SUBMISSION ON

Ministerial Inquiry Land Use

6 April 2023

To: Ministry for the Environment
Name of Submitter: Horticulture New Zealand
Supported by: Citrus NZ, Onions NZ, Process Vegetables NZ, and Summerfruit NZ

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Horticulture™ New Zealand
Ahumāra Kai Aotearoa

OVERVIEW

Submission structure

1. **Part 1:** HortNZ's Role

2. **Part 2:** Executive Summary
   An outline of the key topics our submission covers.

3. **Part 3:** Submission
   Our submission covers the impact of Cyclone Gabrielle on growers and the policy measures that exacerbated adverse effects.

Our submission

Horticulture New Zealand (HortNZ) thanks the Ministerial Inquiry Land Use (MILU) Inquiry Panel for the opportunity to submit on the MILU and welcomes any opportunity to continue to work with the Ministry 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 5,500 commercial fruit and vegetable growers in New Zealand who grow around 100 different fruit, and vegetables. The horticultural sector provides over 40,000 jobs.

There is 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.

Export
Fruit $4.04bn
Vegetables $0.64bn

Domestic
Fruit $0.93bn
Vegetables $1.34bn

Industry value $6.95bn
Total exports $4.68bn
Total domestic $2.27bn

PART 2

Executive Summary

Impact of Cyclone Gabrielle on Horticulture

The devastating impact of Cyclone Gabrielle led to destroyed homes, workers accommodation, facilities, and equipment. Entire crops were contaminated with flood waters, swept away or left to rot because they couldn't be harvested or processed after the storm. Trees were torn from the ground and orchard infrastructure was damaged and destroyed.

Cyclone Gabrielle has highlighted the vulnerability of horticultural land on floodplains to the large climatic events predicted to become more frequent with a changing climate.[1] The loss of vast quantities of soil from pastoral hill country and slash from plantation forestry has an immense impact on downstream uses of highly productive land.

National Policy

Financial support will make the most immediate impact to relieve the burden of recovery on growers. In the longer term, clear national policy direction across resource management, freshwater, and climate change is needed to enable and provide for low-emissions food production. Our submission goes into great detail about a suite of policy changes that would support this aim.

PLANNING AND POLICY OUTCOMES SOUGHT:

- Make an explicit policy provision that recognises the importance of food production and supply to support the health of New Zealanders;
- Protect highly productive land for primary production for future generations;
- And support those who are willing to reshape our landscape to avoid the erosion and sediment-related problems seen in Tairāwhiti and Hawkes Bay.

Local Policy

Regional councils need to take responsibility for catchment modelling and maintaining flood infrastructure in line with the changing climatic conditions. Gisborne needs improved connectivity to other regions in the face of disaster, and that requires massive investment in new road infrastructure and maintaining the existing roads.

[1] Chapter 5: Looking ahead: future emissions and climate | Ministry for the Environment; NIWA Client report (gdc.govt.nz)

PART 3

Submission

1. Horticulture in Tairāwhiti, Tūranganui-a-Kiwa, and Te Wairoa

Horticulture is integral to the Gisborne and Hawke's Bay regions. In Gisborne, there are approximately 390 growers across 8,155 ha of land (3,074 fruit, 5,081 vegetables)[2]. Gisborne grows about two-thirds of the New Zealand citrus supply, one-half of sweetcorn, and one-third of squash.[2] A significant amount of kiwifruit, broccoli, cauliflower, and other vegetables are also grown in the region.

There are approximately 380 growers in the Hawke's Bay across 17,800 ha of land (9,572 ha for commercial fruit production, and 8,256 for vegetables).[2] Seventy percent (70%) of all apples produced in New Zealand are grown in the Hawke's Bay. The region also produces over thirty percent of New Zealand's processed vegetables.[2] Summerfruit, squash, kiwifruit and onions are other significant crops for the region.[2]

Gisborne and the Hawke's Bay produce significant quantities of food for domestic supply, which is important for the health and well-being of all New Zealanders. The contributions of these regions to the domestic food supply are important because of the warmer climate which means that they can provide fresh produce when other regions are not able to provide fruit and vegetables into the supply chain.

2. Resilience

The devastating impact of Cyclone Gabrielle led to destroyed homes, workers accommodation, facilities, and equipment. Crops were contaminated with flood waters, rendering them unsafe to sell or consume. Trees were torn from the ground and washed away. This type of devastating weather event will unfortunately only become more frequent and intense as climate change progresses, which is a massive threat to our domestic food supply and valuable crop exports. The NIWA report *Climate change projections and impacts for Tairāwhiti and Hawke's Bay* found that "extreme, rare rainfall events are projected to become more severe in the future," a finding that is not exclusive to those regions but indicates that we need to prepare for future, potentially more severe cyclones.[3]

The resilience of our food supply must be strengthened in the face of increasingly unpredictable weather, with produce production spread across multiple regions. Growers need the ability to move regions more freely to diversify and reduce risk from natural disasters. Regions with overly restrictive policy settings but favourable climatic

[2] freshfacts-2021.pdf (p. 5)
[3] NIWA Client report (gdc.govt.nz), Nov 2020. (p. 14)

conditions to horticulture like Canterbury and Waikato make this difficult. This redundancy in supply is only possible if regulatory conditions across regions enable horticulture. National policy direction for food security is the best path forward to push consistent and workable rules for horticulture across New Zealand.

3. Protecting Highly Productive Land

The objective of the National Policy Statement for Highly Productive Land (NPS-HPL) is that "Highly productive land is protected for use in land-based primary production, both now and for future generations."[4]

Highly productive land is particularly valuable for supporting domestic food production that support New Zealand's transition to a low emissions economy.

Highly productive land should be managed as a strategic intergenerational asset. This land supports the most efficient use of space for primary production and grows the healthiest food for New Zealanders.

The Intergovernmental Panel on Climate Change (IPCC) are confident that demand-side adaptation, such as consumer adoption of healthy and sustainable diets in conjunction with reduced food loss and waste, can allow more food to be produced on less land area.[5] That implies a cultural shift toward more fruits and vegetables, so while less land is needed to produce the same number of calories as other food types, higher quality soils must be protected for growing.

3.1. Protecting highly productive land from natural hazards and adverse impacts from upstream land use

It is critical that highly productive land is protected for future generations from flooding, debris and sediment dumps during flooding events. This protection should include catchment scale assessments of risks, land use management and regulation to reduce the adverse effects of landslides and debris flows on downstream land uses.

3.2. Protecting highly productive land from inappropriate development

Highly productive land is a finite asset that is under threat, most significantly due to urban development. The Ministry for the Environment report 'Our Land 2021' states that the area of highly productive land that was unavailable for horticulture because it had a house on it increased by 54% from 2002 to 2019.[6] The NPS-HPL attempted to resolve this conflict

[4] National Policy Statement For Highly Productive Land 2022 (environment.govt.nz)
[5] Chapter 5 : Food Security – Special Report on Climate Change and Land (ipcc.ch)
[6] Our Land 2021. Ministry for the Environment.

between development and production on quality soils, and its policy direction must be acted upon as East Coast regions rebuild. Highly productive land, which is most often flat, may have a lower level of flood protection compared to built-up urban areas. Climate adaptation planning should be at the heart of the rebuild conversation, as well as how to reduce the risk to food production from future flooding events.

There is still the need to retain supporting activities such as packhouses and workers accommodation on highly productive land. The NPS-HPL must ensure the flexibility to build these facilities on highly productive land where they are ancillary and necessary to support primary production. However, it should be recognised that providing for large, collective facilities that may serve more than one grower may be more suitable than requiring growers to provide for these supporting activities on their own properties – particularly when some of these properties may be subject to unacceptable flood risk.

4. Threat to Food Security

Before the cyclone, Gisborne contributed 67% of citrus, 33% of squash, and 49% of sweetcorn.[2] The Hawke's Bay was home to over half of the country's apple growing land, 60% of squash, 30% of summerfruit, and 30% of beans and peas.[2]

Most vegetables are grown for domestic consumption, and many fruits as well, particularly summerfruit and citrus.[2] These crops were impacted by the cyclone to varying degrees, but both regions provide significant amounts of our national supply of fruits and vegetables that will be lost if affected growers don't get the support they need to recover. Due to New Zealand's geographic isolation, it is not possible to import all the fresh produce we need to feed our population, so domestic production of fruits and vegetables is critical.

When major growing regions like the ones covered by this consultation are battered by severe weather and forced to halt production, the country's food supply suffers. As we've seen the last few months, the price of fresh produce skyrockets which increases the cost of living and makes it difficult for families to get nutritious food.

Food insecurity is already pervasive in New Zealand, linked with poor physiological health outcomes and psychological distress.[7] A 2019 Ministry of Health study analysed household food insecurity among children in New Zealand and estimated that 19% of all children in New Zealand (174,000) live in food-insecure households.[8] There are complex social and economic reasons why people struggle to meet their nutritional needs. Addressing the issue of food insecurity will be even more difficult, however, if supply is reduced because growers are forced out of the business or entire food producing regions are left hanging out to dry, forcing prices of healthy food to increase.

Beyond the first step of feeding communities, it is critical that we prioritise healthy, nutritious foods to improve health outcomes. New Zealanders diets aren't as healthy as they could be. Ministry of Health data indicates that only 33.5% of adults and 44.1% of

[7] *The association of food security with psychological distress in New Zealand and any gender differences*, Social Science & Medicine 2011
[8] Ministry of Health. (2019). *Household food insecurity among children, New Zealand Health Survey*

children are meeting fruit and vegetable intake guidelines.[9] For families living in deprived areas, increases in fruit and vegetable prices compel them to substitute the purchase of healthier whole fruit and vegetables with cheap, energy-dense and nutrient-poor products.[10]

Importing fresh produce to New Zealand at scale is not viable because of our geographic isolation, so enabling local food production is the best way to improve access at the start of the supply chain. Vegetable growers, who grow over 80% of their product for domestic consumption, rely on access to highly productive land. KPMG's 2017 report on New Zealand's domestic vegetable production demonstrated that of the ten key vegetables that are staples of New Zealand diets, the vast majority are consumed or processed in New Zealand.[11] Should access to highly productive land for food production decrease, fruit and vegetable supply will fall with it.

[9] New Zealand Health Survey Data. Accessed: https://minhealthnz.shinyapps.io/nz-health-survey-2019-20-annual-data-explorer/_w_b6ac76b1/#!/explore-topics

[10] Rush, E., Savila, F., Jalili-Moghaddam, S., & Amoah, I. (2018). Vegetables: New Zealand Children Are Not Eating Enough. Front. Nutr.

[11] KPMG, 2017 New Zealand's domestic vegetable production: the growing story.

Discussion Questions

The following are HortNZ's responses to specific questions from the inquiry.

Q. 1	Tell us about your experience during Cyclones Hale and Gabrielle? What effects have you experienced?

Cyclone damage from floods and the river of debris that came along with the water touched every aspect of growers' lives. As HortNZ Chief Executive Nadine Tunley wrote, "Growers are counting the cost of the cyclone, flooding and silt, in terms of lost homes, orchards, vehicles, packhouses, tractors and all the other equipment and technology that goes to make up a modern growing operation."[12] Some growers returned to their land to find orchard trees torn out of the ground and washed away, their homes destroyed, and metres of lifeless silt burying productive soil.

In some orchards, flood waters rose high above the canopy of fruit trees and didn't fully retreat for days, drowning their roots and inflicting long-term damage to plant health.[13] Fruit or vegetables that were touched by floodwaters became unsafe to sell or eat, which meant a massive loss of income for impacted growers. Crops are rarely, if ever, insured due to lack of affordability.[14] Even in those orchards where floodwaters didn't contaminate the fruit, the ground was often too saturated to send workers out to harvest it in time.[15] For those who are able to pick, growers are concerned about the logistics of getting their produce to market, from Gisborne to domestic markets and the ports in Napier and Tauranga for export.

Growers are still shifting silt and piling up debris, whether it's orcharding frames, trees or vines. This is a gruelling and anxious time as fruit growers determine whether the trees and vines that they've invested so much time and money into are still viable and as vegetable growers assess the damage to their soil from lifeless silt. Soils that were buried in sediment became anaerobic (lacking oxygen), killing any plants living there.[16] Serious remediation is required to restore organic matter and oxygen to the earth.

Clean up is mind-bogglingly expensive – one grower estimated that he spent $12,000-$15,000 on diggers and labour to move silt just in his first day after the cyclone passed.[17] The Tairāwhiti Horticulture Cyclone Recovery Group estimates costs of $30,000 - $40,000 per hectare for deep silt removal, plus tens of thousands more to rebuild and replant.[18] For those who lost fruit trees, it may take many years to get

[12] Clean up's underway in earnest | Horticulture New Zealand – Ahumāra Kai Aotearoa (hortnz.co.nz)
[13] Floods add to kiwifruit woes (ruralnewsgroup.co.nz)
[14] Cyclone Gabrielle: Prime Minister Chris Hipkins returns to Hawke's Bay, hears most crops uninsured - NZ Herald
[15] Hawke's Bay orchardists assess future, more than a week on since cyclone | RNZ
[16] Understanding silt – and what to do about it (farmersweekly.co.nz)
[17] Bevin, Andrew, "Bulk of fruit crops uninsured." 28 Feb 2023. *Greymouth Star*, page West Coast 4.
[18] Crop damage estimated at $42m – The Gisborne Herald

production up and running again between remediating the soil, buying new trees, and waiting for them to reach maturity.[19]

It is an open question where money will come from to rebuild businesses. One grower said that banks will not fund new capital expenditure for those impacted – if an orchardist has lost their infrastructure, radical downsizing is the only option for most. Another grower's opinion was that they won't be able to replant until their business is profitable again given lack of support from the banks – which is quite a task without trees. Getting reimbursed for crop losses is helpful, but one grower estimated that lost crop value only accounts for about 15% of the capital cost to re-establish an orchard.

This barren paddock was once a five hectare apple orchard.

Growers are wondering, do I replant as soon as I can (for some vegetable growers, that might not be for another 18 months) or do I wait for further relief or policy signals about whether growing will be viable? Many growers lease their land and are still making rent payments on lots that were destroyed. One grower said that a landowner who owns 25% of the land he leases was giving him some leeway, but the grower is still on the hook for the other 75%. Some are already walking away from their leases.

Faced with the prospect of rebuilding from the ground up, some growers are wondering whether it's even possible to recover or if they should leave the industry altogether.

[19] Hawke's Bay orchardists assess future, more than a week on since cyclone | RNZ

Is this a chance to retire or reduce overheads and simplify operations, particularly given all the current uncertainties in New Zealand and the rest of the world? Especially for older growers, taking a decade or more to return to full production is not an option. Rather than just reimbursing each grower for crop lost, it might make more sense to make additional grants available for those with a business plan to scale up production to make up for those who leave the industry.

Time is short to give growers the support they need, or they may leave the sector altogether, leaving New Zealand short on food supply.

The section below details the crop loss in both Tairāwhiti Gisborne and the Hawke's Bay across multiple fruits and vegetables.

Two people stand on top of a seven metre deep pile of slash on a four hectare orchard. That makes 280,000m^3 of material to remove or burn.

Damage to the Pine Valley Orchard which is on the banks of the Nuhaka River, between Gisbone and Wairoa.

Tairāwhiti Gisborne

Farm and orchard gate crop loss inflicted on horticulture by Cyclone Gabrielle is estimated at $42 million in the region, according to the Tairāwhiti Horticulture Cyclone Recovery Group.[20] This is in addition to the estimated $80 million of pastoral farming damage.[20] In total, 57.6% of crop producing land sustained partial or complete losses based on the Recovery Group's survey of growers, not including LeaderBrand's massive operation in the area.[20]

[20] Crop damage estimated at $42m – The Gisborne Herald

Gisborne Crop Losses[21]	
Crop	**Farm Gate Value (NZD)**
Seasonal crops (tomatoes, sweetcorn, maize, squash)	$23.469 million
Apples	$6.069 million
Kiwifruit	$5.667 million
Grapes	$4.912 million
Citrus	$1.780 million

The kiwifruit industry is looking at the impact in terms of three categories of fruit:

- A – will be fine to pick;
- B – will need a close assessment this year, and will probably have ongoing plant health issues;
- and C – lost crop and structural damage to orchard.

For kiwifruit, 15% (105 ha) of the Tairāwhiti Gisborne crop is estimated to be in categories B and C, as of March 15th. 12% of orchards in the region were impacted.

The damage to the apple industry is yet to be accurately estimated.

In terms of vegetables, 80% of process tomatoes were lost, 35% of squash and 50% of sweetcorn, as of March 15th, 2023. The total yield loss was 26,000 tonnes of produce. Please note these are still the early estimates.

For citrus, the estimated yield loss was 1,760 tonnes.

For up to ten days after the cyclone, Gisborne's water access was severely restricted due to damage to pipelines to the Mangapoike Dams and the Waipaoa Water Treatment Plant.[22] Water is critical for washing and processing fruits and vegetables, and tomatoes in particular – which were at peak harvest time when the cyclone hit – require a lot of water. Cedenco is the biggest processing plant for tomatoes in Tairāwhiti Gisborne and a major local water user. Due to the crisis, they were unable to operate for over three weeks until they were able to put in their own treatment plant and truck water from growers' irrigation systems. In the meantime, two thirds of Gisborne's tomato crop was lost, rotting in flooded paddocks because it couldn't be

[21] Tairāwhiti Horticulture Cyclone Recovery Group newsletter, 23 March 2023
[22] "Every Day Feels Like a Year," *NZ Grower*, Vol 78, No. 02, March 2023. (p. 20)

processed. 400 million tonnes of tomatoes per day were ready for harvest, for 24 days with no water. In total, 9,600 mega tonnes were lost because they couldn't be processed, and another 2,400 mega tonnes were lost due to flooding.

This is the second disaster year in a row due to factory covid lockdowns and a cyclone last year which meant tomato growers lost thirty harvest days in March. After two years of crises in a row, it's difficult to plan ahead. Growers need to order seed in the next few weeks if they want anything to harvest in 2024, but buying that seed is not financially viable with the current damage. Government compensation and loans are the only way to ensure there will be a harvest next year. There are hundreds of jobs at stake between farms and the packhouse at peak season.

Tomato harvest in Gisborne.

Destroyed tomatoes post Cyclone in Gisborne.

Hawke's Bay

Because of the cyclone, the Hawkes Bay apple crop is down by 33%, which is a reduction of 4.3 million TCEs (tray carton equivalents) across the range of varieties grown in the region. Just under half the area planted in apples (3,400 hectares out of 7,300 hectares) have been affected by the cyclone, and just over half the apple growers in the region (80 out of 150) have been affected. NZ Apples and Pears estimates that clean-up costs will vary from $17,800 per hectare for orchards with flood damage but no silt to $129,800+ per hectare for those with severe flood damage and over 500mm of silt, assuming that growers are allowed to burn tree waste. The long-term impact on the industry is very hard to estimate, as at this stage, there are so many variables.15 However, the industry would like to return to its previous growth trajectory.

50% (105 ha) of the Hawkes Bay kiwifruit crop is estimated to be in categories B and C described above, representing an estimated loss of $18 million in total fruit and service payments (TFSP).

60% of vegetable growers (30 out of 50) were impacted by the cyclone.[23] 72% (5500 of 7600 ha) of vegetable producing land was impacted, and 19% of that land faces a long term impact to soil and production which will likely mean no crop in 2023.[23] The estimated farm gate value loss due to the impact on squash, onions, tomatoes, beans, sweetcorn, pumpkins, potatoes, and melons is $78.2 million, with squash comprising $49.8 million of that as of March 24, 2023.[23] Vegetable growers estimate that clean-up will cost them $1,000-15,000 per hectare. Of growers surveyed, 23% reported a severe impact from the cyclone which threatens the survival of their business.[23] Together, those businesses employ 161 permanent employees and 452 seasonal workers whose employment is now at risk.[23]

[23] Hawkes Bay Vegetable Growers Association Survey, 24 March 2023

For summerfruit, 246 ha out of 651 total ha and 25 out of 64 growers were affected.

Community Resilience

Growers have been remarkably resilient and community minded. NZ Apples and Pears organised a website to donate machinery and other support to those impacted to help with the clean-up. South Island apple growers even shipped equipment up to cyclone-impacted regions.[24] When Gisborne's water infrastructure was wiped out in the cyclone, keystone vegetable grower LeaderBrand shared water from their private dam with neighbouring businesses.[25] LeaderBrand's generosity, and other farms' bores and irrigation schemes, kept the horticulture sector running at all during this trying period.

Q. 2	What is it about the way we use land, and how land use has changed over time that led to the effects being so severe?

Wood Debris from Plantation Forestry

It's no secret that carbon farming and forestry are responsible for the deluge of slash that covered vegetable crops and orchards.

The incentives within the Emissions Trading Scheme (ETS) have led to increased forestry planting, and the averaging method has supported logging of plantation forest. The current ETS forestry settings incentivise replacing farming land with exotic forests without regard to food security or the negative externalities for rural communities.[26]

While plantation forestry has an important role in providing carbon offsets, the economic incentives are being privatised while the economic costs to downstream land and infrastructure are being passed on to tax-payers, ratepayers and users of flat land.

Sediment Loads from Pastoral Hill Country

Vast sediment deposition has resulted from extensive erosion of pastoral hill country. The impact and management of sediment from pastoral hill country is not adequately managed. In evidence developed for the TANK hearing, Catherine Sturgeon analysed the Council's assessment of sediment risk and proposed management approach. She found that council had misattributed bank erosion to activities adjacent to rivers and sought to manage sediment loads though riparian corridors and setbacks. While we are supportive of these measures, analysis of the sediment loads told a different story.

[24] South Island apple growers donate machinery to cyclone-hit orchard owners | Stuff.co.nz
[25] Salde, Maria. "Private dam saves the day in post-Gabrielle Gisborne." 28 March 2023. *National Business Review*.
[26] Final-He-Waka-Eke-Noa-submission-18-Nov-22.pdf (hewakaekenoa.nz)

The hill-country was overwhelmingly the highest risk activity and had the least priority for management in the proposed plan.

Erosion on pastoral hill country was immense.

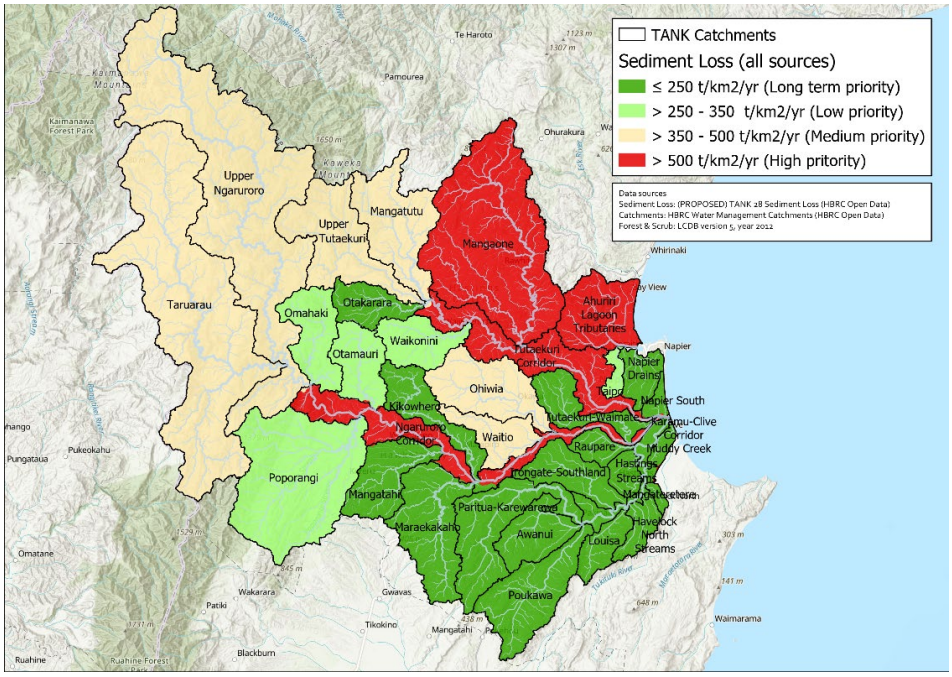

Figure 1: Sediment loss priority map, recreated by Jacobs using HBRC web portal data. This figure matches the PC9 sediment yield priority map except for the Poporangi and Omahaki sub-catchments.

An alternate priority map that omits the streambank erosion proportion of the sediment yield (Figure 2). The priorities have been mapped based on quantiles (as without the streambank proportion no sub-catchment gets above the 500 t/km^2/yr threshold for 'high priority').

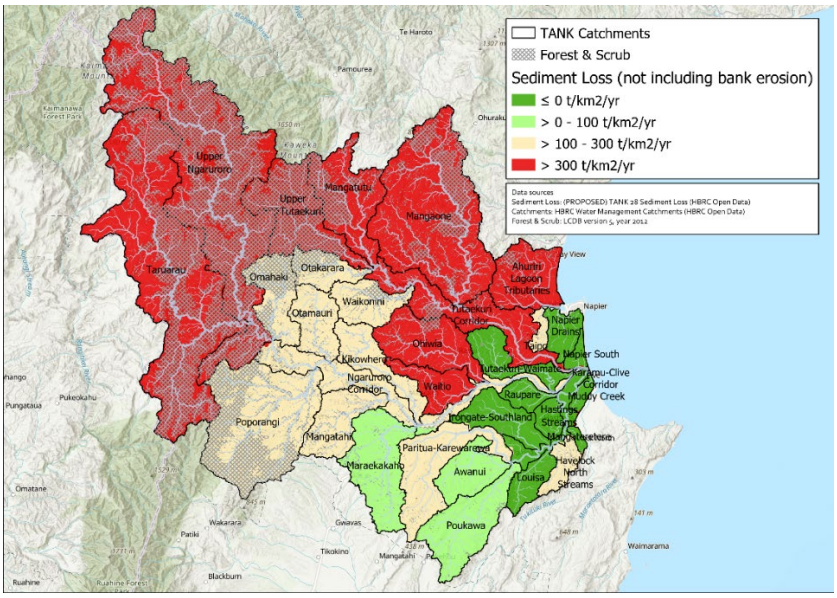

Figure 2: Sediment yield priority map, not including bank erosion and with forest and scrub overlaid, created by Jacobs.

For the high priority sub-catchments in Figure 2 that are largely unforested, landslide processes are the main proportion of total erosion. The percentage of the total sediment load from landslides for each sub-catchment is displayed below:

Sediment Loads in TANK Sub-Catchments

Sub-catchment	**% total sediment load from landslides**
Ahuriri Lagoon tributary	106% of total sediment load is from landslides*
Mangaone	83%
Mangatutu	69%
Ohiwia	97%
Tūtaekurī Corridor	82%
Waitio	102%*

** Note these sub-catchments are where deposition occurs leading to > 100%.*

These erosion processes would only occur on steeper slopes where certain land uses, such as horticulture, would not occur.

Appendix 9 of the s42a report is a technical memo on the water quality attributes in Schedule 26.[27] Further information from the SedNet model is presented that shows contemporary hillslope erosion compared with pre-human hillslope erosion. The pre-human sediment load excludes net bank erosion; therefore the comparison is only made on hillslope erosion types (such as landslide, earthflow, gully, surficial). SedNet predicts approximately 230% increase in sediment loads from hillslope processes across the TANK catchments post-human settlement. In the Ngaruroro tributaries, the model results show there is a loss of more than 4 times and up to 7 times the amount of sediment from hillslope erosion compared to pre-human times. This indicates that hillslope erosion is significant in the TANK catchments.

Road Infrastructure

Road infrastructure in Gisborne was not prepared for a disaster like Cyclone Gabrielle. Cyclone or not, State Highway 2 – the only direct route north – is plagued by slips and flooding which disrupt the flow of people and fresh food out of Gisborne toward the Bay of Plenty and Auckland.[28] Following the cyclone, flooding, silt and slips in the portion between Te Karaka and Matawai created the greatest disruption. Gisborne needs improved connectivity to other regions in the face of disaster, and that requires massive investment in new road infrastructure and maintaining the existing roads.

Gisborne's roads are at risk from the pastoral and forestry uses on steep hills. Impact on road connectivity must be kept front of mind while evaluating the erosion and water retention issues associated with upstream land uses. A thriving horticulture sector in the region requires strong infrastructure to move large volumes of produce.

Topography

The shape of the land also had a part in why the impacts of flooding were so severe. The Poverty Bay flats drained slowly after the cyclone, leaving growing land saturated and food production at a standstill. That area needs the ability to move more water, faster, but the river doesn't have the capacity to drain the land from such a major rain and flooding event. The other option is retention, or better absorption of water. If we are relying on the land for that absorption, the topography pools that water in growing areas, severely disrupting food production.

[27] Haidekker, 2021

[28] SH2 closed between Whatatutu intersection (north of Te Karaka) and Matawai | Waka Kotahi NZ Transport Agency (nzta.govt.nz); Slips, State Highway 2, Te Karaka | LiveNews.co.nz; Temporary SH2 closures to clear slip | Waka Kotahi NZ Transport Agency (nzta.govt.nz)

Q. 3	Are there specific practices or ways in which we use the land that have caused more harm than others? Which of these practices are most important? Why?

Slash Management

There is little doubt that the torrent of slash that buried orchards and vegetable growing land in Gisborne and the Hawke's Bay was attributable to forestry practices that leave organic material on the ground in a push for efficiency. Pine forests were initially planted in response to the erosion caused by land clearance for pastoral farming. The problem is that when those pine forests reach maturity, they are cleared all over again when the lumber is harvested, once again making the land vulnerable to erosion.[29]

One grower shared that their stop banks have worked well for over a century and likely would have last through the cyclone too if not for the slash which blocked the flow of water, causing the river to artificially rise even higher. Yes, the weather was terrible, but there was a man-made component to the degree of destruction.

Here, the edge of a dam popped over the bank before the bridge gave way.

[29] Cyclone Gabrielle triggered more destructive forestry 'slash' – NZ must change how it grows trees on fragile land | RNZ News

Slash backing up behind a bridge, and because of that blockage, causing a debris flow on the adjacent horticultural land.

As for the source of the silt, the clearance of native bush in favour of bare pastoral hill country is the likely culprit.[30] The lack of substantial vegetation to hold the soil in place creates the conditions for erosion. It is worth questioning whether it is viable to keep hillsides in place with only grass, or whether there needs to be a push for more native trees on those slopes.

Q. 4	Is there anything else we should know about that has contributed to the damage from severe weather?

Delay in Silt Removal

The volume of silt that needs to be removed is immense. The demand for help from Council to remove silt and site and operate new dump sites has exceeded their capacity to assist.

Growers have attempted to save trees by removing sediment from their orchards, but many are hampered by their inability – or lack of permission – to remove the sediment from their site.

The scale of the removal of sediment, triggers earthworks volumes. The Emergency Legislation provides a pathway for removing sediment without consent. However, there are extensive areas of archaeological sites on land impacted by sediment. The provisions within the Emergency Legislation to require 20 working days of notice, permissions and the requirement on iwi and hapu to provide cultural management plans, is likely to cause significant delay.

[30] Understanding silt – and what to do about it (farmersweekly.co.nz)

There is a lack of knowledge about the quality of the sediment and potential contamination – scientific testing is required. The cost of removing and testing the sediment, as well as rehabilitating the land is significant and largely uninsured. Government relief is yet to be released to enable growers to pay for testing and private contractors to remove silt.

A meaningful, collaborative partnership between Council, the Crown, and land users is required to make sure the burden of cost and management do not fall solely on growers, who are not responsible for the damage and whose work is critical to national food supply.

Flood Protection and Land Drainage

Council needs to refocus its priorities and be clear about its responsibility for catchment hydrology and protection. There has not been a concerted effort to maintain and upgrade stop banks in the region to make them suitable to current climatic conditions. Consistent review and maintenance of flood protection infrastructure has a huge potential to mitigate damage in future storms. According to an op-ed in the *Gisborne Herald*,

> Several landowners on Papatu Road offered the council a $100,000 interest-free loan last year to help clear the Te Arai River of overgrown willows in the area where it overflowed and caused all the damage to properties, orchards and crops around Manutuke and even over to parts of Patutahi. The offer was declined, but nothing was done.[31]

This lack of action and accountability for risk mitigation must be addressed. Growers themselves know their land and drive through rural roads every day. The Council needs to listen when community members raise infrastructure concerns, because it can be a matter of life or death for a business.

Q. 5	How do the current laws, policies and rules influence the way we use our land? What works well? What is unhelpful? Think about the current legislation, market drivers and conditions, regulations, rules, and the way in which requirements are enforced.

Flood Management

The legislative framework for managing food risk is complex, with a range of powers across several Acts. Some of these Acts are remnants, with some powers difficult to understand and with inconsistencies. The main acts that are used for managing flood risk are:

- Resource Management Act 1991
- Building Act 2004 (and Building Code 1992)

[31] Bold leadership needed for a brighter future – The Gisborne Herald

- Local Government Act 2002
- Land Drainage Act 1908
- Soil Conservation and Rivers Control Act 1941
- Rivers Board Act 1908
- Civil Defence Emergency Management Act 2002
- Water Services Entities Act 2022

The purpose of the 'Flood Management' statutes listed above is to enable a wide range of approaches to managing flood risk. These measures include hazard control measures such as stop banks, channel maintenance, clearance, and dams. The Local Government Act 2002, the Soil Conservation and Rivers Control Act 1941, and the Rivers Board Act 1908 are the primary statutes that permit these works to be carried out. The Land Drainage Act 1908 and localized drainage acts also allow waterlogged land to be drained for urban and food production purposes and contribute to modifying flood events. Various agencies provide information and education about flooding, including scientific and practical advice on minimizing the impact of flood events. Mechanisms like land information memoranda (LIMs) pursuant to the Local Government Official Information and Meetings Act 1987 enable members of the public to access site-specific flooding information from territorial authorities where available. Flood hazard preparedness, response, and recovery measures are primarily authorized under the Civil Defence and Emergency Management Act 2002, which provides the legislative framework for national, regional, and local communities to prepare for and respond to flooding. Flood loss insurance and financial assistance are primarily provided by the Earthquake Commission under the authority of the Earthquake Commission Act 1993, while the government may also offer disaster relief funding to support local communities affected by large-scale flood and other natural disaster events.

The Water Services Entities Act will transfer stormwater management to the new entities. There are some risks with this because stormwater needs to be managed at a catchment level. Horticulture exists in peri-urban areas. There is often a complex set of drainage infrastructure that serves the land, including stormwater and land drainage infrastructure, and not all parts of the stormwater network are "hard infrastructure." Important elements like storage areas are likely to stay with territorial authorities.

HortNZ recommends that greater national direction is provided to ensure a more consistent approach to flood management across the country. This could involve the development of a national policy statement or guidance on flood management under the RMA. Such national direction could provide more clarity and guidance for local authorities to manage flood risk and could help to ensure that a consistent approach is taken to flood hazard assessments, flood risk management plans, and flood protection works. Additionally, we recommend that national direction should take into account the impacts of climate change on flood risk and should provide guidance on how to integrate climate change considerations into flood management planning and decision-making.

The proposed outcomes within the Natural and Built Environment Bill (NBA) includes an outcome relating to climate change and natural hazards.

Our expectation is that the new National Planning Framework under the NBA provides an opportunity for national direction for natural hazards including flooding and direction on how highly productive land at the urban fringe will be managed in a coordinated manner across various legislation.

Three Waters Reform

In Gisborne, the cyclone decimated the potable water supply, leaving the community in a dismal situation. Those who had local storage were able to help their neighbours and provide for their own drinking water and business needs. In catchments that are not over-allocated, water storage is a way to build resilience into local systems by making sure there is water available for essential activities in times of disruption.

Commonly, horticultural growing areas are in peri-urban catchments. The water that growers rely on to grow crops for domestic food security is frequently shared with urban communities. The freshwater receiving environments in peri-urban catchments are often under pressure from stormwater and non-point source discharges, abstractions and hydrological changes related to drainage.

The Water Services Legislation Bill would direct water services entities towards options that serve urban development in an efficient manner, without adequate consideration of the wider social, cultural and economic impacts, including detrimental health impacts on urban communities due to adverse impacts on domestic food supply.

In our view, values in the second hierarchy of Te Mana o te Wai, such as drinking water, does not equate to an exemption from contributing to the costs of providing for the first hierarchy. This is particularly important in the context of a changing climate where investment in water storage, augmentation and recharge may be required to support freshwater ecosystem health. The investment in infrastructure that supports the health of freshwater and provides for drinking water and irrigation is likely to provide greater benefits than an approach where drinking water is afforded priority to the lowest cost water, without consideration of wider costs and benefits aligned to achieving the regional freshwater vision and regional Te Mana o te Wai objective.

Shifting the hard engineering parts of the stormwater network into the water services entities, may improve investments into that part of the system, but creates new risks for the catchment scale approach that is required for flood management.

Freshwater Management

Freshwater is managed under the RMA. Freshwater management is influential in land use patterns and the flexibility to change land use.

NPS-FM

In submissions on the Visions and Value setting process, HortNZ sought an integrated approach to freshwater management, where the freshwater vision not only directs instream freshwater outcomes, but also directs freshwater limits.

In our experience, Regional Councils are not taking an integrated management approach to setting visions, values, outcomes and limits under the NPS-FM. Councils are focused on instream values but not on considering how the principles of "Manaakitanga" and "Care and Respect" should be applied to provide for the health of the nation when determining outcomes and limits.

Te Mana o te Wai

Te Mana o te Wai establishes a hierarchy of obligations. The first priority is the health and wellbeing of water bodies and freshwater ecosystems.

The six principles of Te Mana o te Wai provide guidance on who makes resource management decisions and which matters are to be considered.

The second priority obligation under the Te Mana o te Wai framework is the health needs of people (such as drinking water).

Food, and in particular vegetables and fruit, are essential human health needs.

HortNZ seeks that the production of vegetables and fruit for domestic supply are recognised within the second priority obligation of the Te Mana o te Wai hierarchy.

Providing for the health of the Nation under Te Mana o te Wai

HortNZ seeks that the production of vegetables and fruit for domestic supply are recognised within the second priority obligation of the Te Mana o te Wai hierarchy.

The recent high court decision relating to the Specified Vegetable Growing Area Policy in the NPS-FM 2020 notes "Continuity of supply in fresh vegetables is important for national food security and human health".

The Te Mana o te Wai principles most relevant to providing for the health needs of people are Manaakitanga, and Care and Respect. The principle of Manaakitanga incudes 'generosity and care for freshwater and for others'. The principle of Care and Respect includes 'care for freshwater in providing for the health of the nation'

The term 'nation' within the care and respect principle indicates freshwater decisions, need to consider both the local and national scale health benefits that are achieved through catchment activities, and 'providing' for the discharges and allocations that support the health of the nation.

New Zealand is geographically isolated. We cannot import most of the fresh fruit and vegetables our people need to eat, because most fruits and vegetables are too perishable to be efficiently transported to New Zealand.

New Zealand's national food system relies on reciprocity between regions, and a responsible approach to the management of natural resources to provide for the health of the nation.

Trade, manaakitanga and reciprocity underpinned the traditional approach to trading of goods. Horticultural production has had a long history of having certain crops and varietals being produced in some areas and traded to other areas.

The principles of Manaakitanga and Care and Respect express that care for freshwater is part of how the health of the nation is provided for. However, the application of this principle is not limited to human health associated with in-stream freshwater values such as swimming and collecting mahinga kai from within waterbodies.

Under clause 3.2.2.c.ii of the NPS-FM, Councils must apply the hierarchy of obligations to the National Objectives Framework, this includes applying the hierarchy of obligations to limit setting.

Enabling communities to provide for their social, economic, and cultural wellbeing in a manner consistent with the NPS-FM, requires that second and third priority obligation activities are differentiated, and that the concept of health under the second obligation includes the health of the nation.

Recognising the importance of the production of fruit and vegetables for domestic supply within the second priority obligation of Te Mana o te Wai, doesn't negate the need for fruit vegetable growers to manage their environmental effects through good management practices and to operate within the freshwater limits of the catchments they are located within.

The value of domestic food supply in resource allocation decision making, has been recognised within a series of policy instruments including: NPS-FM specified vegetable growing areas; Waikato PC1 Policy 3; Horizons PC2 Policy 14-6; Canterbury PC7 section 42A reply, Policy 4.36A.

Long Term Visions and Values

The people of NZ will rely on the Vision and Values in the Gisborne and Hawkes Bay Freshwater Plan, when they apply the principles of Manaakitanga, and Care and Respect to make sufficient provision to produce enough fruit and vegetables to provide the reliable supply fresh fruit and vegetables to the rest of NZ, and in particular regions such as Otago, Southland, West Coast and Wellington that have less favourable climates for year-around growing and are far from self-sufficient in producing healthy food for their populations.

It is inherent that the NPS-FM 2020 long-term visions focus on freshwater, however, consider that this should not be interpreted too narrowly. Long-term visions must include the whole of freshwater considerations. "Freshwater related" by its nature gives a broad interpretation.

The clause relating to long-term visions in the NPSFM 2020 (clause 3.3) speaks to long-term wishes for waterbodies and freshwater ecosystems in the region and that long-term visions must express what communities and tangata whenua want the Freshwater Management Unit (FMU) to be like in the future. An FMU means 'all or any part of a water body or water bodies, and their related catchments, …'.

The NPSFM 2020 seeks integrated management, for example:

Policy 3 states: 'Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments'.

Clause 3.2 Te Mana o te Wai,

… (2) Every regional council must give effect to Te Mana o te Wai, and in doing so must: … (e) adopt an integrated approach, ki uta ki tai, to the management of freshwater (see clause 3.5).

Clause 3.5 specifically addresses integrated management

In our view, Te Mana o te Wai is about the whole freshwater system, which is also a reflection of land use that have an inherent relationship to the health of waterbodies. We think that long-term visions should reflect integrated management.

Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community. HortNZ consider that this requires as part of the conversation, consideration of other important values as part of that balancing act.

In our view, the specified vegetable growing area (SVGA) provisions in the NPS-FM 2020 are a specific acknowledgment of the need to balance different values, while still improving freshwater. The SVGA provide a way of doing so in catchments with specific freshwater challenges. In our view, the same priniciple applies elsewhere but without the ability to set target attribute states below national bottom lines.

To quote the Ministry for the Environment's factsheets and website:

> "The hierarchy does not mean, however, that in every case the water needs to be restored to a pristine or prehuman contact state before the other needs in the hierarchy can be addressed."[32]

> "Making this the first priority in freshwater management does not mean that councils will ignore the health needs (or other needs) of people."[33]

To an extent, the other Te Mana o te Wai priorities are somewhat reflected in the proposed long-term vision statements (e.g. recognition that land and water resources underpin the economic prosperity, national contribution of the Tongariro hydro-electric scheme). However, we think it is necessary to include the values of domestic food supply and food security explicitly as part of the long-term visions.

HortNZ consider that food production for domestic food supply (and food security) is a critical part for providing an essential human health need, and accordingly that it fits within the second hierarchy priority. We note that the High Court (in the Judicial Review decision) held that food security and Te Mana o te Wai are not inconsistent nor unachievable, but that the council must undertake this balancing act.

There is also a broader value related to the economic and social value of growing as part of the communities which they are part of (for all food production – whether it serves only the domestic market, or also export markets); this aspect fits within the third hierarchy priority.

The third hierarchy of Te Mana o te Wai is the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

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[32] https://environment.govt.nz/assets/Publications/Files/essential-freshwater-te-mana-o-te-wai-factsheet.pdf
[33] https://environment.govt.nz/acts-and-regulations/freshwater-implementation-guidance/clarification-of-the-essential-freshwater-programme-implementation-requirements/#implementing-te-mana-o-te-wai

Except for food produced for the domestic market, most food production and primary production more generally is managed within the third priority obligation of Te Mana o te Wai.

Achieving these freshwater visions requires a policy framework that recognises and supports food production. This framework includes freshwater limits, but other non-freshwater policy settings have a considerable impact on food production.

Long-term visions are ultimately linked to environmental outcomes and limits, and therefore need to respond to values in water bodies and values associated with the use of water (assimilative capacity of freshwater to support abstractions and discharges) in catchments – in a manner consistent with Te Mana o te Wai.

Regional Plans

GISBORNE UNITARY PLAN

Land use in Gisborne is constrained by the lack of water. Any irrigation-based business, like kiwifruit or vegetable growing, has to go on a waiting list of at least five years dictated by water access. Despite horticulture's low risk of erosion, those activities are disincentivised by the resource allocation process.

One solution proposed to alleviate the region's water shortfall is managed aquifer recharge of the Makauri aquifer. After a decade of favourable investigative work, this project remains stalled by uncertainty about the regulation of freshwater and the layers of bureaucracy to be overcome to 'get it done'. Not only would this improve the availability of water for community and irrigation use, it would play and important role in the regional climate resilience, including reducing the risk of groundwater salinisation due to sea level rise.

Land Management

NES PLANTATION FORESTRY

The National Environmental Standards for Plantation Forestry (NES) have provided regulatory certainty for foresters to enable them to harvest forest provided environmental standards are met.

It is apparent from the vast volumes of slash that were discharged from plantation forestry land, that the NES is not effective at managing the adverse effects associated with this activity.

It is important to acknowledge that plantation forestry often occupiers steep and erosion prone land, that under pasture would also be very erosion prone and result in downstream effects.

The review of the NES may be able to strengthen the requirements and oversight for the management of risks from plantation forestry. If foresters were required to meet the costs of managing their environmental effects, this would reduce the attractiveness of this land use resulting in reduced offset, but that would not reduce the risks associated with this land use.

National Policy Statement for Highly Productive Land

Highly productive land is a finite and intergenerational asset that is under threat in New Zealand, most significantly due to urban development. 'Our Land 2021' states that the area of highly productive land that was unavailable for horticulture because it had a house on it increased by 54% from 2002 to 2019.[34]

The importance of highly productive land and the need to manage this natural resource strategically were clearly articulated in consultation on the NPS-HPL. Submitters wrote about the lack of clarity under the RMA, which means highly productive land is given inadequate consideration by local government:

> "The value of this land for primary production is often given inadequate consideration, with more weight generally given to other matters and priorities. This absence of considered decision-making is resulting in uncoordinated urban expansion over, and fragmentation of, highly productive land when less productive land may be available and better suited for urban use. This is preventing the use of this finite resource by future generations… National direction on highly productive land could provide councils with a clearer framework for managing this resource and assessing trade-offs between competing land uses …"[35]

Highly productive land needs to be protected from urban and lifestyle sprawl and enabled for primary production, so this land's productive potential is retained for future generations. Highly productive land is particularly valuable for supporting domestic food production and horticultural and arable crops that support New Zealand's transition to a low emissions economy.

Natural and Built Environment Act

OUTCOMES

The Bill's outcomes drive planning direction throughout the rest of the Bill. In the HortNZ submission on the NBA, we asked for an amendment of the outcome for urban and rural areas to provide for food production and supply for New Zealand.[36] The Select Committee recommended this change in the first report, although it did not carry through to the next draft of the Bill.[37]

We also suggested an amendment to the highly productive land environmental outcome to mirror the NPS-HPL by protecting highly productive land for primary production, rather than just ensuring its availability. This change seeks to protect land for "primary production," not "land-based primary production" to ensure that packhouses, glasshouses, or other supporting infrastructure for horticulture can sit adjacent to similar activities to reduce transportation required for product movement.

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[34] Our Land 2021. Ministry for the Environment.
[35] Valuing Highly Productive Land: A discussion document on a proposed national policy statement for highly productive land, Ministry for Primary Industries, August 2019.
[36] Horticulture-NZ-Submission-on-NBA-and-SPA-Final.pdf (hortnz.co.nz)
[37] Interim Report (Natural and Built Environment Bill and Spatial Planning Bill) (selectcommittees.parliament.nz)

NATIONAL PLANNING FRAMEWORK

HortNZ supports the National Planning Framework (NPF) as a means of providing integrated national direction. We support the proposed timeline from the NPF in terms of providing national limits, targets and allocation principles, to Regional Spatial Strategies and then NBE plans.

We consider that this framework should and will support allocation within management units and result in a consenting framework that provides some certainty for existing uses, while allowing re-allocation of natural resources over time to stay within use limits, meet limit states or target states and achieve outcomes.

In our submission, HortNZ asked that national food production and supply are included as matters the National Planning Framework (NPF) must address.[38] The domestic food system is nationally significant, requires cross-regional cooperation, and is essential to human health and well-being. As we've seen with the cyclone, national food planning is critical to keep grocery store shelves stocked and healthy food available at affordable prices for New Zealanders.

Spatial Planning Act

The Spatial Planning Act (SPA) will direct land-use across the country. In HortNZ's submission on the SPA, we asked that highly productive land is added to the key matters included in Regional Spatial Strategies (RSS) to integrate soil resource management with other regional planning. In the cyclone, we saw some of our most fertile soils decimated by silt, so it is all the more important to protect highly productive land elsewhere in the country. We also called for mitigation and adaptation measures to be mapped individually in the RSS given that these are two difference climate change response strategies. Land use conversion to horticulture might be mapped as a mitigation measure given our industry's lower emissions than other rural uses, which shifting residential zoning away from flood-prone areas would be an adaptation measure.

HortNZ seeks for highly productive land to be a key matter included in regional spatial strategies. Regional planning councils will already be required to map highly productive land under the NPS-HPL, and this mapping should be used in an integrated management approach with other mapping for planning purposes, such as that in the regional spatial strategies. Productive land most suitable for horticulture often sits in peri-urban areas that may not fit cleanly into urban or rural categories. Protecting that land from inappropriate use requires considering highly productive land directly, instead of just areas to be reserved for urban or rural use.

With the Bill's current emphasis on infrastructure, there is cause for concern that planners may prioritise urban expansion around existing transit corridors without regard to soil, climate, topography, or hydrology that may make those areas more suitable for other land-uses. Considering highly productive land is part of a more holistic planning approach.

[38] Horticulture-NZ-Submission-on-NBA-and-SPA-Final.pdf (hortnz.co.nz)

Climate Change Response Act

The RMA Amendment Act 2020 includes the requirement to have regard to the Emissions Reduction Plan and the National Adaptation Plan when making and amending regional policy statements, regional plans and district plans.

The Emissions Trading Scheme and the system for pricing agricultural emissions, that will come into effect in 2025, provide a market system for disincentivising higher emissions activities.

Analysis to support He Waka Eke Noa has shown there is a strong link between achieving freshwater outcomes and reducing agricultural emissions. The link between freshwater and climate requires an integrated approach to freshwater and climate policy.

EMISSIONS REDUCTION PLAN

The Emissions Reduction Plan includes a key action to transition to lower emissions land uses and practice.

Supporting land use diversification to lower emissions land uses such as horticulture is critical to New Zealand achieving our 2050 emissions reduction targets within the Climate Change Response Act.

The opportunity horticultural expansion provides for reducing emissions was canvased in the Climate Change Commissions advice to Government. This advice assumed conversion of 2,000 ha to horticulture annually between 2025 and 2035 (and noted that land use change would need to play a larger role than this if new technologies to reduce livestock emissions do not eventuate).

The emissions reduction plan includes transition to lower emissions systems and land uses, however this action appears to be focused on making systems changes to pastoral farming, rather than exploring ways of supporting and enabling land use change to horticulture. We see this as a missed opportunity. While regenerative farming may offer opportunities on the margin to reduce emissions from pastoral farming, much more significant emissions reductions could be achieved through land use change, and unlike many of the initiatives within the emissions reduction plan, the emissions reductions are certain.

NATIONAL ADAPTATION PLAN

The National Adaptation Plan recognises the important role our planning and investment systems have in guiding how we use our land and resources, and that currently regulatory systems do not always account for changing risks.

According to Plant and Food Research, climate change is expected to have an impact on the future suitability of growing areas in New Zealand. The Otago region, and in particular, Central Otago, will see their growing areas suitability increase as the effects of climate change become apparent.

Horticultural adaptation will include:

- Planting breeding (more heat/drought resistant varieties), and the use of crop protection products such as agrichemicals, biopesticides and biological controls to manage new and increasing pest threats.
- Infrastructure investment, including crop protection structures, such as wind and hail shelters and plastic and glasshouses, to protect crops from more erratic weather. Infrastructure investment will also include water storage to provide irrigation reliability while supporting the freshwater ecosystem health.
- Land use change, crop changes within growing systems and crop rotations to match crops with the changing climates and manage new and increasing pest threats.

The role of crop protection structures is likely to become increasingly important with changing climate, although it should be acknowledged that these structures are not immune to damage, with some glasshouse and covered growers experiencing significant damage to infrastructure in the cyclones.

EMISSIONS TRADING SCHEME

HortNZ recognises the Emissions Trading Scheme (ETS) as an important tool to help New Zealand achieve its climate change budgets.

Technology is starting to become more available for the abatement of carbon emissions, but currently there is a tension, where the costs of abatement is not always economically viable.

Offset has an important part to play in managing the impacts of emissions. The horticulture sector is not opposed to the use of forestry for offset, but we consider that the alongside the carbon price there is the need for stronger regulation to ensure that environmental effects are managed and that the price of the carbon offset does not distort land use patterns such that low emissions food production is replaced by carbon farming.

PRICING AGRICULTURAL EMISSIONS

Fruit and vegetables are low emissions foods. Over the past decade, growers have progressively reduced fertiliser application as growing techniques have become more efficient thanks to advances in technology. This trend will continue.

Growers are already engaging with emissions reduction; this has been largely linked to freshwater reform which also requires them to carefully match nutrient supply with crop demand.

We are seeing increasing market demand for climate action. GLOBAL GAP version 6 includes Climate Change and Greenhouse Gas requirements. All horticultural exporters in NZ are certified under the GLOBAL G.A.P. scheme.

One of the key reasons HortNZ has participated in the He Waka Eke Noa partnership is because we believe the primary sector coming together to support climate change action is powerful and important.

The analysis undertaken by He Waka Eke Noa, indicated that the emissions price was one of the drivers that would result in reductions in emissions, but that on its own price

is too blunt an instrument to drive lower emissions will maintaining a productive economy that is resilient in the long-term.

In our view, the analysis undertaken for He Waka Eke Noa, supports the inclusion of climate change emissions and adaptation outcomes in the Natural and Built Environment Act, where achieving long-term climate change outcomes can be a drivers for managing natural resource allocation decisions.

Sequestration

One of the issues that He Waka Eke Noa partnership has grappled with is how to reward sequestration that is not eligible for recognition under the ETS, but that is still credible or has co-benefits for biodiversity.

Where the benefits of sequestration are not related to greenhouse gas emissions – but related to other benefits such as biodiversity or managing erosion risk, it does follow that the cost of incentivising these activities should fall to those emitting greenhouse gas emissions.

Q. 6	Anything else you would like to say about the current policy framework?

Strategic Land Use Planning for a Resilient Future

Horticulture presents an opportunity for New Zealand to build prosperity from primary production in a way that is within environmental limits.

Our climate change mitigation and adaptation policies require strategic planning, so we actively invest in adaptation that supports a low-emission resilient future.

Our 2050 net-zero greenhouse gas emissions targets require us to meet net zero in 2050 and every year after that. Sequestration from plantation forestry is a necessary short-term stopgap. The current policy settings risk locking in emissions from pastoral farming and locking in our dependency on offset from plantation forestry.

Cyclone Gabrielle has highlighted the vulnerability of horticultural land on floodplains to the large climatic events predicted to become more frequent with a changing climate. What was very apparent was the loss of vast quantities of soil from pastoral hill country and the loss of vast quantities of slash from plantation forestry. The adverse effect of these hill country land use choices on downstream highly productive land has been immense.

There are low-lying lands and active flood channels that we should retreat from and return to wetlands. There is hill country that we should retreat from and return to native forest.

We should not be retreating from or diminishing the productivity of highly productive land. New Zealand's highly productive alluvial terraces are an intergenerational asset that have taken thousands of years to develop. This land is the most suitable for low

emissions, high-value primary production. The NPS-HPL recognises this land should be protected for land-based primary production. This should include protection from urban sprawl, protection from sediment deposition through upstream catchment management, and flood protection.

The NPS-HPL supports the use of the most productive land in NZ to be used for plantation forestry. When we consider the risks of using hill country for plantation forestry, and the value of carbon forestry, there is an emerging risk that we will see more LUC I, II and III land go into plantation forestry. To manage this risk, we consider it important that the NPS-HPL and the policy direction in the National Planning Framework is explicit in prioritising the use of NPS-HPL for low emissions food production.

STRATEGIC LAND USE PLANNING OUTCOMES SOUGHT:

- Reaffirming our commitment to reducing our greenhouse gas emissions to avoid the type of devastation we have seen;
- Make explicit policy provision that recognises the importance of food production and supply to support the health of New Zealanders;
- Protect highly productive land for primary production for future generations;
- Support the development and adoption of new technologies as we transition to lower emissions food production;
- Ensure everyone pays a fair share for their greenhouse gas emissions and that those who have chosen to leave larger parts of their farms in sequestration-eligible species are rewarded;
- And support those who are willing to reshape our landscape to avoid the erosion and sediment-related problems seen in Tairawhiti and Hawkes Bay.

National Food Strategy

Since Cyclone Gabrielle, consumers around the country have felt in their wallets and seen on the sparse supermarket shelves what happens when a weather event slams the domestic food supply. With these extreme weather events getting more common with climate change, our land use planning must make plans and back up plans to preserve our country's fruit and vegetable baskets. Resilience means that government must enable horticulture in multiple growing regions. If a weather event knocks out one area for a while, there should be redundancies in supply from other regions to continue feeding our people.

This disaster has been indescribably difficult for our sector, and the unsettling flipside is that it also presents the government with a policy window to refocus on the importance of food supply. The government needs to take advantage of that political moment and national awareness of the vulnerability of our domestic fruit and vegetable production to make bold changes to the way we think about food.

FOOD STRATEGY OUTCOMES SOUGHT

- To develop a National Food Strategy, that includes consideration of the importance of New Zealand in supporting food security in the Pacific;

- Specifically recognise the importance of food security in supporting human health in the NBA;
- Specifically recognise the importance of highly productive land for food production in the NBA;
- Ensure the National Planning Framework under the NBA promotes Te Oranga o te Taiao in a way that enables the benefits of strategically important outcomes to be balanced against localised effects;
- In the NPS-HPL, specifically prioritise and support the use of HPL for low emissions food production;
- In the NPS-HPL, specifically recognise that the productive capacity of HPL is measured in its social, cultural and economic contribution;
- Develop a National Environmental Standard for commercial vegetable growing, to provide a longer-term planning certainty than provided for by the NPS-FM SVGA.

Q. 7	What is your vision for the future of land use in the region? (In this section, we are seeking your vision for the future about the way we use our land in Tairāwhiti, Tūranganui-a-Kiwa, and Te Wairoa.)

Long term catchment management is necessary and must specifically model silt flows and other whether other debris may wash up in flooding events. With this information available, planners can make decisions about land use to mitigate those impacts.

In Gisborne and the Hawke's Bay in particular, an ideal future would look like reliable infrastructure with multiple roads in and out of region, creating redundancy in case of disaster.

The most erosion-prone hill country will be covered with native bush to hold the soils in while supporting biodiversity and emissions reduction.

A thriving horticulture industry in Gisborne would have consistent access to water and confidence that access will continue for the long term.

Soils would be remediated to their highest productive capacity and protected from urban encroachment.

Flood protection would be designed to protect human health – that includes housing, lifeline infrastructure and domestic food supply are the top priorities.

We accept that with a changing climate, some land will require managed retreat – we expect this to include retreat from pastoral and plantation forestry and restoration of native bush, retreat from very low-lying land and restoration of wetlands.

When times of natural disaster strike, other regions of New Zealand are still producing enough fruits and veggies to feed the country because horticulture is thriving in multiple growing regions. One grower said that though they lost all of their orcharding land in the Esk Valley, they don't intend to replant there due to future flooding risk. They would rather leave the silt where it is as a natural buffer for future floods and move their orchard elsewhere. That is a business decision that won't work for all growers, but other regions need to have policy settings that allow for horticulture for strategic relocation to work.

Q. 8	What do we need to do to achieve this vision? Please think about: Immediately? (in the next 12 months) In the short term? (next 1- 2 years) In the medium term? (3-5 years) In the long term? (10+ years) Far into the future? (30 – 100 years)

Immediately: Soil Remediation and Replacing Crops

A huge amount of work is needed to regenerate the soil until it is useable for cropping. Immediately and in the short term, some orchardists may need to change land use to short-term cover cropping to remediate the soils. Scientific research shows that grass cover crops, arables (like wheat or maize), or process crops can increase organic matter, prevent wind-based erosion, and reduce compaction in soil.[39, 40, 41, 42] There is limited potential for growers to recover some income by selling these commodity crops or providing animal feed.

One grower who lost 90% of his apple harvest in Cyclone Gabrielle told RNZ that he is planning to plant annual seed crops in the years it takes to get back to higher value orcharding. He estimates it will take 4 years to return to apple production after spending hundreds of thousands of dollars pulling out damaged trees and planting new ones.[43] The trees then need time to reach fruit-bearing maturity.

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[39] Blanco-Canqui, H. and Jasa, P.J. (2019), Do Grass and Legume Cover Crops Improve Soil Properties in the Long Term?. Soil Science Society of America Journal, 83: 1181-1187. https://doi.org/10.2136/sssaj2019.02.0055

[40] Darapuneni MK, Idowu OJ, Sarihan B, DuBois D, Grover K, Sanogo S, Djaman K, Lauriault L, Omer M, Dodla S. 2021. Growth characteristics of summer cover crop grasses and their relation to soil aggregate stability and wind erosion control in arid Southwest. Applied Engineering in Agriculture 37: 11-23.

[41] Blanco-Canqui, H, Ruis, SJ. Cover crop impacts on soil physical properties: A review. Soil Sci Soc Am J. 2020; 84: 1527– 1576. https://doi.org/10.1002/saj2.20129

[42] Koudahe K, Allen SC, Djaman K. 2022. Critical review of the impact of cover crops on soil properties. International Soil and Water Conservation Research 10: 343-354.

[43] Midday Rural News for 24 March 2023 | RNZ

Immediately and in the short term, we need water solutions to allow people to irrigate and process their harvests.

Short Term: Building Science Capability

In the short to medium term, New Zealand needs to build the science capacity to support the horticulture industry to recover and thrive. After weather events like the cyclone, growers need the evidence base to identify alternative crops that can work in degraded soil or grow in changing weather conditions. In the current science system, industry organisations have to pay Crown Research Institutes (CRIs) or consultants vast amounts for crop research due to the minimal horticulture research happening in universities.[44] For smaller sectors like vegetables, this is simply not viable due to economies of scale. One solution to the lack of coordination between industry need and science delivered are innovation hubs like the Pukekohe Vegetable Centre of Excellence currently in development, which will bring extension services, university research and teaching, and workforce development all under the same facility. Projects like this one are starting points to redirect science where it's needed, but they require government co-investment to launch.

Medium Term: Return to Orcharding

In the medium to long term, those operations that were able to remediate their soil health will be able to return to perennial orcharding if the market and regulatory conditions exist that foster enough confidence to make the long-term investment in trees. Replanting will not happen immediately – tree and post availability will both have an impact on the timeline to recovery. NZ Apples and Pears estimate that it will take at least three years to replant all 1,600 ha of damaged or destroyed orchards in the Hawkes Bay. Nursery operators who have been growing trees for 50 years said that anyone ready to order trees now wouldn't get them until 2025, and in a couple of weeks, a new order would be looking at 2026. With some nurseries impacted by the cyclones as well, supply will be even lower. Growers have estimated up to seven to ten years for a return to full operations.

Long Term: Water Solutions

In the long term, large reservoirs are a potential solution to control the release of water and sediment/slash discharged into waterways.[45]

Far Future: Thriving Horticulture

In the far future, Cyclone Gabrielle could be remembered as a turning point that pushed people to recognise the importance of investing in lower-erosion, lower-emissions land uses like horticulture. In 30+ years, Gisborne and the Hawke's Bay will once again be major fruit and vegetable baskets for the country, helping feed New Zealanders and the world.

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[44] Foley, John. (2022), Science and Innovation in New Zealand Agriculture: We need to work Together, Nāu te rourou, nāku te rourou, ka ora ai te iwi. Nuffield New Zealand.

[45] https://www.gisborneherald.co.nz/business/20230327/bold-leadership-needed-for-a-brighter-future/

Q. 9	Is there anything that shouldn't be changed, for example, things that if changed would make it worse?

Protecting highly productive land via the NPS-HPL is even more important across the country as we rehabilitate soils that were destroyed by silt. That productive capacity must be picked up elsewhere as the East Coast recovers.

Q. 10	In your view, which groups need to be involved in developing solutions and what is the best way for these groups to be involved?

In our view, it is critical that growers are included in conversations about solutions. Their work feeds New Zealand while providing considerable export value. Industry representative bodies like Horticulture NZ, product groups (NZAPI, NZKGI, Vegetables NZ, etc), and district associations (Gisborne Produce Growers Assn Inc, Hawkes Bay Fruitgrowers Association, etc) should be included in working groups and consulted on relevant policy. It is especially pertinent to include the Tairāwhiti Horticulture Cyclone Recovery Group, which is comprised of relevant stakeholders already.

Q. 11	Any general feedback on the consultation?

It is unclear why all of the Hawke's Bay was not included in the inquiry. The questions could have been better defined and more specific, especially if the intent of the inquiry was to focus on the specific impact of forestry slash.