1</sup> [www.mfe.govt.nz/fresh-water/state-of-our-fresh-water/water-quality-swimming-maps](http://www.mfe.govt.nz/fresh-water/state-of-our-fresh-water/water-quality-swimming-maps)

<sup>2</sup> [http://archive.stats.govt.nz/browse\\_for\\_stats/environment/environmental-reporting-series/environmental-indicators/Home/Fresh%20water.aspx](http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Fresh%20water.aspx)

A water tax would be complicated to design and difficult to implement fairly

7. Internationally, the idea of a water tax/ royalty has been considered by many countries but abandoned in all cases due to the complexity of designing and implementing such a charge.
8. To introduce a water tax, we need to confirm:
  - a. Who would pay the tax and who would be exempt (or what activities would be exempt)
  - b. How and by whom would the tax be collected (nationally or regionally)
  - c. On what basis would it be collected (actual use or allocation)
  - d. If actual use the monitoring accuracy required (Weights and Measures Act and Regulations)
  - e. What is the tax rate and does it vary (activities and regional variations in water use)
  - f. How it would be spent
9. Through the National Water Measurement Regulations 2010, all water users have been required to measure their water takes since 2012. Eight years on, there is still no national set of accounts for the approximately 12,500 irrigation take consents in New Zealand, despite irrigators having provided annual and in some cases live telemetered data to regional councils during this period. This task is far less complex than designing, implementing and monitoring a water tax on all water users nationally.

The burden of a water tax would predominantly fall on a small subset of farmers in east coast regions using irrigation who are already investing a significant amount to improve water quality. This is not an equitable way to fund improvements to rivers nationwide

10. Around 60% of a water tax cost would be paid by just 12,500 irrigators, based on current consented water use data<sup>3</sup>. These irrigators are predominantly located in small number of regions – Canterbury, Otago, Marlborough and Hawkes Bay. This is very narrow tax base to bear much of the tax cost.
11. This group of irrigators is currently allocating a significant amount of their income to meet new regulatory environmental requirements with the intent of improving water quality locally. Is it fair or reasonable to impose a major new tax on this small group of businesses to pay for improvements to waterways across New Zealand when this small group is not the cause of water pollution nationally?

Irrigation already creates wealth for society and tax income for the government

12. Depending on the tax cost, we note that many irrigated farms could face an annual cost of \$20,000 (based on \$0.02 m<sup>3</sup>) or more in a water tax. This level of additional tax would reduce farm profitability and also result in reduced employment and spending in local communities. It is important the net impact of introducing a water tax is fully understood – increased income from a water tax versus reduced income from a decrease in PAYE, GST & Business Income tax.

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<sup>3</sup> [www.lawa.org.nz/](http://www.lawa.org.nz/)

13. For example, in a 2014 study NZIER estimated that irrigation adds at least \$5.4 billion to New Zealand's GDP<sup>4</sup>. Catchment specific analysis on the socio-economic value of irrigation<sup>5</sup> have shown that adding 1,000 hectares of irrigated land creates an average of 50 additional full-time jobs for pastoral industries and over 500 for permanent horticulture. Creating additional jobs and income is beneficial for rural communities and for the government as it generates additional Business Income Tax and Income Tax income. We would question whether there is a case to tax irrigators given the broad socio-economic benefits irrigation already provides?

### About IrrigationNZ

14. INZ represents over 3,500 irrigator members nationally, including irrigation schemes and individual irrigators. Our members include a wide range of farmers/ growers – dairy and cropping farmers, horticulturalists, winegrowers. We also represent over 120 irrigation service industries – manufacturers, distributors, irrigation design and install companies, and irrigation decision support services.
15. As an organisation we actively promote best practice irrigation and carry out a range of training and education activities. Over the last 5 years we have trained over 3,000 irrigators on different aspects of irrigation best practice to improve water use efficiency.
16. INZ members share the same goals as other New Zealanders:
- a. to see improvements to their waterways
  - b. to make a contribution to their communities
  - c. to make a living for themselves and their families.

### Objectives and criteria of the review

17. We agree that New Zealand is facing a number of challenges, such as an aging population demographic creating more demand for superannuation spending. Therefore, it is timely for the government to review the existing taxation system.
18. We agree with the Living Standards Framework's broad approach to assessing wellbeing, and that the criteria of efficiency, equity, revenue integrity, fiscal adequacy, compliance and administration costs and coherence should be used as the basis to assess any future tax proposals.

### Environmental Taxes

19. The section of the paper dealing with environmental taxes mentions a water tax or royalty as one of the possible environmental taxes being considered. Our submission will explore the idea, implementation and impact of a water tax in New Zealand.
20. We have provided some background information on how water and irrigation is used towards the end of our submission, which is important to consider in any discussion of a potential tax.

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<sup>4</sup> NZIER, Value of Irrigation in New Zealand, 2014

<sup>5</sup> [https://www.irrigationnz.co.nz/news-/Article?Action=View&Article\\_id=13](https://www.irrigationnz.co.nz/news-/Article?Action=View&Article_id=13)

21. The *Future of Tax* paper states that “Environmental taxes are charges levied on tax bases that have a proven, specific negative impact on the environment. They include both charges on pollution (for example, a landfill waste levy) and charges on resource use (for example, a water consumption charge when the supply of clean water is limited (page 49).” The paper also states that, “Environmental taxes can be a powerful tool to efficiently reduce pollution and encourage better use of natural resources (page 49).”
22. Various forms of environmental taxes are discussed in the paper. From the points raised in the *Future of Tax* paper, the following points are worthy of discussion in relation to water tax or royalty:
  - a. Is the supply of water limited in New Zealand?
  - b. Is there a link between water use and water pollution?
  - c. Would a water tax/ royalty encourage more efficient water use?

Is the supply of water limited in New Zealand and should a royalty be charged?

23. Based on the latest 20 years of data, NIWA estimates that New Zealand receives about 550,000 million m<sup>3</sup> of precipitation in an average year – 9 times the volume of Lake Taupo. About 80% of this flows-out to sea, supporting river ecosystems. Approximately 18% of rainfall evaporates after it lands.<sup>6</sup> Human use of water (including for irrigation) is equivalent to around 2% of our national rainfall total.<sup>7</sup> Water use varies by region – so for example in Canterbury 74 billion m<sup>3</sup> of water falls as rainfall each year, and 6.8 billion m<sup>3</sup> (or an equivalent of 9% is abstracted by humans).<sup>8</sup> In comparison with many countries internationally, New Zealand is considered to have ample renewable water resources per capita (see map below from *Water for a Sustainable World - UN World Water Development Report*).<sup>9</sup>
24. Despite this, there are some areas of New Zealand where river or groundwater resources have been overallocated. In all cases, processes are underway to resolve this issue through setting river flows and groundwater extraction limits. These processes are informed by science and carried out in consultation with communities. The TANK process in Hawkes Bay, the Land and Water Plan in Canterbury and the replacement of deemed permits in Otago are examples of this occurring. Using a collaborative process allows a range of factors to be considered, including environmental and community impacts. Parties seek to achieve win-win solutions that work for all involved. Taxing water does not create a framework which encourages group solutions to be found which enable farmers to remain in business as well as achieving good environmental outcomes.
25. Where water resources are under pressure there is often a requirement for irrigators to invest in modern efficient irrigation systems to achieve goals around efficient water use. This comes at a significant cost (typically between \$5,000 - \$10,000 per hectare depending upon the irrigation system type installed). Introducing a new tax or royalty on water will reduce the funding available to make these investments.

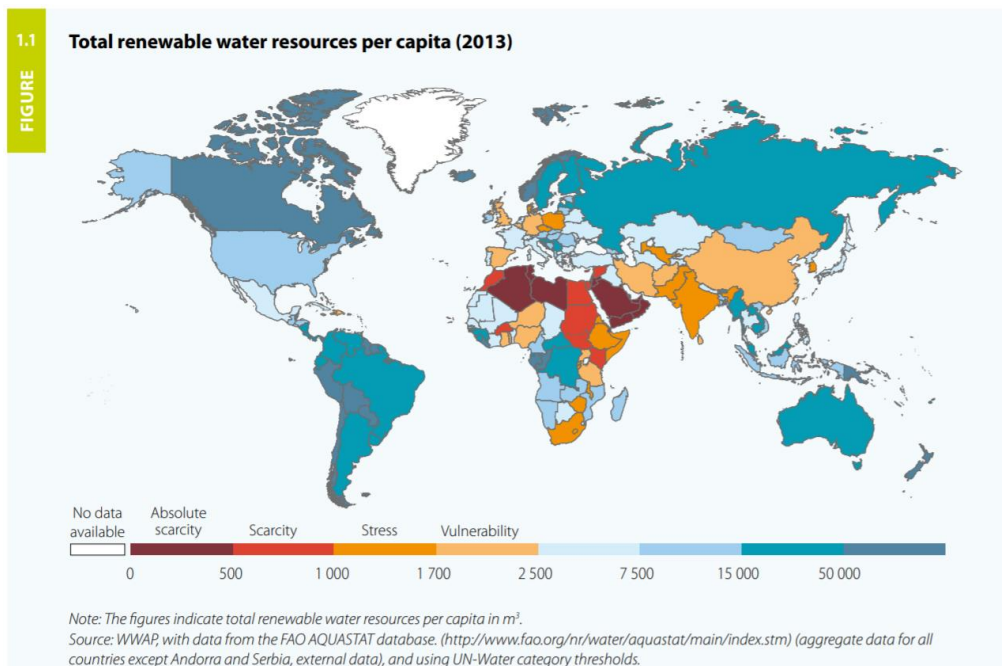
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<sup>6</sup> NIWA – The Water Accounts of New Zealand, <https://www.niwa.co.nz/freshwater-and-estuaries/freshwater-and-estuaries-update/freshwater-update-70-august-2016/the-water-accounts-of-new-zealand>

<sup>7</sup> LAWA – Water Quantity data <https://www.lawa.org.nz/explore-data/water-quantity/#/tb-region>

<sup>8</sup> LAWA – Water Quantity – Canterbury, <https://www.lawa.org.nz/explore-data/canterbury-region/water-quantity/>

<sup>9</sup> <https://sustainabledevelopment.un.org/content/documents/1711Water%20for%20a%20Sustainable%20World.pdf>



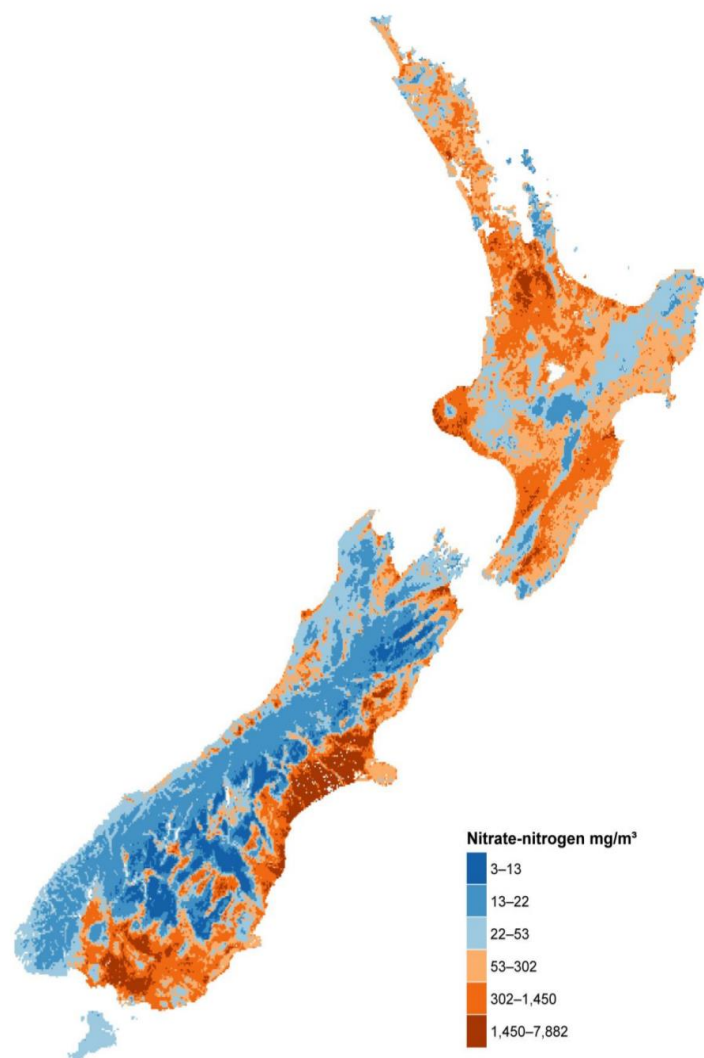
26. As noted in the 2018 NZIER Taxing Times report that was prepared for a range of Primary Sector partners, water is a renewable resource. Water is unlike finite minerals like oil and gas resources. Water is part of a cycle. Water that is taken from anywhere in the cycle (including drinking and irrigation) will be returned to the cycle in some form.
27. Economic rents or royalties are often applied to finite resources to ensure the community gains a fair return from their use. Typically, finite resources generate super profits (the price at which it can be sold, in relation to its abstraction and processing costs, is beyond a normal return) and resource rents have been applied to address this. Using water for agricultural purposes is capital intensive as it requires investment in water storage and conveyance infrastructure, irrigation application equipment and ongoing operating costs. Water use, providing it is undertaken within sustainability limits is also intergenerational – it continues year after year. The return on this investment will not likely give rise to super profits and should therefore only be subject to business income tax.
28. While there are challenges in particular catchments of New Zealand, we do not agree that there is a general case for introducing a water tax based on a shortage of water.

Is there a link between water use and water pollution?

29. Maps taken from *Our Fresh Water 2017*<sup>10</sup> by the Ministry for the Environment follow. They indicate that water quality issues such as nitrogen, phosphorus, e.coli and poor macroinvertebrate scores affect both regions with significant amounts of irrigation as well as regions with little irrigation. For example, high nitrogen levels affect waterways in Waikato, Southland and Canterbury. High phosphorus is an issue in Waikato, Wellington and Hawkes Bay. Poor macroinvertebrate scores are found in Canterbury, Auckland and Wellington.

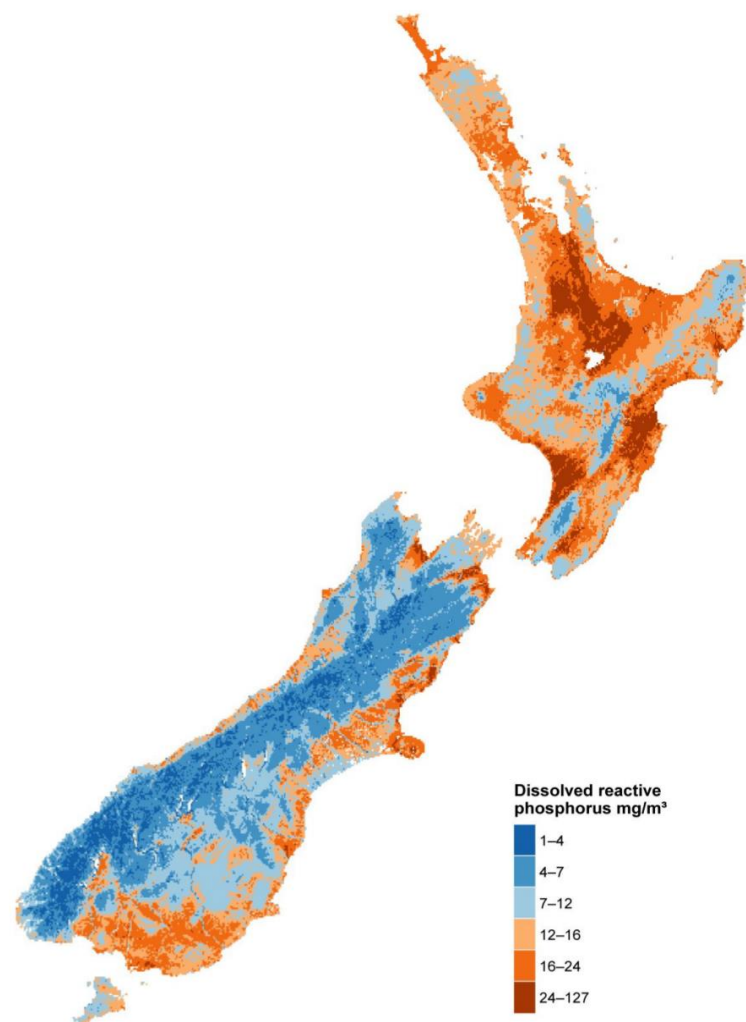
<sup>10</sup> Maps sourced from “Our Fresh water 2017”, Ministry for the Environment,  
[http://www.mfe.govt.nz/sites/default/files/media/Environmental%20reporting/our-fresh-water-2017\\_1.pdf](http://www.mfe.govt.nz/sites/default/files/media/Environmental%20reporting/our-fresh-water-2017_1.pdf)

Modelled river water quality – median concentrations  
of nitrate-nitrogen, 2009–13



Source: Larned et al, 2017

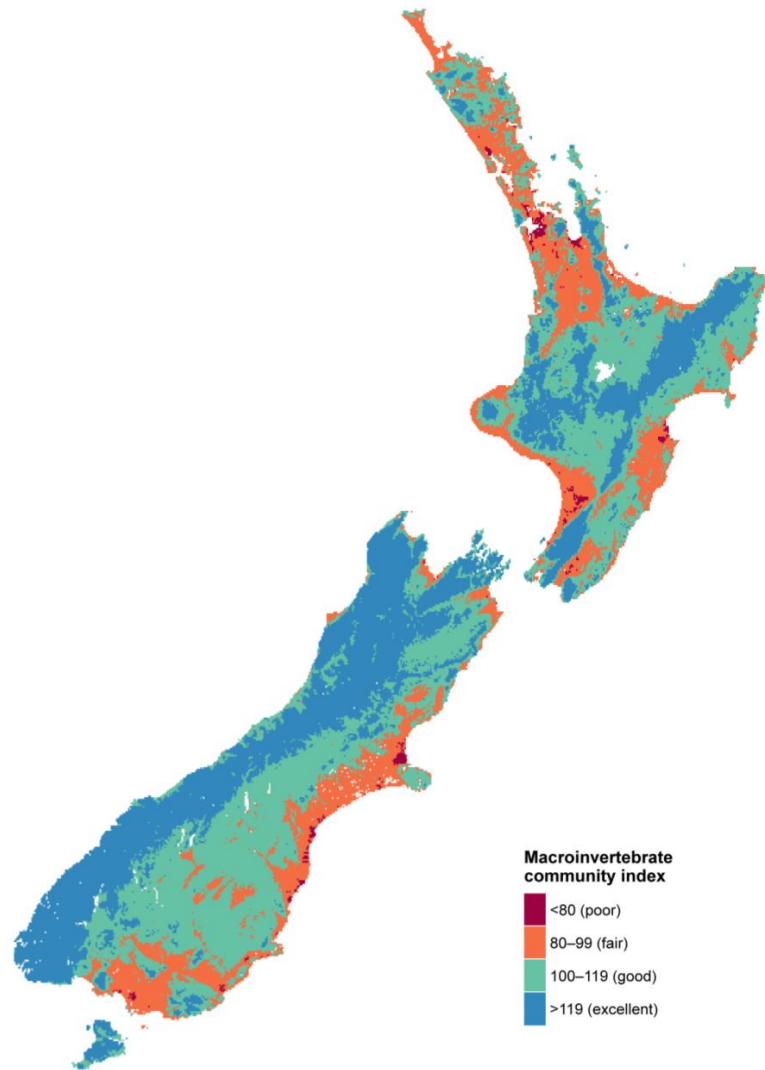
Modelled river water quality – median concentrations  
of dissolved reactive phosphorus, 2009–13



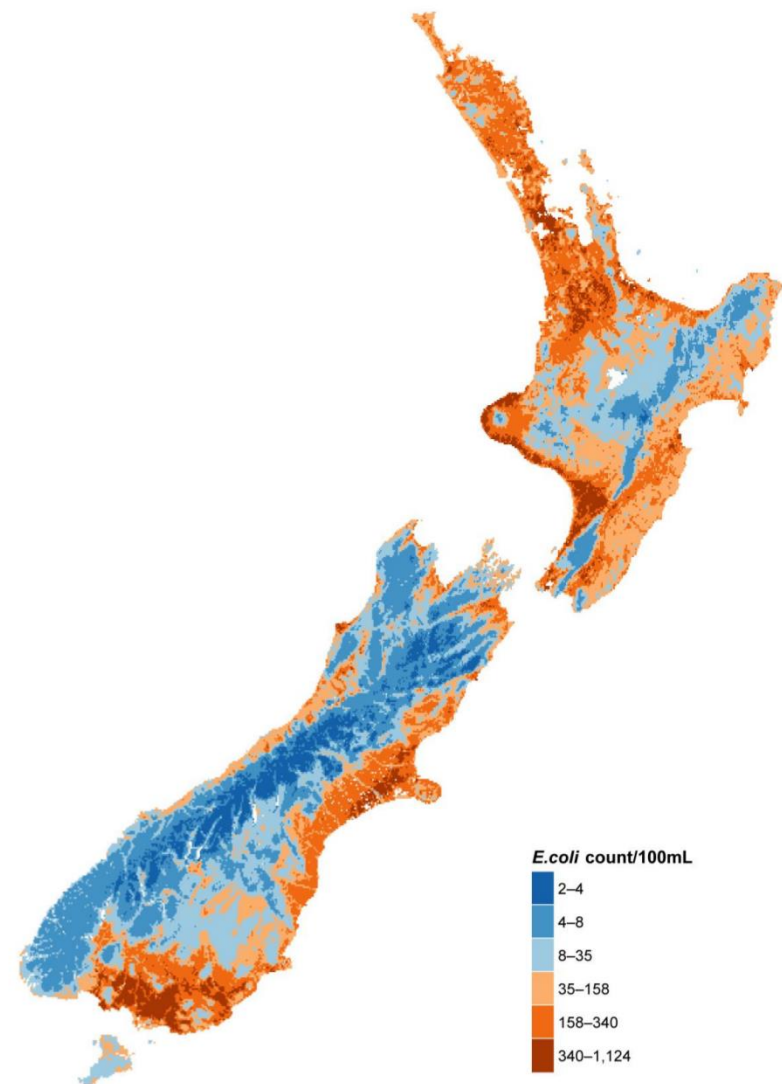
Source: Larned et al, 2017



Modelled river water quality – median scores  
of the macroinvertebrate community index, 2009–13



Modelled river water quality – median concentrations  
of *E.coli*, 2009–13





29. INZ acknowledges that land use on irrigated land can contribute to poor waterways in some areas, however the data does not support the idea that irrigation is the main contributing factor to poor waterways across New Zealand, given that many regions with very little irrigation – such as Auckland, Waikato and Southland – also have significant problems with their waterways.
30. With regards to swimmability, we have summarised the Ministry for the Environment data<sup>11</sup> by region below, along with data on how much a water tax could potentially cost each region based on a calculation of irrigated land area and average water use per hectare of 4,000 m<sup>3</sup> (400 mm). At a regional level those regions with more irrigation actually have more swimmable rivers, while the regions with the most rivers graded poor for swimming (Auckland, Waikato, Northland, Southland, Taranaki, Manawatu-Wanganui) all have less than 2% irrigated land area.

| Region            | Irrigator water tax cost<br>(\$0.02 per 1,000 litres) | Rivers graded poor for<br>swimming | Irrigated land in region |
|-------------------|---|------------------------------------|--------------------------|
| Canterbury        | \$40.5 million  | 4%                                 | 11%                      |
| Otago             | \$7.4 million   | 9%                                 | 3%                       |
| Marlborough       | \$2.5 million   | 1%                                 | 3%                       |
| Wellington        | \$1.4 million   | 6%                                 | 2%                       |
| Hawkes Bay        | \$2.3 million   | 2%                                 | 2%                       |
| Auckland          | \$0.6 million   | 62%                                | 1.6%                     |
| Nelson Tasman     | \$1 million   | 1%                                 | 1%                       |
| Manawatu-Wanganui | \$1.8 million   | 16%                                | 1%                       |
| Waikato           | \$1.9 million   | 44%                                | 1%                       |
| Gisborne          | \$0.5 million   | 0%                                 | 0.8%                     |
| Northland         | \$0.7 million   | 48%                                | 0.7%                     |
| Bay of Plenty     | \$0.5 million   | 2%                                 | 0.6%                     |
| Southland         | \$1.5 million   | 29%                                | 0.6%                     |
| Taranaki          | \$0.3 million   | 17%                                | 0.5%                     |
| West Coast        | \$0.3 million   | 0%                                 | 0.2%                     |

31. A water royalty/ tax would represent a wealth transfer from farmers in regions with more swimmable rivers to regions with less swimmable rivers. This would be contradictory to the idea of an environmental tax because those regions with less swimmable rivers would be subsidised to clean up their rivers by farmers from regions with more swimmable rivers.
32. In regards to other water quality measures, farmers using irrigation would pay the water tax to subsidise the clean-up of rivers across New Zealand. The tax does not create a relationship between pollution and taxation as this money would need to be spent in regions both with significant areas of irrigation and with little irrigation.
33. There is no incentive created to reduce pollution through taxing water use as there is no penalty or charge for those 'polluting' water created through this tax. In fact, it could be argued that

<sup>11</sup> Ministry for the Environment, Water quality for swimming (2017), <http://www.mfe.govt.nz/fresh-water/state-of-our-fresh-water/water-quality-swimming-maps>

those responsible for creating water quality issues are being subsidised by irrigators to continue polluting.

#### Would a water tax result in more efficient water use?

34. INZ is of the view that any assumption that introducing a water royalty/ tax would encourage more efficient use of water needs to be supported by evidence. The key driver for improving efficiency is setting the price of the water tax at a level which incentivises water use efficiency whilst at the same time ensuring business viability. However, given the extremely variable irrigation requirements at the sub-catchment scale, as a result of different soil types and rainfall bands, this is very difficult task to achieve.
35. We also note that there is the potential for a range of adverse effects to occur as the result of an introduction of a new tax.
36. INZ carried out an online survey of our member irrigators in 2017 on the potential impact of a water tax at a \$0.02 per 1,000 litre rate. It should be noted that our membership is generally made up of medium to larger size properties rather than small or lifestyle properties. They told us that based on their water use:
  - 30% of irrigators would pay less than \$10,000 per annum
  - 19% of irrigators would pay between \$10,000 and \$20,000 per annum
  - 29% of irrigators would pay between \$20,000 and \$40,000 per annum
  - 22% of irrigators would pay \$40,000 or more per annum.
37. We are concerned at the significant financial impact on a small subset of the farming community (those 12,500 who have an irrigation consent) who may be asked to fund national waterway improvements with funding directed to areas far away from their homes. Most of these same irrigators are also investing significant funding and time to meet the recent introduction of regional standards aimed at improving water quality.
38. Responses from survey participants on how they would fund the costs of a water tax are below:
  - 40% of farmers said they would need to increase the number of stock on their farm to pay for the water tax
  - Of the 59 arable, sheep, beef or mixed cropping and sheep or beef farmers participating in the survey, 48% said they would consider converting their property to other uses, like dairying, dairy grazing, horticulture and more intensive activities to make their farms viable enough to fund the cost of the tax. Two property owners said they would consider selling up.
  - 63% of farmers said they would reduce their spending in local communities
  - 56% of said they would look at reducing debt payments and 35% of farmers said they would consider increasing debt.
  - 27% said they would have to look at either reducing staff hours or laying off staff to meet the tax costs

39. Impacts:

- a. Over 80% of the survey participants said they had already done one or more of the following – fenced off waterways, undertaken riparian planting, or undertaken some other kind of biodiversity enhancement work.
- b. 50% said they would reduce riparian planting, wetland restoration or other biodiversity enhancement work as a result of the tax.
- c. 45% said they would scale back investment in funding more efficient irrigation systems.

40. We would summarise our concerns about the introduction of a water tax and water use efficiency as follows:

- a. Introducing a water tax would reduce the funding farmers have available to convert to more modern irrigation systems. Shifting to a more water efficient system is the biggest change farmers can make to reduce their water demand and nutrient losses.
- b. Introducing a water tax may not reduce demand for water – sheep, beef and cropping farmers told us they would consider moving to more intensive farming models that would use more water to pay the tax costs.
- c. A water tax may reduce spending in rural communities, on farm staffing and on environmental initiatives.

### Would tax income be ring-fenced?

41. There needs to be clarity around the purpose of a water tax/ royalty, and how any funds raised would be used. Some of the issues that need to be addressed are:

- a. What is the purpose of this tax? We note that the idea to introduce a water tax originated from concerns about exporting bottled water not paying their way. If the concern is that water bottlers are not paying their fair share of taxes through the taxation system then this needs to be considered and any loopholes closed.
- b. Is a water tax aimed at encouraging more efficient water use? If yes, then how would the tax be set to ensure it would be effective given the considerations in paragraph 34?
- c. Would funds from a water tax be used to improve water quality? If yes, what other options are available to improve water quality and would they be more effective? We note that regulatory mechanisms to improve waterways which impose significant costs on farmers (and irrigators) are already showing they are having a positive effect.<sup>12</sup>
- d. If funding is to be used to improve water quality then we need to understand if water users are causing all the water pollution and if not, why are they being targeted to pay for improvements to water quality across New Zealand?
- e. If a water tax/ royalty is not to be ringfenced for improving water quality then:
  - How would the funding be used? and
  - Why is this tax being introduced when other renewable natural resources are not taxed?
- f. Finally, what is the impact of the tax on those who would pay it?

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<sup>12</sup> <https://www.lawa.org.nz/get-involved/news-and-stories/national-news/2018/april/new-zealand-river-water-quality-trends-show-cause-for-optimism/>

## A water tax/ royalty assessed against other tax criteria

42. The working party's paper identifies six criteria for assessing taxes against and we have included comment on each below:
- a. efficiency
  - b. equity
  - c. revenue integrity
  - d. fiscal adequacy
  - e. compliance and administration costs
  - f. coherence

### Efficiency

43. Should a water tax be imposed on all water users then it may be seen as an efficient tax. However, if exemptions are made, for example for stockwater use or those on Council municipal water supplies and not for irrigation then this could lead to inconsistencies and changes in behaviour. For example, many farmers use water both for stock and irrigation from the same source and it would be difficult to measure and charge for use for each purpose. Equally, many lifestyle properties source water for irrigation from Council supplies while other lifestyle properties have their own irrigation consent. Given that in both examples property owners would be carrying out the same activity and use similar amounts of water but rely on different water sources, it would be inconsistent to charge a water tax/ royalty for one activity but not another.

### Equity and coherence

44. A tax on water would need to be applied on all water users otherwise it would not be equitable. For example, a carwash business or a café in a city is using water for a commercial purpose - the same as an irrigated farm does.
45. Equally, water used for hydro-electric generation should not be exempt from a water tax. Although frequently described as non-consumptive, hydroelectric generation is a commercial use of water that generates significant profits for its shareholders. The use of water for this purpose means that water is not available to be used for other commercial purposes – it is exclusive.
46. We would also contend that if the aim of introducing a water tax is to provide funding to improve waterways across New Zealand, then allowing most of the burden of paying this tax to fall on a small group of farmers and growers (less than 2% of New Zealand businesses) raises significant equity concerns. These concerns are exacerbated by the fact that the group paying the tax have not been demonstrated to be the main cause of our water quality problem.
47. Over 80% of New Zealand's irrigated land is located in four regions – Canterbury, Otago, Marlborough and Hawkes Bay. These regions have lower rainfall and drier climates and use irrigation to supplement their rainfall. There are significant costs with using irrigation including the cost of funding irrigation infrastructure, ongoing maintenance and electricity costs and the cost of meeting environmental and compliance costs needed for consents. Is it equitable to tax water use by farmers and growers in these regions while those farming in other regions enjoy

free access to higher rainfall which they also use as part of their farming operation to improve their productivity?

48. Taxing water use for irrigation cannot simply be seen as a “gain” for the tax system. Taking a significant amount of additional tax from irrigators reduces the amount of Business Income Tax they would contribute to the government. Given that larger farms could be paying in the order of \$20,000 or more per year in a water tax, for some farmers this may turn a comfortably profitable farm into a marginal business. Based on farmer survey responses reducing staff hours (PAYE), reducing the number of staff employed (PAYE) and reducing spending in local communities (GST and Business Income Tax) as well as the intensification of farming are all potential outcomes from introducing a water tax/ royalty.

#### Revenue integrity and Fiscal adequacy

49. We note that there would need to be clarification as to whether a water tax/ royalty would be levied based on consented water allocation or actual usage. If the tax is based on actual use there is likely to be significant variation in the income season to season. With over 75% of New Zealand’s irrigated land located in Canterbury and Otago, a wet South-Island summer could result in significant drop in annual revenue, creating uncertainty about future revenue levels.
50. We would have significant questions about whether charging for water based on consented use is equitable, given that actual use is generally significantly lower for irrigators. To provide water supply reliability, allocations are typically based on a 1 in 10 year drought scenario. Furthermore, consents are not created equal, some farmers and growers in a catchment are not able to use their full water allocation most years due to different minimum flow or ground water level restrictions. They instead have to build water storage or source alternative water supplies to provide their required water supply reliability. The question is should these businesses, who have invested to a much greater level, have to pay the same rate as others?
51. Finally, designing a suitable water tax/ royalty system which would avoid opportunities for tax evasion would be challenging.

#### Compliance and administration costs

52. Much of the complexity of introducing a water tax would relate to its design and implementation. In order to impose a water royalty/ tax, a number of issues need to be clarified:
- who would pay the tax and who would be exempt (or what activities would be exempt)
  - how and by whom would the tax be collected (nationally or regionally)
  - on what basis would it be collected (actual use or allocation)
  - if actual use the level of accuracy required (implications of Weights and Measures Act and Regulations and the costs associated with this)
  - what is the tax rate and does it vary (activities and regional variations in water use)
  - how it would be spent and where
53. The introduction of a water tax/ royalty has been considered in many other countries, but none have decided to adopt such a charge, mainly because of the administrative complexity of designing and implementing an equitable water tax/ royalty system.

54. For example, if domestic water use was exempted from a tax, then how would rural households who use water for irrigation and for household use from the same source be treated? If urban townships are exempted this creates anomalies as many semi-rural (lifestyle) properties use water for irrigation from a Council water supply to carry out the same activities on farms, but would escape a water tax, while farms would pay a tax. Would stock water be charged? And if not, how is water race water which is used for both stock use and irrigation treated?
55. Equally, in regions where water is scarce like Central Otago, a higher charge could be imposed but this may make farming unviable. In drought prone regions farming is already challenging. Imposing a significant new tax may result in farming becoming uneconomic. This has flow-on effects on the local economy as well as the environment, for example, through not having farmers available to carry out pest control activities or graze land resulting in a higher fire risk.

### Iwi rights and Interests

56. INZ notes there are complications with establishing a water tax/ royalty with regard to iwi rights and interests. The government implementing a water tax/ royalty implies ownership – whereas the Crown's stance to date has always been one of 'nobody owns water'. Iwi rights and interests in water would therefore have to be resolved as part of implementing the water tax/ royalty.

### Other taxes

57. INZ supports the submissions of Federated Farmers and HorticultureNZ with regard to the other taxes contained in the Future of Tax paper.

### The cumulative effect of taxes

58. We would like to highlight that the cumulative effect of the financial cost of regulatory requirements, as well as the combined impact of new taxes on irrigators and farmers more generally need to be considered in terms of equity and ability to pay.
59. Potentially there are a range of new taxes which could affect irrigators – additional fuel tax, a water tax, a land tax, and a carbon emissions tax. These are in addition to the substantial costs they will need to fund to meet new regional environmental regulatory standards being implemented as a result of the Freshwater Management National Policy Statement.



## Existing regulatory requirements and costs

60. A proposal to introduce a significant new tax needs to be considered in light of the existing compliance costs those potentially paying it are facing.
61. We will use the example of Canterbury irrigated farms, as just over 60% of New Zealand's irrigated land is located in this region.
62. Environment Canterbury recently introduced a requirement for most of the farms in the region (including irrigated farms) to prepare Farm Environment Plans<sup>13</sup>. 3,000 farms have recently prepared their plans or are in the process of doing so. Around another 1,000 plans will need to be developed by 2020.
63. The plans need to show how farmers will manage and reduce nutrient losses over time, manage effluent (for dairy farms), show they are using irrigation efficiently through metered data and practices, and undertake other actions to protect and enhance the environment (like riparian planting). The goal of a Farm Environment Plan is to improve water quality. The plans are regularly independently audited, with the frequency depending upon their performance – for example a B Grade property is audited every two years.
64. The external cost to have a farm environment plan, including a nutrient budget, prepared is around \$4,000-\$5,000. They must also submit a consent to Environment Canterbury to have their plan approved at a cost of \$1,700. An independent audit costs around \$1,200, with annual water meter and telemetry costs around \$500.
65. Each farm will identify a series of actions they must undertake to meet environmental standards – for example upgrading their dairy effluent treatment, installing soil moisture monitoring technology, undertaking staff training on how to use their irrigation system, fencing and planting waterways. The costs and staff time of undertaking these actions is an additional cost they must meet which will vary from farm to farm. Meeting new nutrient limits will be challenging for farmers and may require trialling different crops or in some cases reducing stocking which may reduce their farm income.
66. Some farmers are also required to invest in more modern irrigation systems to improve water use efficiency as a requirement of regional rules. Under Plan Change 5 requirements, Aqualinc provided evidence that showed \$86 million was required to be spent to modernise irrigation systems in Canterbury to meet new regional rules.
67. Further south in Otago, many irrigators currently use water based on historical permits dating from gold mining days. These permits will expire in 2021 and will need to be replaced with resource consents under the Resource Management Act. Through the consent application process, applicants need to show they are using water efficiently. Many existing irrigators will need to shift from older flood irrigation systems to modern spray systems. Shifting from a border dyke to modern spray system reduces water wastage by around 20% but there is also a significant capital costs in this upgrade (\$5,000 - \$10,000 per hectare depending on system types

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<sup>13</sup> <https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-land-and-water-regional-plan/>

and topography). Introducing a new water tax reduces farmers ability to afford irrigation modernisation.

68. Canterbury farmers are not the only areas where there is a requirement to prepare a Farm Environment Plan – this is required in Horizons, some areas of Hawkes Bay, Otago and soon the Waikato. In many regions there is also a requirement for farmers and growers to show they are using water efficiently.
69. Irrigators who are members of irrigation schemes often have additional consent requirements or voluntary initiatives to provide environmental benefits. For example, the Central Plains Water Scheme provides funding for community planting projects.
70. Future spending needs to be viewed in light of other investment. DairyNZ surveyed farmers and found in 2015 that dairy farmers spent an average of \$90,000 per farm on environmental initiatives in the period from 2010 to 2015. Environmental initiatives they had invested in included effluent management, stock exclusion, riparian planting, upgrading systems and investing in technology, retiring land and developing wetlands.<sup>14</sup> More recently the Ministry for the Environment calculated that farmers must spend \$135 million per year until 2040 on mitigations required under regional rules to improve river swimmability. These mitigations include excluding stock from waterways, riparian planting, and the management of farm dairy effluent.<sup>15</sup>
71. A recent report looking at water quality measures for the period 2007-2016 has indicated that more sites are improving than degrading across all measures – clarity, phosphorus, e.coli and nitrogen (see summary below from LAWA).<sup>16</sup> A range of actions have contributed to these improvements, with the investment to date by farmers playing an important role in this. According to Environment Canterbury, in Canterbury where over 50% of irrigated land is located, more sites at monitored rivers are also now improving than degrading.<sup>17</sup>

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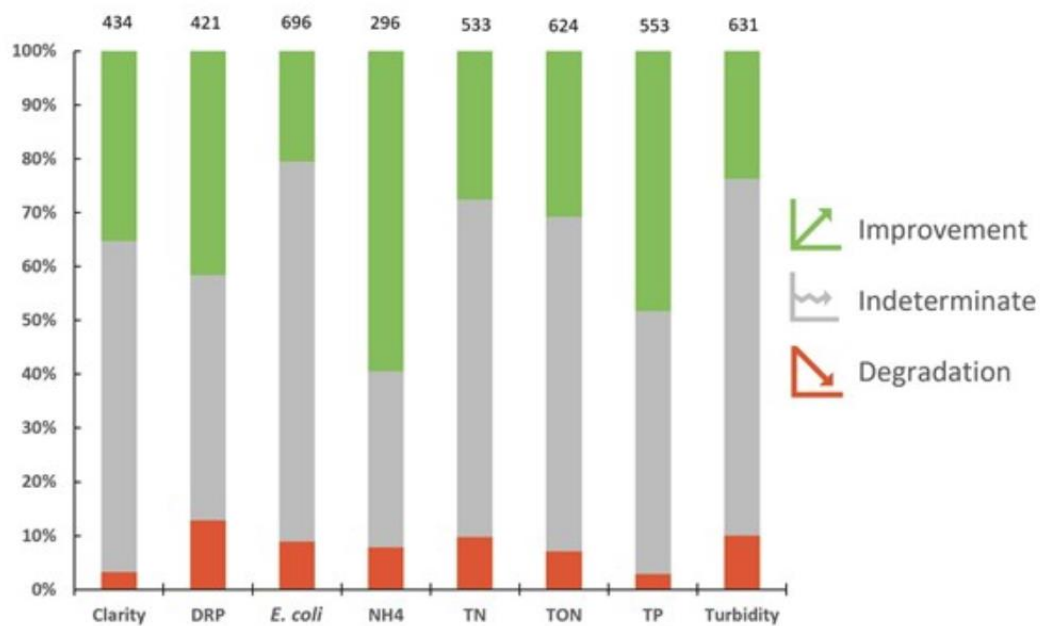
<sup>14</sup> <https://www.dairynz.co.nz/news/latest-news/dairy-farmers-spend-over-1-billion-on-the-environment/>

<sup>15</sup> Ministry for the Environment (March 2018). *Regional information for setting draft targets for swimmable lakes and rivers*. <http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/Regional%20information%20for%20setting%20draft%20targets%20for%20swimmable%20lakes%20and%20rivers-final.pdf>

<sup>16</sup> <https://www.lawa.org.nz/explore-data/river-quality/#/tb-national>

<sup>17</sup> <https://bit.ly/2Hksovc>

## Percentage of NZ sampling sites with improving or degrading trends 2007-2016 (LAWA)



72. Many of the environmental requirements are new and the effects of changing farming practices are starting to show an effect with further effects to be seen in the future. However, we need to consider whether it is fair to tax farmers and growers using water in order to fund water quality improvements when they are already investing significant time and money in initiatives to improve water quality? These are resulting in improvements to waterways and are expected to create further improvements over time. Can a small subset of farmers afford these additional costs and still remain viable?

### How do we improve water quality and encourage water use efficiency?

73. If a water tax aims to raise funds to improve waterways we need to examine if this is the best approach to achieve this goal. We offer two examples of areas which have successfully implemented changes to improve local waterways.

#### *Waterway improvements in the Manawatu-Wanganui Region*

74. The Horizons region recently released a study showing there was strong statistical evidence of reductions in sediment (suspended sediment, water clarity and turbidity), as well as E.coli, in local waterways. Modelling showed there has been a 5 to 8% improvement in "swimmability" in the region in the decade ending in 2016.<sup>18</sup>
75. The Council took an approach of working side by side with farmers and others on practical solutions, tailored to each catchment and informed by science.
76. 683 farm environment plans, covering more than 500,000ha, advice on 'best' farm practice, the planting of 14 million trees and more than 570 km of waterways being fenced off are some of

<sup>18</sup> [http://www.horizons.govt.nz/HRC/media/Media/Water/Horizons-Ecoli-Sediment-Trends\\_Final-2018.pdf](http://www.horizons.govt.nz/HRC/media/Media/Water/Horizons-Ecoli-Sediment-Trends_Final-2018.pdf)

the major components of the plan. Targeted action on highly erodible land, upgrading point source discharges and planting stream margins were other actions undertaken through the plan.

#### *Waterway improvements in North Canterbury*

77. Another example of a successful initiative to both improve water use efficiency and improve water is underway in North Canterbury.
78. To improve the efficiency of the Amuri Irrigation Scheme, over 20,000 hectares of the scheme area were converted from flood irrigation to more efficient spray irrigation in the decade before 2016, with over \$100 million spent on farms in that modernisation process. In 2016 the scheme began replacing the water race irrigation network with a piped network at a cost of \$85 million. The open water race network saw around 30% of water being lost due to leakage and operational by-wash. The reduction in demand for water allowed the scheme area to expand to cover an extra 5,860 hectares, with the expanded area using the same amount of water.
79. The shift from flood to spray irrigation has also been key to the success of irrigators efforts to improve their local river. In 2001, an algal bloom was found in the Hurunui River and Environment Canterbury identified that the problem originated in the Pahau River, a tributary which flows into the Hurunui. Farmers who were part of the Amuri Irrigation Company formed the Pahau Enhancement Group. They worked to reduce the amount of run-off water from farms containing phosphorus, sediment and E.coli, in order to improve the river.
80. Some farmers chose to convert to spray irrigation while others decided to develop ponds to capture and recycle irrigation water. They undertook a range of other work including riparian plantings and fencing off waterways from stock. Amuri Irrigation established the Amuri Irrigation Environmental Collective in 2013. All scheme members are required to be part of the collective and must complete audited farm environment plans. The collective has provided support to help develop the plans as well as education and training opportunities for farmers, such as field days.
81. Analysis work on the Hurunui River and its tributaries has shown that between 2005 to 2017, nitrogen loads from the Amuri Basin during the irrigation season have been trending down. Phosphorous loads are also strongly trending down. This reduction has been achieved despite a 50% increase in the dairy platform area over the same period. The trends for phosphorus loads are attributed to the reduction in flood irrigation by-wash water - the main phosphorus source from the Amuri Basin. Median annual loads are now three to four times lower than in 2001 to 2006.<sup>19</sup>
82. The Pahau River was named most Improved River at the 2017 River Awards, based on data showing there had been a 15.6% year on year trend reduction in E.coli levels over the previous ten years.

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<sup>19</sup> [https://www.irrigationnz.co.nz/Attachment?Action=Download&Attachment\\_id=414](https://www.irrigationnz.co.nz/Attachment?Action=Download&Attachment_id=414)

### *What makes these projects successful?*

83. The two examples above indicate that improvements to waterways require collaboration, access to science and technical support, alongside a significant investment of time and resources on farm. It also takes time for changes to be implemented and have an effect.
84. A water tax would reduce the funding available on farms to take the necessary actions to see an improvement in water quality, like irrigation modernisation.
85. Environmental interventions need to be targeted to specific areas of need, and solutions identified that are based on science and are tailored to the specific issues within that catchment. A generic water tax/ royalty does not achieve this and is therefore not a 'fit for purpose' approach for addressing water quality issues in NZ.

### Background on irrigation and water use in New Zealand

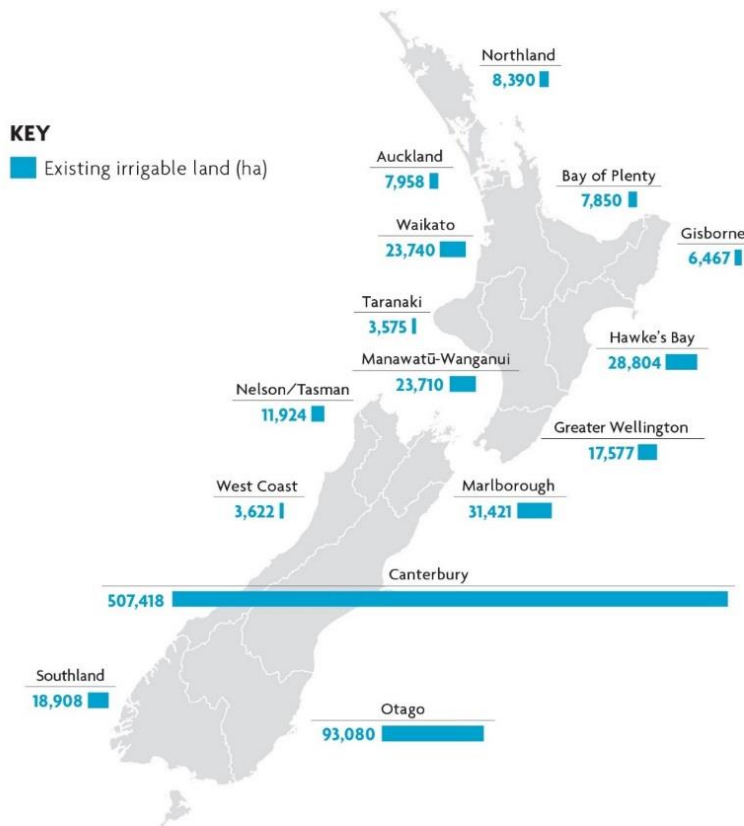
#### How water is used in New Zealand

86. Based on LAWA data, consented water use in New Zealand is currently used for:
  - Irrigation 62% - 6.8 billion litres
  - Industrial use 4% - 0.4 billion litres
  - Stock 17% - 1.8 billion litres
  - Town water supplies 10% - 0.3 billion litres
  - Other uses 7% - 0.8 billion litres
87. Globally, around 70% of water is used for agricultural use, 19% for industrial use and 12% for town use<sup>20</sup>. While water use by New Zealand's agricultural sector is slightly higher than the global average, water use for irrigation is not excessive as agricultural production and agricultural exports are a significant part of New Zealand's economy. Relative to many countries New Zealand also has plentiful water resources.
88. As we noted previously, New Zealand has a plentiful supply of rainfall. According to NIWA, New Zealand currently receives an average of 550 billion m<sup>3</sup> of rain each year, of which 80% flows out to sea supporting river ecosystems along the way. Around 2% is used for irrigation, urban and industrial use, with the remaining rainfall evaporating.

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<sup>20</sup> [http://www.fao.org/nr/water/aquastat/tables/WorldData-Withdrawal\\_eng.pdf](http://www.fao.org/nr/water/aquastat/tables/WorldData-Withdrawal_eng.pdf)

## Irrigated land in New Zealand



New Zealand's Existing Irrigated Area and Future Potential

Source: MfE (2012), National Irrigated Land Spatial Dataset: Summary of methodology, assumptions and results.

89. There are estimated to be around 12,500 irrigators with a consent to use water in New Zealand, (based on LAWA data<sup>21</sup> along with estimated consent numbers from Otago). In total there were estimated to be approximately 58,000 farms in the 2012 Agricultural Production Census.<sup>22</sup>

### What does irrigation contribute?

90. Irrigation plays an important role in food production. Worldwide, around 20% of agricultural land is irrigated, however this land helps produce 40% of the world's food supply.<sup>23</sup>
91. Irrigation helps ensure that produce can be delivered to specific quantity and quality standards for export and domestic use. Over the past summer, where New Zealand experienced record-breaking dry periods coupled with deluges, irrigation played an important role in ensuring food remained affordable and in stock in local supermarkets.

<sup>21</sup> LAWA – Water Quantity, <https://www.lawa.org.nz/>

<sup>22</sup> [http://archive.stats.govt.nz/browse\\_for\\_stats/industry\\_sectors/agriculture-horticulture-forestry/2012-agricultural-census-tables/farm-counts.aspx](http://archive.stats.govt.nz/browse_for_stats/industry_sectors/agriculture-horticulture-forestry/2012-agricultural-census-tables/farm-counts.aspx)

<sup>23</sup> Food and Agriculture Organisation of the United Nations, <http://www.fao.org/nr/water/aquastat/irrigationdrainage/treemap/index.stm>



92. The photo below was taken on a Canterbury farm in early January 2018. The section of the paddock with crop growth was irrigated, while the areas with virtually no crop growth were not reached by the irrigator and shows the effects of several weeks of dry weather on crop growth.



93. The demand for irrigation comes both from farmers, but also from suppliers who want security of food supply to meet consumer demand.
94. With climate change expected to bring increasingly severe droughts, along with more intense rainfall events, water storage and irrigation is a sensible and necessary approach to managing through the effects and providing national food security.
95. Irrigated land employs considerably more people than unirrigated land. New Zealand socio-economic studies of a number of irrigation schemes have shown that an average of 50 additional full-time jobs are created when 1,000 hectares of land installs irrigation. For high-value industries such as horticulture, up to 500 jobs per 1,000 hectares are created when irrigation is added to land.<sup>24</sup>
96. NZIER estimated in 2014, that based on there being 720,000 hectares of irrigated land in New Zealand, irrigation adds \$4.8 billion to New Zealand's GDP<sup>25</sup>. There is now an estimated 800,000 hectares of irrigated land in New Zealand that is irrigated.
97. The cost of installing irrigation is largely borne by farmers, however the benefits from this investment, whilst obviously accruing to the irrigating farmer, also accrue more widely to surrounding farmers, rural communities, regional government through increased rates, and the government through more employment and more taxable income.

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<sup>24</sup> [https://www.irrigationnz.co.nz/Article?Action=View&Article\\_id=13](https://www.irrigationnz.co.nz/Article?Action=View&Article_id=13)

<sup>25</sup> [https://www.irrigationnz.co.nz/Attachment?Action=Download&Attachment\\_id=24](https://www.irrigationnz.co.nz/Attachment?Action=Download&Attachment_id=24)