SUBMISSION ON

Taranaki Freshwater Targets

2 August 2024

To: Taranaki Regional Council
Name of Submitter: Horticulture New Zealand

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Horticulture™ New Zealand
Ahumāra Kai Aotearoa

OVERVIEW

Submission structure

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Our submission

Horticulture New Zealand (HortNZ) thanks Taranaki Regional Council for the opportunity to submit on the Taranaki Freshwater Targets and welcomes any opportunity to continue to work with Taranaki Regional Council and to discuss our submission.

The details of HortNZ's submission and decisions we are seeking are set out in our submission below.

PART 1

HortNZ's Role

Background to HortNZ

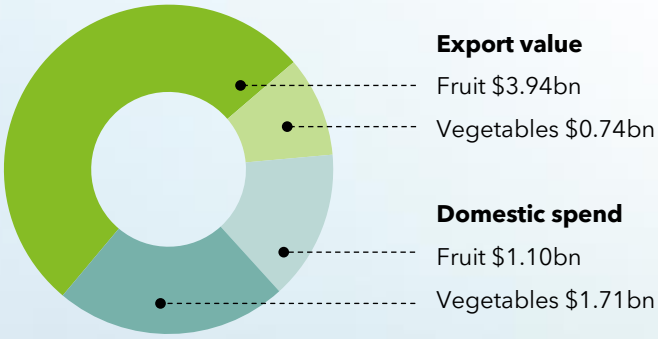
HortNZ represents the interests of approximately 4,200 commercial fruit and vegetable growers in New Zealand who grow around 100 different fruits and vegetables. The horticultural sector provides over 40,000 jobs.

There are approximately 80,000 hectares of land in New Zealand producing fruit and vegetables for domestic consumers and supplying our global trading partners with high quality food.

It is not just the direct economic benefits associated with horticultural production that are important. Horticulture production provides a platform for long term prosperity for communities, supports the growth of knowledge-intensive agri-tech and suppliers along the supply chain; and plays a key role in helping to achieve New Zealand's climate change objectives.

The horticulture sector plays an important role in food security for New Zealanders. Over 80% of vegetables grown are for the domestic market and many varieties of fruits are grown to serve the domestic market.

HortNZ's purpose is to create an enduring environment where growers prosper. This is done through enabling, promoting and advocating for growers in New Zealand.



Industry value $7.48bn

Total exports $4.67bn

Total domestic $2.81bn

Source: Stats NZ and MPI

HortNZ's Resource Management Act 1991 Involvement

On behalf of its grower members HortNZ takes a detailed involvement in resource management planning processes around New Zealand. HortNZ works to raise growers' awareness of the Resource Management Act 1991 (RMA) to ensure effective grower involvement under the Act.

PART 2

Executive Summary

Horticulture in Taranaki and Potential Diversification

Horticulture is currently a small activity in the region supplying fruits and vegetables to domestic and export markets. Taranaki has a proliferation of small market gardens and orchards that sell to consumers within the region. Horticulture in presents an opportunity to diversify the region's land uses and make the economy more resilient while reducing key contaminants that are not a problem for horticulture, such as *E. coli*.

Access to ancillary activities like packhouses, transportation infrastructure and labour are all key considerations, but expansion is possible. Venture Taranaki has recognised the potential for horticultural expansion, especially in avocados, kiwifruit and vegetables.[1] Industry growth can be nurtured, and horticulture could once again be a strong sector in Taranaki with enabling planning provisions.

Horticulture and Freshwater Targets

Horticulture should be prioritised and enabled as a land use given its efficient use of resources (in particular for orcharding) and importance for domestic food supply (in particular vegetable production). Horticulture has lesser environmental effects than other land uses, with the dual benefit of being a low emissions activity. Especially given the small footprint of the sector, and thus small contribution to contaminant loads in Taranaki, the rules framework should be designed with care to enable, rather than constrain, horticulture.

Freshwater Farm Plans and Industry Assurance

The horticulture sector is well prepared to deliver freshwater farm plans, so long as there is an industry assurance pathway. Growers widely use Good Agricultural Practice (GAP) industry assurance programmes to meet their food safety, social practice and environmental market and regulatory requirements. GAP is a credible, trusted and well-established system that has been around for decades. New Zealand GAP (NZGAP) is preparing to benchmark their Environment Management System (EMS) add-on to freshwater farm plan requirements. Regional plans that recognise industry assurance will support growers and reduce duplication in compliance requirements.

[1] Branching Out » Taranaki, New Zealand (venture.org.nz)

PART 3

Submission

1. Horticulture in Taranaki and Potential Diversification

Horticulture is currently a small activity in the region with approximately 23 commercial growers, who grow avocados, citrus, subtropical fruits, kiwifruit, berries, and vegetables both indoors and outdoors supplying both domestic and export markets.[2] Taranaki has a proliferation of small market gardens and orchards that sell to consumers within the region.[3] Venture Taranaki has recognised the potential for horticultural expansion, especially in avocados, kiwifruit and vegetables.[4] The region is well-suited to horticulture. In the early 1980s, before Cyclone Bola there were over 1,700 ha of horticulture in the region with 90 growers. The cyclone in 1988 caused widespread damage to crop, and production never returned to peak levels.[5] Industry growth can be nurtured and horticulture could once again be a strong sector in Taranaki, however, with enabling planning provisions.

Horticulture in Taranaki presents an opportunity to diversify and make the economy more resilient whilst reducing key contaminants that are not a problem for horticulture, such as *E. coli*. 207,000 ha of land in the region have been identified as possibly suitable for horticulture.[6] Access to ancillary activities like packhouses, transportation infrastructure and labour are all key considerations, but expansion is possible.

2. Taranaki Food Supply

Due to the small regional horticulture industry and the distributed nature of food retail in New Zealand, most of the food consumed in Taranaki was not grown in the region. When asked about the importance of small-scale food production, one local grower said, "Small-scale food production is one major key in solving our climate crisis. It is a path towards reducing food miles, implementing regenerative practices that protect soil and captures carbon and closes nutrient cycles while protecting indigenous biodiversity."[7] Supporting local food production to feed the region, the nation and the world through valuable export crops requires access to freshwater.

3. National Value of Fruit and Vegetable Growing

Vegetables are essential to nutrition, and New Zealand cannot import sufficient fresh vegetables to meet our domestic demand due to our geographic isolation and the perishable nature of the produce.[8] Over 80% of vegetables sold by New Zealand vegetable

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[2] Fresh-Facts---December-2023.pdf (unitedfresh.co.nz)
[3] Venkateswar et al. *Farming to Flourish – Regenerative Food Systems, Sustainable Livelihoods and Thriving Communities in Taranaki, Research Report, 2020-2021.*
[4] Branching Out » Taranaki, New Zealand (venture.org.nz)
[5] Taranaki Regional Council. The Taranaki Economy and Freshwater Management.
[6] Taranaki Regional Council. The Taranaki Economy and Freshwater Management.
[7] Venkateswar et al. *Farming to Flourish – Regenerative Food Systems, Sustainable Livelihoods and Thriving Communities in Taranaki, Research Report, 2020-2021.* (p. 10)
[8] Agchain 2023 Sensitivity of Domestic Food Supply to Loss in Vegetable Growing Production in Specified Vegetable Gorwing Area. Report for MfE.

growers are for domestic consumption. Fruits, particularly citrus, grown in Taranaki will support domestic food supply. Reductions in supply influence the cost of healthy food and reduce the diversity of varieties grown, raising the cost of living and reducing consumer choice.

Resource management has an impact on public health when plans enable or enact barriers to fresh fruit and vegetable production. Compliance costs are increasingly a factor in the cost of production, which has flow-on effects for food affordability. Taranaki Regional Council has the opportunity with the new Land and Resources Plan to design rules that are mindful of the public health benefits of horticulture.

Horticulture is a low emissions activity with the potential to lower regional greenhouse gas emissions and get higher value with a smaller land and resource footprint. Fruit growing in particular is incredibly resource efficient. For instance, New Zealand Kiwifruit Growers Inc. estimates that when compared to the dairy industry, kiwifruit as an intensive land use creates 40 times more jobs per hectare, 35 times food per hectare, and 15 times export earnings per hectare (and far greater again than sheep and beef) while contributing minimal contaminants to waterways when compared to other land uses.

Commercial-scale vegetable production in Taranaki is of national importance due to its contribution to food supply across the North Island. The growing in Taranaki is of particular importance as vegetable growers in neighbouring regions, particularly Horizons and Waikato, are under intense regulatory pressure. Regional diversity in growing provides resilience in the case of adverse weather events. If a cyclone takes the East Coast out of production for a season, for instance, Taranaki can provide supplementary food supply.

4. Freshwater Farm Plans and Industry Assurance

Fruit and vegetable growing should remain a permitted activity in Taranaki. The rules framework should allow growers over 5 ha to meet environmental requirements with a Freshwater Farm Plan, delivered via industry assurance.

The horticulture sector is well prepared to deliver freshwater farm plans, so long as there is an industry assurance pathway. Growers widely use Good Agricultural Practice (GAP) industry assurance programmes to meet their food safety, social practice and environmental market and regulatory requirements. GAP is a credible, trusted and well-established system that has been around for decades. New Zealand GAP (NZGAP) is preparing to benchmark their Environment Management System (EMS) add-on to freshwater farm plan requirements. Regional plans that recognise industry assurance will support growers and reduce duplication in compliance requirements.

The horticulture industry widely uses Good Agricultural Practice (GAP) programmes such as New Zealand GAP (NZGAP, owned by Horticulture New Zealand) and GLOBALG.A.P. (based in Cologne, Germany). GAP schemes provide assurance for the safe and sustainable production, packing and distribution of fruits and vegetables in New Zealand. Horticulture businesses who achieve compliance with GAP assurance standards demonstrate that management systems, procedures and practices are in place to meet relevant regulatory and market requirements – so customers can buy with confidence.

All GAP certified operators are independently audited by certification bodies (e.g. AsureQuality, SGS) who are accredited (e.g. by JAS-ANZ) against ISO standards to undertake assessment and certification activities. Growers must continuously meet requirements of GAP standards to maintain certification. GAP standards are benchmarked to relevant Regulatory and Market requirements so that GAP certification can be accepted as a pathway for growers to demonstrate compliance with those requirements (e.g. Food Safety, Environment, Social Practice).

The NZGAP EMS add-on is a robust risk-based farm environment planning system. The EMS standard draws on codes of practice with farm plans certified based on years of Crown Research Institute independent research and grower practice.[9]

The EMS was developed and refined over the past few years. One of the biggest benefits is that it documents the timeline for the implementation of good and best management practices. It collates the suite of practices, and if a practice is not being used, it requires a justification for a no response or a timeframe for its implementation. Likewise, growers must provide evidence where practices are being used.

The EMS standard can be updated to reflect regulatory requirements. Currently, the EMS is recognised in Canterbury and Gisborne, and regional guides have been developed where the core EMS standard is supplemented with specific regional requirements.

While the NZGAP EMS has very high rates of adoption, it is a voluntary add- on because it is not a market requirement. Some growers have other Farm Environment Plans, such as those that operate as part of irrigation schemes. In our view, there should be flexibility for growers to adopt whichever farm planning tool works for them and meets regulatory requirements, but the NZGAP EMS should achieve regulatory equivalence for delivering Freshwater Farm Plans to provide growers with an efficient and integrated option or meeting their market and regulatory requirements.

5. Horticulture and Freshwater Targets

Horticulture should be prioritised and enabled as a land use given its efficient use of resources (in particular for orcharding) and importance for domestic food supply (in particular vegetable production).

5.1. Freshwater quality

The target states showcase a reasonable level of ambition that recognise the time it will take to make improvements. HortNZ seeks that the Council model proposed changes to clearly show what land use and farming practice changes would be needed to meet the targets. Any reductions beyond those gained from good management practice on-farm should come from land uses other than horticulture due to the value of fruit and vegetable growing for domestic food supply, emissions reductions, and economic value.

[9] Environment Add-on (nzgap.co.nz)

5.1.1. E. COLI

The biggest contaminant impacting the Taranaki region is *E.coli*. HortNZ seeks that the Land and Resources Plan prioritises targets for this contaminant and associated land uses. Land uses, including horticulture, where *E.coli* is not a problem should be enabled as part of the plan. For example, the losses of *E. coli* from commercial vegetable production were estimated at 6% of *E. coli* losses from sheep and beef hill country farming in Waikato.[10]

5.1.2. NUTRIENTS

The targets for nutrients do not appear to be overly ambitious and have a relatively long lead in time to achieve the targets by 2055. This means that reductions and associated rules will be phased in over the ten-year cycle of plans to achieve these targets. The focus appears to be on sediment control measures and erosion risks on steep terrain rather than vegetable growing, which is supported given the tiny footprint of vegetable growing in the region compared to other land uses.

HortNZ notes that the focus for the largest N reductions will need to be on the Southern Volcanic Ring Plain and Coastal Terraces in South Taranaki. Most horticulture is in the Northern Volcanic Ring Plain and Coastal Terraces near New Plymouth, so large N reductions should not be expected from horticultural activities in those areas. Given the relative size of vegetable growing to other activities in Taranaki, it is expected that it is contributing a very small percentage of the overall N load. As such, good management practice through farm plans should be enough to manage any nutrient discharge from horticulture with a permitted activity.

5.1.3. MANAGING INTENSIFICATION

We are requesting that the rules manage intensification in a targeted way that does not accidentally capture and constrain vegetable rotation or stifle expansion. Vegetable production should be enabled in the rules to at least expand to keep up with population growth given its importance both for regional and national supply of fresh vegetables.

5.2. Freshwater quantity

Water supply has generally not been a big concern in Taranaki, but future climate projections show some areas could experience longer periods of shortage, so the plan should recognise the specific needs for horticulture water supply. The most important thing for growers, particularly fruit growers, is reliability of supply, especially for vulnerable root stock to protect the trees as well as the future viability of the fruit.

5.2.1. IRRIGATION

Water takes for irrigation of horticultural crops are used to supplement rainfall. Some, but not all, growers in Taranaki irrigate. Irrigation is used more frequently in the summer months when rainfall is lower, and typically less through the winter months. Irrigation of crops is matched to crop demand, and it is important to note that overirrigation of a crop can be as problematic as underwatering a crop. Many factors influence how much water a crop will

[10] Semadeni-Davies, A. et al. September 2015. Modelling E. coli in the Waikato and Waipa River Catchments: Development of a catchment-scale microbial model. Waikato Regional Council Technical Report 2018/62

require, including type of crop, stage in growth cycle and climatic conditions.[11] Growers work within their local climate and environment to ensure crops receive adequate water to produce a marketable yield.

5.2.2. RELIABILITY FOR EFFICIENCY

When people think of irrigation efficiency, they often think of the amount of overall water applied to the land that is actually taken up by the plants, rather than lost to leaks, runoff or leaching. This is called water application efficiency, and orcharding is a leading land use in this area with precision irrigation methods and static infrastructure.

Efficiency can also be defined as the ratio of product value to environmental influence.[12] "Product value" or productive output could be measured in economic benefit, export value or quantity of food produced. For example, it is estimated that food crops produce 12 times more calories per hectare than growing animals for meat.[13] Environmental influence could take into account freshwater use, greenhouse gas emissions, nutrient discharge or impact on biodiversity. Orchards produce more monetary value with each unit of water than other land uses. This is known as technical efficiency. For example, high value fruit crops can generate as much as 40x more monetary value per millimetre of water applied per hectare, compared to dairy.[14]

More efficient water users can do more with less, but that doesn't mean that they should get less water to use. On the contrary, more efficient activities should be incentivised with reliability and sufficient allocation to make the most of our limited natural resources for the good of the economy and the environment.

5.2.3. ROOTSTOCK SURVIVAL WATER

Reliable access to water is critical for many activities including horticulture, agriculture and urban activities. However, the way that water shortages and access restrictions can affect horticultural systems is distinct from agricultural systems.

This is not only because of the potential for crop loss and the time taken to resuming production, but for many crops it can have a significant impact on growers' ability to meet market requirements such as shape or size characteristics. If these standards are not met, the value of the crop is significantly reduced with major impacts on orchard viability. Without confidence in their ability to main productivity, a grower is unable to raise capital, invest or expand and will likely turn to other means to make money.

For avocados, kiwifruit and other crops, there is significant capital investment in root stock. Full production is only reached after approximately three years for avocados and four years for kiwifruit.

Rootstock survival water is as essential to orcharding as stock drinking water is to pastoral farming. Without it, your system of production is not viable, even for seasons to come. Severe

[11] https://www.fao.org/3/s2022e/s2022e02.htm
[12] 2010 Ministry for the Environment "Framework for Determining Resource Efficiency"
[13] The security of our food system (newsroom.co.nz)
[14] horticulture-new-zealand-stuart-ford.pdf (orc.govt.nz)

water stress can lead to root die-back and reduced branching, which negatively affect productivity in the next season.[15]

Horticulture should be afforded preferential access to water at times of water shortages or low flows to provide for crop survival water, particularly horticultural rootstock. Enough water is needed not just to prevent crop death, but also to prevent long-term damage that would cause the crop to be unviable for years to come.

While Taranaki historically has abundant water supply, El Niño and La Niña weather patterns create oscillations between "too much" and "not enough" water. Those periods of shortage mean that growers have to irrigate more often. The Council's consultation documents indicate that many of the region's catchments are over allocated.[16] As that allocation is reconsidered, fruit growing reliable access to rootstock survival water should be provided for to enable economic development and the transition to a low emissions economy in Taranaki.

Rootstock survival water provisions are well-established in New Zealand planning, including the Hawke's Bay Regional Resource Management Plan PC6, the Tasman District Council Resource Management Plan and the Northland Regional Plan.

5.2.4. POST-HARVEST WATER REQUIREMENTS

Growers need to work within food safety and market requirements to ensure produce is safe and fit for human consumption.[17] Part of food safety frameworks which are incorporated into commercial accreditation programmes such as NZ GAP is the requirement to test water for contaminants such as *E. coli*. It is important water used to wash produce is of a quantity and standard to ensure produce is clean and safe for consumers before it makes it to market. In addition to water testing and food safety processes within an operation, produce sold through retailers and markets is subject to random testing to provide consumers with confidence that the produce they purchase has been grown and produced in a way that it is safe to eat.

6. Other Considerations

6.1. Contaminated Land

One of the actions proposed in the survey is "Additional management controls for earthworks on contaminated or potentially contaminated land (requiring resource consent)." Market gardens, orchards and greenhouses often fall under the Hazardous Activities and Industries List (HAIL) due to historical persistent pesticide bulk storage or use.[18] Depending on the way this rule is structured, it could have a disproportionate impact on horticulture.

Normal ancillary rural earthworks on horticultural properties should not require consent. Ancillary rural earthworks are defined as:

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[15] Rootstock survival for New Zealand orchards. (hortnz.co.nz)
[16] Understanding Water Quantity and Water Allocation Freshwater Consultation Document
[17] 2019-07-24-Guidelines-for-Fresh-Produce-Food-Safety-2019-WEB.pdf (hortnz.co.nz)
[18] Hazardous Activities and Industries List (HAIL) | Ministry for the Environment

Earthworks associated with normal agricultural and horticultural practices, such as:

- *Maintenance and construction of facilities, devices and structures typically associated with farming activities including but not limited to farm tracks, driveways and unsealed parking areas, stock races, silage pits, farm drains, farm effluent ponds, and feeding lots, fencing, crop protection and sediment control measures*
- *Irrigation and land drainage*
- *The burying of material infected by unwanted organisms as declared by the Ministry of Primary Industries Chief Technical Officer or an emergency declared by the Minister under the Biosecurity Act 1993.*

6.2. Erosion and Sediment Control

Another of the actions proposed in the survey is "Erosion and sediment control plans and good management practise to be included in all activities enabled through a resource consent." Erosion and sediment control plans for horticulture can be delivered through the NZGAP EMS add-on, based on the "Erosion & Sediment Control Guidelines for Vegetable Production" and the "Soil and Drainage Management Guide".[19]

6.3. Riparian Plantings

HortNZ generally supports extending the riparian planting programme to small farms and lifestyle blocks as long as they are phased in over a time period and with some assistance to ensure they are manageable.

[19] Guidelines (nzgap.co.nz)

PART 4

Survey Responses

This section contains direct responses to the consultation questions on Taranaki Freshwater Targets. This submission only responds to questions relevant to horticulture.

1. *E. Coli*

Q. 1.1	The Council is considering the opportunities and challenges to improve E. coli loads to a level that corresponds with no more than a 3% chance of infection. This will require a long-term approach with smaller targets along the way to map progress. Do you agree with setting long-term targets for E. coli beyond 30 years?

AGREE

This is the biggest contaminant of concern in Taranaki therefore the policy focus should be on *E. coli*. HortNZ supports that these targets show that making changes to contamination will take time. Future aspirations can be ambitious but still achievable.

The proposed targets may still present a challenge, though an important one, depending on what is required to achieve these gains.

HortNZ seeks that the Council provide information on the extent of practice and land use change to achieve these targets. It would be good to provide several scenarios for different end states as well as different land use mixes to achieve them. What would a significant increase in horticulture do to the end states in each catchment?

Q. 1.2	To what extent do you agree with the below draft targets for improving E. coli levels by 2035?

AGREE

Because *E. coli* is the biggest issue, it is important that regulations are targeted to this contaminant and associated land uses. Land uses, including horticulture, where *E. coli* is not a problem should be enabled as part of the plan.

2. Earthworks and Land Disturbances

Q. 2.1	Earthworks refers to activities like excavation drilling, contouring, blading, filling and earth moment. Gardening cultivation and the disturbance of land for the installation of fence posts are not considered earthworks. Do you support the proposed management approaches?

Action 1: Allowing small scale earthworks, land disturbance and sediment run-off to occur as a permitted activity (no resource consent required).	**YES**

Action 2: Requiring resource consents for larger scale earthworks, land disturbance and sediment run-off.	**YES**
Action 3: Additional management controls for earthworks on contaminated or potentially contaminated land (requiring resource consent). (See comments about contaminated land in Section 6.1 of this submission.)	**UNSURE**
Action 4: Erosion and sediment control plans and good management practise to be included in all activities enabled through a resource consent. (See comments on erosion and sediment control in Section 6.2 of this submission.)	**YES**
Q. 2.2	Considering each of the following proposed actions, what impact would they have on you and the earthworks and land disturbance activities that you undertake?
Proposed action 1: Allowing small scale earthworks, land disturbance and sediment run-off to occur as a permitted activity (no resource consent required).	**VERY LOW IMPACT**
Proposed action 2: Requiring resource consents for larger scale earthworks, land disturbance and sediment run-off.	**LOW IMPACT**
Proposed action 3: Additional management controls for earthworks on contaminated or potentially contaminated land (requiring resource consent). (See comments about contaminated land in Section 6.1 of this submission.)	**MODERATE IMPACT**
Proposed action 4: Erosion and sediment control plans and good management practise to be included in all activities enabled through a resource consent. (Depending on whether this creates duplication with the NZGAP EMS add-on described in this submission).	**HIGH IMPACT**
Q. 2.3	Are there any other practices that you use to manage earthworks?
Ancillary rural earthworks is a term to describe earthworks associated with normal agricultural and horticultural practices, such as:	

- Maintenance and construction of facilities, devices and structures typically associated with farming activities including but not limited to farm tracks, driveways and unsealed parking areas, stock races, silage pits, farm drains, farm effluent ponds, and feeding lots, fencing, crop protection and sediment control measures
- Irrigation and land drainage
- The burying of material infected by unwanted organisms as declared by the Ministry of Primary Industries Chief Technical Officer or an emergency declared by the Minister under the Biosecurity Act 1993.

Growers manage their erosion and sediment risk using industry codes of practice (see comments on erosion and sediment control in Section 6.2 above).

3. Stormwater and Wastewater Discharges

Q. 3.1	Do you support the management of stormwater from industrial and trade processes by the level of risk to the environment? Currently only large industrial and trade premises require a stormwater discharge consent, while smaller premises (<0.5 ha) are permitted despite the types of contaminants that may be present. We are looking to create a framework that manages stormwater discharges by the level of risk to the environment, rather than the size of operation.
YES	
Q. 3.2	What other low risk activities should we be considering? You answered yes to the previous question: Are there other low risk activities that we should be considering? Can you tell us more?

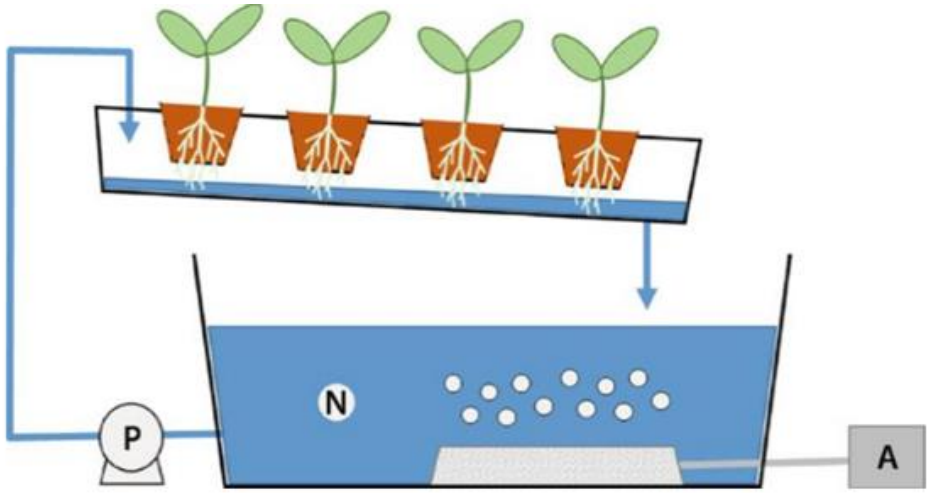
Fruit and vegetable wash water (discussed in Section 5.2.4 of this submission) and water from hydroponic greenhouses should also be considered.

Discharge of water from run-to-waste hydroponic greenhouse systems should be considered a low-risk activity. Greenhouses are efficient users of water compared to other primary production, in terms of both quality and quantity. There are two types of water systems for greenhouses. The first, run-to-waste, is better suited to fruit-producing crops like tomatoes and involves discharging used water to land. The second, nutrient-film technique (NFT) is a closed, soilless system better suited to leafy greens.[20] Both involve constant measurement of water and nutrient use to ensure best practice. More water is used to maintain hygiene in the growing system for food safety and biosecurity than for irrigation. This includes washing the gullies beneath

[20] ScienceDirect. "Nutrient Film Technique". Accessed online https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/nutrient-film-technique.

plants and washing the harvested plant itself. Figure 1[21] shows how water is efficiently recycled within an NFT system.

Figure 1: Schematic representation of a NFT system; [P] water pump, [N] nutrient solution



The code of practice for Greenhouse Nutrient Discharge provides growers with a checklist, decision tree, and reference values to manage freshwater impacts.[22] This self-audit describes a formula for disposing of nutrient discharge without exceeding kg/ha loads per annum. A rule of thumb is growers should discharge effluent onto 10 ha of grass for each 1 ha of glass.[23]

Q. 3.3	WASTEWATER Do you support the current approach of maintaining permitted pathways for discharges of low risk activities to land (ie cooling water and truck wash); and a consented pathway to land for more significant activities? Industrial and trade wastewater is the liquid waste produced by commercial and industrial activities. Our current approach within the Plan for managing low-risk industrial and trade waste activities is considered effective. We are proposing to continue this approach.

YES

[21] Geilfus, C. M. (2019). Hydroponic Systems in Horticulture. In Controlled Environment Horticulture (pp. 35-40). Springer, Cham.

[22] Horticulture New Zealand. "Greenhouse Nutrient Solution Discharge: The requirements for achieving Good Practice". February 2020. Accessed online https://www.nzgap.co.nz/guidelines.

[23] A. Barber, L. Wharfe. "A Growers' Guide to The Management of Greenhouse Nutrient Discharges: Based on 'A Code of Practice for the Management of Greenhouse Nutrient Discharges'". June 2007. Accessed online https://www.hortnz.co.nz/assets/Compliance/Grower-Guide-Managing-GH-Nutrient-Discharges-1.pdf

Q. 3.4	Are there other low risk activities (other than truck washing and cooling activities) we should be considering for permitted activities?

YES (See comments on wash water and discharges from hydroponic greenhouses above.)

4. Water Quantity and Water Allocation

Q. 4.1	Do you agree with the proposal to have different flows and limits based on the size of rivers? One of the key factors that affects how rivers are impacted by water take is their size, with smaller streams more affected than larger rivers. About 95% of Taranaki rivers are classified as small. Our current approach doesn't take river size into consideration which puts our smaller rivers at risk. We are proposing to have different flows and limits for large, moderate and small rivers.

YES

Q. 4.2	Do you agree with the approach we are proposing to take into account the effects of climate change? Our future approach needs to take into consideration the potential impacts of climate change on water quantity. Historical flow records were reduced to represent possible reductions in MALF from low (5%), moderate (20%), to high (50%), where a 5% reduction was equivalent to retaining 95% of stream flow.

UNSURE

This approach is supported in principle as it provides for climate change impacts and builds them into the take regime. More background information is needed to support the scientific robustness of the chosen numbers.

5. Options for Environmental Flows, Levels and Take Limits

Q. 5.1

Different combinations of minimum flows (the low flow at which people need to stop taking water to protect river health) and take limits (how much water can be taken for different activities) can achieve the same species protection level. With changes to flows and take limits we can achieve different levels of reliability and river protection. We have prepared five scenarios with different minimum flows and take limits. Each scenario has a different impact, including on reliability of supply and the amount of over allocation in the region. The table below outlines each scenario and the different impacts on users and the river.

Scenario	Species protection level	Minimum flow (% of MALF)	Take limit (% of MALF)	Number of consents over allocated	Reliability of supply (excluding climate change effects)
1	90%	100%	Small: 20% Moderate: 40% Large: 50%	71	77%-95% (18-84 days of partial restrictions)
2	90%	90%	Small: 10% Moderate: 30% Large: 40%	84	85%-98% (7-55 days of partial restrictions)
3	**90%**	**Small: 100% Moderate: 90% Large: 90%**	**Small: 20% Moderate: 30% Large: 40%**	**75**	**85%-98% (7-55 days of partial restrictions)**
4	90%	110%	Small: 40% Moderate: 50% Large: 60%	39	70%-94% (22-110 days of partial restrictions)
5	80%	Small: 80% Moderate: 60% Large: 50%	Small: 20% Moderate: 30% Large: 50%	70	94%-100% (0-22 days of partial restrictions)

The Council's recommendation for water allocation is Scenario 3. Do you agree with this?

UNSURE

Scenario 3 has a predicted 7-55 days of restrictions. A dry year with 55 days of restrictions would not allow for most horticultural operations to operate. If greater land use diversification is desired in the region, greater reliability of water supply is needed for horticultural land uses within any flow regime.

Reliability depends on the amount of water allocated. The total allocation rate needs to provide reliability of supply. A flow regime with longer restrictions is possible so long as those land uses in the catchment that need reliable water during dry periods can continue to take as a priority. This can be provided through a tiered, multi-take approach where some users who need greater reliability get to take longer, before the cease take comes into effect (e.g. rootstock survival water and stock drinking water). The reason we would like a priority 'step down' take before cease takes is that the implications for loss of orchard trees and vines that take a long time to establish are significant.

Where over-allocation is a result of 'paper' over- allocation rather than true over-allocation, we support consents being bought into line with reasonable use, (i.e. the reasonable use from a representative group of similar land users, rather than actual use).

Q. 5.2	Reducing over allocation Which options to reduce over allocation do you support? Despite the abundance of water in Taranaki, all scenarios (including the Current Plan) result in considerable over-allocation, especially on small rivers. We need to reduce demand on water bodies that are under pressure and make sure that the impacts of any future reduction in water availability are minimised for users. Select all that apply.

- ***Improving water efficiency*** **– YES**
- Reducing "paper" allocation (water allocated to people but not being used)
- Switching to groundwater (where appropriate)
- ***High flow harvesting and storage*** **– YES**

Q. 5.3	What are the challenges you will have to implement any of those options?

Water storage provides benefits to all water users, including the wider community as climate change impacts on natural flows can be better buffered. Therefore, the cost of high flow harvesting and storage should not just be borne in its entirety by new users.

Q. 5.4	Council is proposing options to assist further investigation to understand permitted takes. Do you agree or disagree with any of the options? Not all activities require a resource consent from the Council. Some are permitted according to set conditions. To assist with future work, we are considering a range of options for permitted activity limits.

Linking permitted take limits to river size, i.e. so the limits are lower for smaller rivers It makes sense. Some very small waterbodies can be heavily impacted by lots of small takes.	**AGREE**
Setting higher permitted volumes for groundwater than surface water Permitted activity status should be for smaller and essential abstractions. This depends on the volume Council decides the aquifer can handle whilst maintaining key values.	**DISAGREE**

Recording the locations of permitted takes, by registering them with the Council or by including them in Freshwater Farm Plans HortNZ supports transparent regulatory information where it is essential to effectively manage the resource in question.	**AGREE**
Limiting the number of permitted takes allowed on a property The volume of water that can be taken should be linked to the activity rather than the property, in theory; however, there may be administrative reasons for using this methodology.	**NEUTRAL**
Improving the information available on actual usage by requiring all permitted takes to be metered or by requiring a representative subset of properties to be metered. HortNZ supports transparent regulatory information where it is essential to effectively manage the resource in question. The Council needs to be mindful of administrative burden and ensure that the cost of implementing metering is fairly distributed.	**AGREE**

6. Good Farm Practice

Q. 6.1	Are there any other good practices for general farm management that we haven't acknowledged?

Good practices for horticulture are well-laid out in industry codes of practice and under the NZGAP EMS add-on. Some examples include:

- Nutrient budgets
- Soil testing and assessment for soil quality, health, structure and fertility
- Irrigations records
- Sediment control measures (could include diversion bunds, vegetated buffers/riparian margins and hedges, silt traps, etc.)
- Use of cover crops
- Crop rotation

See more:

- Fresh produce and freshwater (arcgis.com)
- Fresh fruit from freshwater (arcgis.com)
- Industry codes of practice: Environment Add-on (nzgap.co.nz) (section 4. Horticulture Industry Guidelines and Codes of Practice)

7. Riparian Planting

Q. 7.1	To what extent do you agree with the approach of extending riparian planting to include small farms/ lifestyle blocks? Well-established and maintained riparian zones have multiple benefits for ecosystem health. The Council is reaffirming its intention of requiring riparian planting and fencing for intensive farms under the Proposed Plan. It is also considering extending the requirement to lifestyle blocks. These actions will help achieve targets and may contribute to softening limits set for nutrients.

AGREE

This work can be costly and require a level of expertise to ensure funds aren't wasted. It would be good if the Council could provide support and importantly allow sufficient time to get riparian setbacks in place.

8. Freshwater Farm Plans

Q. 8.1	To what extent do you agree with the approach of using Freshwater Farm Plans to relieve resource consenting burdens where possible? The details of Freshwater Farm Plans are currently being reviewed by Government, however, they have signalled that they are important tools for the future and have the opportunity of alleviating consenting burdens for farmers. To pursue this benefit, we need to write the use of FWFPs into our future rules framework. This approach may relieve consenting burdens but may make the process of preparing FWFPs more complex.

STRONGLY AGREE

With a pathway for industry assurance through the GAP programme with the EMS add-on, or other equivalent industry assurance.

9. Managing Land Intensification

Q. 9.1	Intensifying the use of land in Taranaki is a concern because of the potential to increase of E. coli, nutrient and sediment in the catchment. We need to think carefully about any future intensification so that it does not contribute to increasing contaminant loads and in future, intensification will likely require a resource consent. The following questions explore how this process could work for Taranaki. What should we consider as triggers for a consent being needed? Select all that you think apply

Increases to stocking rates as a proxy for intensification e.g. any increase from a specified date **– YES**

Increased to the effective land area being intensively farmed or increases to the irrigated land area **– NO**

Changes to higher intensity land use (e.g. sheep and beef to dairy) **– NO**

Other (please specify) **– YES**

It is critical to control intensification in general; otherwise, the gains made with good management practice are eaten up by increases in intensification and water quality improvements won't occur. Expansion of horticulture should not be captured by these rules, however. Whilst vegetable growing is intensive, expansion may be valuable and necessary to keep up with population growth and provide for the priority policy for domestic supply of fresh vegetables.

There should not be blanket land use rules, but provision made to exclude certain land uses based on clear priorities (i.e. supply of domestic fresh vegetables).

There should also be incentives to move towards land uses that would reduce the load of key contaminants such as *E. coli*. This could be a transition to horticultural land uses or to permanent forestry.

Q. 9.2	To what extent do you agree with these requirements being applied in a resource consent process?

Evidence to show that intensification will not increase contaminant loads

DISAGREE

Commercial vegetable production is a complex activity requiring crops to be grown in rotations over different paddocks in cycles over different years to maintain crop and soil health. These spatial and temporal changes make regulation extremely difficult, with vegetable growing often triggering rules meant for larger scale land use changes. To ensure the importance of domestic vegetable production is provided for, enabling rules need to be created that allow rotation within FMUs to avoid each new rotation triggering the rules. There needs to be some flexibility within land uses of similar intensities to allow some movement and changing of land uses without triggering rules e.g. wine to apples.

A good record of compliance with rules and consent conditions

STRONGLY SUPPORT

For horticultural land uses, this can be by meeting NZGAP with the EMS add-on.

Good farm practices are well established and effective (such as mature riparian planting)

STRONGLY SUPPORT

For horticultural land uses, this can be by meeting NZGAP with the EMS add-on.

Catchments that show improvements in contaminants

NEUTRAL

This question isn't clear.

Offsetting the impacts of intensification to decrease impacts elsewhere in the catchment (such as constructing a wetland)

NEUTRAL

This doesn't work on small properties and may not be the best use of highly productive, but it is supported in principle if a mechanism can be found to make it work for these properties. Support for bigger properties.

Use of adaptive management plans to ensure practice can adjust to on the ground conditions

STRONGLY SUPPORT

HortNZ strongly supports allowing for incremental measures to be made over time. The appropriate vehicle for horticultural properties is through the NZGAP EMS add-on.

Q. 9.3	Do you have any additional comments you would like to make for managing intensification?

It is critical that intensification rules allow for crops to rotate and expansion of vegetable production to meet population increases.

Q. 9.4	Diversification: What types of barriers have you faced in diversifying? Please be specific about the types of diversification and the barriers

Horticulture provides an opportunity to address some of the contamination issues in Taranaki, especially *E. coli*. Enabling this positive land use transition will require enabling freshwater policy. Access to infrastructure, labour and transportation challenges are all important barriers that collectively need to be considered to understand and facilitate more horticulture in Taranaki and allow the region to have a more diverse, resilient and sustainable economy.

Q. 9.5	Sediment To what extent do you agree with the draft targets below for sediment to achieve improvements by 2055?

AGREE

Although modelling on the potential land use change likely from these targets would help us to understand better the ramifications.

Q. 9.6	Would you like to provide any further comments?

A sediment control plan is required for growers under the NZ GAP EMS add-on. Fruit crops generally have grass sward under vines or trees and have very low sediment discharges, if any. Vegetable growers use a variety of methods to control sediment depending on the slope of the land. Sediment retention structures/ponds are more effective on sloped land and filtration strips around paddock edges work on flat land.

We can provide examples of filtration strips being used in Taranaki should you wish to have some examples.

HortNZ supports a whole catchment approach, with serious consideration of sediment in upper catchments on hill country which is supported by these consultation documents.

10. Nutrients

Q. 10.1	To what extent do you agree with the below draft targets for the following to achieve improvements by 2055

Nitrate – **AGREE**

Ammonia – **AGREE**

DRP – **AGREE**

One site's target appears to change from a B to C in Dissolved Reactive Phosphorus. It is not clear why this is allowed.

While the targets seem acceptable, it would be helpful to model all bands so that all submitters can easily see the implications of different degrees of ambition.

Q. 10.2	Would you like to provide any further comments?

HortNZ would like to ensure that the plan focusses carefully on the key contaminants and the main activities that produce these.

Sediment loads are largest from the steeper hill country pastoral farming and should be the focus for this contaminant.

The "Most Challenging Spots" maps show that the Southern Volcanic Ring Plain and Coastal Terraces are where the biggest N reductions are needed. Most horticulture is in the Northern Volcanic Ring Plain and Coastal Terraces near New Plymouth. The two sites below national bottom line for nutrients are not in horticultural areas. It is critical that the overall load contributed by land uses is considered rather than simply apply a contaminant/ha limit without considering the importance or priority of a particular land use, resulting in unintended consequences. For instance, harsh regulations on vegetable growing could result in loss of vegetable growing in the region with little overall impact on the load of the contaminant given its small contribution.