

**BEFORE THE HEARING COMMISSIONERS APPOINTED BY THE MANAWATU  
WANGANUI REGIONAL COUNCIL (HORIZONS)**

**IN THE MATTER** of the Resource Management Act 1991  
(the Act)

**AND**

**IN THE MATTER** of Proposed Plan Change 2 to the  
Horizons One Plan

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**INDUSTRY STATEMENT OF EVIDENCE OF MICHELLE KATHLEEN SANDS  
FOR HORTICULTURE NEW ZEALAND**

25 September 2020

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**ATKINS | HOLM | MAJUREY**

Helen Atkins/Nicole Buxeda  
PO Box 1585  
Shortland Street  
AUCKLAND 1140

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Solicitor on the record  
Contact solicitor

Helen Atkins  
Nicole Buxeda

Helen.Atkins@ahmlaw.nz  
Nicole.Buxeda@ahmlaw.nz

(09) 304 0421  
(09) 304 0424

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## INTRODUCTION

### Qualifications and experience

1. My name is Michelle Kathleen Sands. I am the Manager Natural Resources and Environment, with Horticulture New Zealand (**HortNZ**). I manage HortNZ's Natural Resources and Environment team who are involved in national, regional and district planning processes across New Zealand. I have been in this role since May 2018.
2. I hold a Bachelor of Science Honours from Victoria University (1995). I am a member of the New Zealand Hydrology Society and a Certified Environmental Practitioner with the Environment Institute of Australia and New Zealand. I have over 20 years of post-graduate experience in environmental management. During this time, I have worked in local government, the voluntary sector, research, consultancy and currently for the horticulture industry.
3. My experience includes developing catchment scale water quality models. I led the water quality assessments, including the development of catchment scale water quality models, used to inform the assessments of environmental effects for Transmission Gully, Puhoi to Warkworth and Warkworth to Wellsford. I developed catchment scale water quality and hydrological models to inform the Greater Wellington NPSFM limit setting process in the Ruamahanga and Porirua catchments.
4. My experience includes providing expert witness testimony on water quality and quantity issues at council hearings, and Board of Inquiry and Environment Court mediations.
5. Currently I manage HortNZ's environment policy team. I provide technical leadership on water policy for HortNZ's involvement in all national and regional freshwater processes. Currently HortNZ is involved in freshwater planning processes, impacting water quality in Canterbury, Marlborough, Horizons, Hawkes Bay and Waikato.
6. I lead HortNZ's involvement in national water policy, in particular providing input into the development of the National Policy Statement for Freshwater and the National Environmental Standard for Freshwater
7. I lead HortNZ's policy response on Climate Change matters. I am a steering Group Member of He Waka Eke Noa.

8. Since beginning my role at HortNZ, I have met with growers across New Zealand to better understand their horticultural operations and how resource management issues impact them.
9. While I am a qualified hydrologist and a water quality scientist, I am not appearing in the capacity of an expert in this hearing. My role in this hearing is as HortNZ's representative and advocate.

### **Purpose and scope of evidence**

10. This evidence provides an overview of the Commercial Vegetable Growing (**CVG**) in the region including:
  - (a) Crop rotations;
  - (b) The area and number of vegetable growing enterprises;
  - (c) History of vegetables growing in the Region;
  - (d) Economic contribution;
  - (e) Export potential;
  - (f) Health benefits and food security policy; and
  - (g) Natural resources impacts and management, including:
    - i. Water quality.
    - ii. Soil.
    - iii. Climate change.
11. Finally, I summarise the reasons for the provisions sought by HortNZ.

### **Summary of conclusions**

12. I recognise the One Plan was written before the National Policy Statement for Freshwater Management (**NPSFM**), and therefore does not include the concept of Te Mana or Te Wai. However, I consider it is a useful framework for assessing freshwater policy, and have structured this summary to consider the degree to which PC2 provisions provide for the health of water, the health of people, the social, cultural and economic wellbeing of people, and the interconnected health of the wider environment.

### Health of water

13. Updating the leaching values in Table 14.2 of the One Plan is a technical matter related to software. Updating the table has no water quality consequences, compared to that envisaged by the One Plan, and it should occur.
14. The measure of nitrogen leaching intensity (kg/ha) in Table 14, is a metric that can be used for assessing the adoption of Good Management Practice (**GMP**). However, its use in the One Plan and PC2 for allocation and as proxy for assessing environmental effects, is in my view, mis-directed. This is a matter we consider out of scope for Plan Change 2 (**PC2**).
15. PC2 is a transitional plan change. The goal of PC2 should be on achieving improvements in water quality compared with the baseline state, through the adoption of GMP and Best Management Practice (**BMP**).
16. The provisions proposed by HortNZ are designed to drive the uptake of GMP and BMP, in order to achieve tangible water quality improvements, prior to the development of NPSFM compliant plan changes.
17. Growers are already implementing GMPs and BMPS through independently audited Farm Environment Plans (**FEPs**). In the Hokio 1a target catchment, 100 percent of growers have an FEP developed using the NZGAP EMS, and 90 percent have been through their first audit.
18. Growers and HortNZ are committed to working with iwi, hapū, communities and regulators on future NPSFM 2020 plan changes and on future catchment projects. These NPSFM plans changes will build on the progress made on water quality improvements through the widescale adoption of GMP and BMP. It is the future catchment-specific NPSFM plan changes that will provide a framework for achieving the community freshwater vision over-time.

### Health of people

19. New Zealand is geographically isolated. We cannot import fresh vegetables easily. Vegetable growing in the Horizons Region is critical for domestic food security. Over 47 different vegetable crops are grown in the Region.
20. Vegetables are essential to human health. Vegetable consumption has been falling year on year; only half of New

Zealander's ate the recommend 3 plus vegetables daily in 2018/19. In 2017 800 deaths were caused by low vegetable intake in New Zealand. One in five New Zealand children live with food insecurity.

21. If freshwater regulations impact on vegetable prices the health cost to New Zealander is substantial. Small increases in vegetable prices, translate to millions of dollars in health costs.
22. We support the inclusion of policy to acknowledge the importance of food security and recommend that the importance of fresh vegetables is also acknowledged in the policy.

Social, cultural, economic well-being of people

23. Existing CVG growing makes a considerable social and economic contribution, employing 600 people and making an economic contribution over 40 million to regional GDP.
24. Improving the definitions of CVG to better reflect CVG operations will enable the majority of growers, who are specialists, to manage their environmental effects at the same spatial scale as their CVG enterprises within the Region.
25. Overseer updates over time have rendered the leaching maximums within the One Plan meaningless and created uncertainty for those considering diversifying land use. An update of Table 14.2 within PC2 provides for the expansion of extensive vegetable rotations within the Controlled activity consenting pathway.
26. Chinese growers traditionally grew most of New Zealand's greens, and this community is still strongly represented in the Region. The growers of green vegetable rotations have been particularly poorly served by the One Plan. No consenting pathway was provided for greens rotations in the One Plan, and the pathway provided for in the notified version of PC2 was still very uncertain for green vegetable growers. The proposal in Section 42a provide a more certain pathway for more vegetable growers.
27. Vegetable growers are price takers and cannot increase costs associated with GMP and BMP implementation to consumers. The ability of growers to implement these measures depends on the scale of their business.
28. We seek provisions within PC2 that promote the adoption of appropriate GMP and BMP, nutrient budgeting and reporting

methods appropriate for all vegetables rotations and all vegetables growers.

#### Health of the wider environment

29. The provisions we have sought to enable crop rotation are essential for maintaining soil health and the natural capital of highly productive land.
30. The expansion of extensive vegetable rotations presents an opportunity for farmers to diversify their land uses and reduce their greenhouse gas emissions.
31. Achieving the reductions that are likely to be required for New Zealand to meet the targets within the Climate Change Response (Zero Carbon) Amendment Act 2019 will require land use diversification that is only likely to be achieved through experienced growers accessing leased land and implementing crop rotation practices. These growers need the certainty that a CVG enterprise consent offers to enable this diversification.

#### **HORTNZ POLICY AND APPROACH**

32. The following sections discuss the nature of CVG, describing the way crops are grown in the region and scale of vegetable growing in the Region,
33. I discuss the history of vegetable growing and its economic contribution and export potential.
34. I discuss the importance of vegetable growing for the health of New Zealanders and the importance of the recognition of food security within regional and national freshwater policy.
35. Finally, I discuss the natural resource impacts of vegetable growing, from water quality, soil and climate perspectives, and how these effects are managed through Farm Environment Plans.

#### **Crop rotations**

36. There are three main growing areas within the Horizons:
  - the north of the region including Ohakune;
  - the central region located in the Manawatu and Rangitikei, including Opiki; and
  - to the south in the Horowhenua District, including the area around Levin.



37. These areas represent different soil and climatic conditions and these natural conditions provide for distinctive crop rotations.
38. Growing the same crop repeatedly in the same location results in poor crop performance. This is because depletion of the soil nutrients will occur over time. The growth of some crops is suppressed by self-emitted metabolites if they are not grown in rotations with other crops. Some rotations include legumes, which fix atmospheric nitrogen to be used by following crops in the rotation. Some crops with deep strong roots are useful for opening channels deeper in the subsoil than the harvested crop might penetrate. A pasture phase can improve soil structure by adding organic matter to the soil.
39. Rotating crops breaks pest and disease cycles by removing host material for a period and reducing pest populations. Some crops and their residues can act as soil bio-fumigants. In New Zealand there are certain sorghum and brassica species used in this way.
40. Because CVG requires very specific conditions, growers only grow vegetables on land that is optimal for growing vegetables. This means that CVG growing enterprises are frequently made up of non-contiguous land parcels of leased and owned land.
41. The Statistics New Zealand Agricultural Production Census 2017 data (Statistic New Zealand, 2017) illustrates that 85% of vegetable growing land is farmed by specialist growers. This figure is slightly less for potatoes growers, with about 80% of potato growing land being farmed by specialists growers. Process peas growers are more likely to grow in mixed farming systems, with 40% being specialist growers. While growers may lease land from pastoral farmers the growers are usually specialists and are generally not involved in other farming activities.
42. The nature of leased arrangements that support CVG should be considered in the design of the consenting regime for the activity. When considering the One Plan, the Environment Court<sup>1</sup> preferred the evidence of Fish and Game's expert Planner, rather than HortNZ's expert Economist, on how consenting and lease arrangements for CVG might work under the One Plan, imagining that farmers would consent

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<sup>1</sup> *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at [5-81].

their farms to provide for vegetable growing on the off-chance a specialist grower might seek to lease land from them at some point:

*But, as was discussed at the hearing, it seems to us that it would make far more sense for a landowner, who knew or hoped that some of his or her holding might be attractive for such a purpose, to make a whole of farm application for a resource consent, with leachate and other factors being assessed at the high but plausible end of the range. The application would be presented on the basis that only a finite portion of the farm would be so used at any one time, and thus be leaching at up to the defined rate, in any one year. Depending on the exact nature of the consent required, its term could be indefinite or for a finite but still ample period of years, and the cost of the consent could be amortised over that time.*

43. This was never a realistic scenario, and the absence of consents granted in this manner bears this out.
44. The proposed new definition within the S42a for Enterprise is useful because it describes the reality of most CVG businesses within the Region, and enables growers to consent their operations themselves, for leased and owned blocks.
45. However, a proportion of growers of vegetables, are also farmers and operate mixed farming systems, where vegetables are a minor activity integrated within a mixed farming system. Mixed farming is a valid farming system and may become increasingly important as New Zealand transitions to a low emissions economy. It is important that PC2 retains a pathway for vegetables grown on mixed farms to be assessed at the mixed farm scale.
46. We largely support the proposed new definitions for Crop Rotation. The definition of Crop Rotation should include rotation across an area as well as deleting reference to 'in the same space'.
47. The definitions of Crop Rotation and Enterprise enable existing CVG to be defined as an area made up of non-contiguous parcels, but recognising that the specific location of that CVG area can shift, without triggering land use change, unless the overall CVG area expands.
48. These new definitions are critical to supporting CVG to rotate crops in the manner that represents best practice for managing soil health and plant health.

49. The new definitions better describe the farming system for the majority of growers in the Region. However, as noted above vegetables are also grown within mixed farms, and therefore we support the Section 42A author's proposed rule (14-1), that would enable CVG grown within a mixed farm to be assessed at the farm scale, rather than just the CVG enterprise, as would be required for CVG growers that cannot meet the leaching maximums Table 14.2.

Northern Region - Ohakune

50. Ohakune has long been associated with supplying the North Island's winter vegetable crops. It has friable volcanic soils and a cool climate. It is an ideal vegetable growing area.
51. This area is important for the winter supply of vegetables. Key crops area in this area include carrots, potatoes, onions and brussels sprouts.
52. A KPMG report determined that (based on 2014 figures) the Horizons Region produced 15% of New Zealand's carrots and parsnips. (KPMG, 2017)
53. These vegetables area grown in 12–14 year rotations, with pasture (and sometime cereals) grown for 8-10 years, and then a mix of vegetables. These rotations occur on leased and owned land. The location of CVG changes as part of the crop rotation, and as lease arrangements change.
54. The Ohakune autumn/winter harvesting season complements the other growing Regions in the North Island, filling the important gap that would otherwise exist when these vegetable types would not be available to the fresh market in the quantities required to meet domestic consumer demand.
55. The leaching and economics of a representative proxy rotation is described in a 2014 report undertaken by Stuart Ford and is described as Waimarino. (Ford, 2014)
56. The evidence statement of Bruce Rollinson for the Ohakune Grower Association, provided in **Appendix A**, provides detail about the Ohakune growing area and crops.
57. The growing area to the north of the Region, around Ohakune, is not within Target Water Management Sub-Zones.

Central Region - Manawatu and Rangitikei catchments

58. The central growing area is large and includes growing within the Manawatu and Rangitikei catchments and the area around Opiki. This growing area is important for the supply of fresh and process potatoes and for seed potatoes. Process peas are also grown in this part of the Region.
59. Manawatū-Whanganui Region is currently has around 10% of the New Zealand potato sector; 74% of potato production is currently for domestic food supply.
60. Seed potato production in the Rangitikei District operates across dairy pasture, utilising a paddock only once across a five year period. The potato cultivation is often utilised to return soil health after damage caused by pugging from stock.
61. Potato production in the Opiki District occurs within a mix of maize, dairy cattle, and potato production rotated on a shorter term due to the soil.
62. These vegetables are grown within pasture rotations. These rotations occur on leased and owned land. The location of CVG is constantly changing as part of the crop rotation, and as lease arrangements change.
63. The leaching and economics of a representative proxy rotation is described in modelling undertaken by Stuart Ford and is described as cash cropping. (Ford, 2017) (Ford, 2014)
64. The majority of the central growing area, including Opiki, are not within Target Water Management Sub-Zones; however, there are potatoes and seed potatoes grown in the Coastal Rangitikei Target Water Management Sub-Zone.

Southern Region – Horowhenua

65. The southern growing area is located within the Horowhenua District and extends into the Kapiti District. This growing area is important for the year-around supply of green vegetables. A very wide range of crops are grown, over 38 vegetable crops – including, brassicas, leafy greens, Chinese greens, salad crops, potatoes and onions. A KPMG report determined that (based on 2014 figures) the Manawatū-Whanganui Region produced 22% of broccoli and cauliflower and 20% of cabbage (KPMG, 2017)

66. There is one large potato and onion grower. The remaining growers grow green vegetables with a range of other crops in rotations.
67. The leaching and economics of representative proxy rotations is described by Stuart Ford as intensive vegetables and Market Garden. (Ford, 2014) (Ford, 2017)
68. The leaching of representative rotations are also described in the Page Bloomer report developed for PC2. Three representative rotations were modelled: potatoes/onions, intensive vegetables and Brassica. (Bloomer, et al., 2020)
69. The sequence of vegetable crops is designed to manage plant pests and to build soil fertility through the re-integration of plant residue. The green vegetable rotations grow crops that are hand-harvested and therefore need to be grown in a manner where harvesting is efficient. These growing systems are less integrated with pastoral farming, than the vegetable type rotations found in the northern and central part of the Region.
70. Vegetables are grown on a mix of owned and leased land. The location of CVG is more stable than the rotations in the northern and central parts of the Region, but the locations do change over time as lease land arrangements alter and as land is periodically rested.
71. The evidence statements of Travis Sue, Jeffery Wong and Chris Pescini provided in **Appendix A**, and the statement from Jay Clarke from Woodhaven Gardens, provide more detail about the crop rotations grown in the south of the Region, around Levin.

### **Land area and numbers of commercial vegetable growers**

72. The Manawatū-Whanganui Region is an important part of the national food production system. There is approximately 4800ha of horticultural land in the Region, approximately 3,700 ha of which is planted in vegetables. (Plant and Food , 2019)
73. In the Horowhenua Freshwater Management Unit (**FMU**), we estimate that there is 1,007 ha of vegetable growing land, with 561 ha of this in the Horowhenua Target Water Management Sub Zones (**TWMSZ**).
74. The evidence of Claire Conwell compares detailed mapping of grower's land and the New Zealand Land Cover Data Base (**LCDB**). This analysis indicates that in the Manawatū-

Whanganui Region, the LCDB short-rotation crop layer is reasonably accurate for the Horowhenua and Ohakune areas. It is not accurate in the Manawatu and Rangitikei areas, where there is more than 14,000 ha of cultivated land growing arable crops and vegetable crops to feed animals. Of this area, only about 1100 ha is used to grow vegetables for human consumption.

75. When the LCDB data is compared with Land Use Classification (**LUC**) data, it can be seen that in Horowhenua over 85% of CVG is on LUC I and II land, and 94% on LUC I, II and III. In Ohakune, 80% of CVG is on LUC III land and 95% is on LUC III and IV.
76. CVG makes up less than half a percent of land use in the Region. In the Horowhenua District, which has the highest proportion of CVG relative to other land uses in the Region, CVG makes up two percent of land use within the District. (Statistic New Zealand, 2017)
77. The Statistics New Zealand Agricultural Production Census 2017 data indicates that the area of potatoes, onion, and squash (these are the surveyed crops) have reduced in the Region between 2012 and 2017. The area of process peas has expanded. The net change for these four surveyed crops is a reduction of 400 Ha. (Statistic New Zealand, 2017) (Statistics New Zealand, 2012)
78. This is comparable to estimates from Fresh Facts which estimates the area of CVG in the Region at 4200ha in 2013 and 3700 ha in 2019. (Plant and Food , 2013) (Plant and Food , 2019)
79. My conclusion is that the CVG area in the Region overall may have contracted a small amount since 2012. However, the Horowhenua and Ohakune growing areas have been relatively static.

#### Numbers of growers

80. There are 60 growers in the Region who are certified with NZGAP.
81. The Statistics New Zealand Agricultural Production Census statistics for 2012 and 2017 indicate that there has been a decrease in the number of CVG farms in the Region, from 105 in 2012 to 78 in 2017. (Statistic New Zealand, 2017) (Statistics New Zealand, 2012)

82. The same statistics indicate that the size of CVG enterprises has increased in area over this time, with fewer very small CVG farms, and an increased proportion of larger operations. (Statistics New Zealand, 2012) (Statistic New Zealand, 2017)
83. The permitted threshold for CVG within the One Plan and proposed PC2 is 4 ha. NZGAP indicates that 16 growers in the Region have operations less than that size.
84. The nature of leased land and crop rotations means that when one grower retires it is not always necessary for them to sell their growing land to the grower who will then take over the market share.
85. We support the definitions for CVG baseline area on the basis that we understand it would enable growers to access the existing activity consenting pathway for a CVG enterprise provided it did not exceed the overall area that was existing in 2012-2013.

### **History**

86. Growing vegetables within the Manawatū-Whanganui Region has a long history.
87. The Ohakune Growing area was established following the development of the main trunk line in 1908.
88. In the 1940's vegetable growing areas in the Hutt Valley were compulsorily purchased and the Government encouraged growers to shift to the Otaki/Levin area. (Murphy, 2013)
89. As outlined in evidence of Andrew Yung in **Appendix A**, the Otaki growing area was important for outdoor tomato growing, with 150 growers until indoor growing replaced outdoor growing. The land parcels that were economic for growing tomatoes on, are too small and valuable to support greens growing.
90. The Levin growing area, has long been important for growing green vegetables. Chinese growers began growing in the early 1900's. The removal of the poll tax, in 1944, enabled Chinese women and children to come to New Zealand, and family businesses established. At the peak in the 1960s, Chinese market gardeners produced 80 per cent of New Zealand's green vegetables. (Murphy, 2013)

91. Many of the growers of Chinese ancestry in the Horowhenua today are second, third and fourth generation New Zealanders, some are recent immigrants.
92. In recent years, books have been written about the challenges Chinese growers have faced. '*Success through adversity: a history of the Dominion Federation of New Zealand Chinese Commercial Growers*', documents the history of the Chinese Federation of Growers, formed in 1935 and still active. (Murphy, 2012) '*Sons of the Soil: Chinese Market Gardeners in New Zealand*' (Lee, et al., 2012), documents the social and community history of more than 140 years of Chinese involvement producing the nation's vegetables. Both books document the challenge faced by Chinese growers due to systemic racism in New Zealand.
93. Throughout the history of growing in NZ, grower collective organisations have been an important part of the industry. This includes HortNZ, which was established in 2005 with the amalgamation of the New Zealand Fruit Growers Federation, the New Zealand Vegetable and Potato Growers Federation and New Zealand Berryfruit Federation. (Murphy, 2013)
94. District Associations provide a structure for growers to exchange information and ideas and to come together for mutual benefit, such as involvement in research projects, policy and farm environment planning.
95. District Associations provide a coordinated way of growers to provide input into the horticultural levy organisations work and to provide point of contact for other organisations such as government, councils, community and iwi.
96. The Tararua Growers Association represents growers on the west side of the Tararua's between Otaki and Rangitikei. There are currently 50 growers represented by the Tararua Growers Association. The group advocates for growers interests and provides a community support network for growers.
97. Terry Olsen's evidence provide in **Appendix A**, describes the Tararua Growers Association commitment to collaborative working for the common good of all growers.
98. The Ohakune Growers Association represents 11 growers. The number of growers in Ohakune has decreased from 25 growers 20 years ago, following a peak of 40 in the 1980's.



99. The Ohakune Growers Association, is described by Bruce Rollinson in his evidence in **Appendix A**.
100. Vegetable growers in the Region have an ageing demographic. The uncertainty that has been created by the One Plan, has undermined confidence of current growers and created uncertainty for succession planning.

### **Jobs and economic contribution**

101. Vegetable growing in the region contributes over 40 million in GDP and approximately 600 jobs
- (a) In the Horowhenua District, vegetables growers contribute 27 million to the district GDP and 386 jobs,
  - (b) In the Manawatu District, vegetables growers contribute 8.4 million to the district GDP and 100 jobs
  - (c) In the Ruapehu District, vegetable growers contribute 5 million to GDP and 100 jobs. (Infometrics, 2019) (Infometrics, 2019) (Infometrics, 2018)
102. Different growing rotations have different labour requirements. The extensive vegetable rotations grown in the Central and Northern parts of Region are more dependent on machinery for harvesting. The green vegetable rotations grown in Horowhenua, require crops to be harvested by hand, and therefore the growing system is more intensive to provide an efficient working environment. These green vegetable growing rotations are very labour intensive, planting and harvesting vegetables daily, all year.
103. As outlined in the evidence of Jay Clarke from Woodhaven Gardens, their 220-250 employees are a diverse workforce with a range of roles. Most of the employment within the vegetable sector is non-seasonal and is undertaken by New Zealand residents. However, for some crops and at the peak of harvest, seasonal workers contribute to the workforce.
104. The evidence of Geoff Lewis, provided in **Appendix A**, describes how on his farm he grows both strawberries and asparagus and has increased full time roles from one to 12. During the peak of the asparagus season, local employment is supplemented with seasonal workers from NZ and Pacific workers under the Recognise Seasonal Employment Scheme (**RSE**). As outlined in his evidence, the RSE scheme delivers real value to New Zealand and to Pacific communities.

105. Potato production in the Horizon's region provides seed potato production for other regions within New Zealand, and supports significant New Zealand processing facilities (Pepsi, Griffin's, Mr Chips, Fresher Foods and Proper Snack Foods).
106. The scale of the CVG businesses within the Region varies considerably, with a small number of large growers and larger number of small growers.
107. Growers compete in free market with supermarkets setting the price of produce. Vegetable growers are unable to pass on increased costs to supermarkets.
108. The price of vegetables increases when there are crop shortages. Shortages of crops occurs because of market disruption. This can occur due to storms and droughts, other events such as COVID19, and due to regulation.
109. Currently regulation throughout New Zealand, including the proposed PC2 provisions in the Section 42A report, is constraining the expansion of green vegetable rotations.
110. A recent study looked at the impact on the price of vegetables if the Pukekohe vegetable Hub is unable to expand to meet population growth. This study found that if regulation constrained expansion, the price of vegetables could be expected to increase by between 43-58% by 2042. (Deloitte, 2018)
111. There is considerable urban pressure from the expansion of Auckland. The southern part of the Pukekohe hub is within the Waikato Region, and regulated by the recent Plan Change 1 decision. The Plan Change 1 decision provided for 440ha of expansion of intensive vegetable rotations. 440ha equates to 60% of the area that would be required to keep pace with the population growth predicted in the Waikato in the next 10 years and 30% of the area that would be required to keep pace with the combined Waikato and Auckland predicted population growth over the next ten years, (Easton, 2019).
112. PC2 does provide a pathway for the expansion of extensive vegetable rotations, as these are likely to have leaching within the maximums described Table 14.2. However, any expansion of green vegetable rotations is very uncertain under the notified version of PC2 and the proposed approach in the Section 42A report.

113. The combined impact of restrictive planning provisions for CVG in the Waikato, Canterbury and Manawatū-Whanganui Regions create a risk to New Zealand's food security.

### **Export potential**

114. Over 80% of vegetables grown in New Zealand are for domestic supply. (Plant and Food , 2019)
115. Fresh green vegetables are generally not grown for export due to loss of freshness with distance to market.
116. Some vegetables are suitable for export. In the Manawatū-Whanganui Region the main crops that are currently exported are onions, potatoes and process peas. There is also potential for increased export of carrots.
117. Growers who grow some crops for export, also grow vegetables for domestic markets. Including crops for export markets within rotations provides economic resilience and supports the resilience of the New Zealand domestic market.
118. As outlined in the Potatoes New Zealand submission, the demand estimates for new potato production land suggest that the area of land required by 2025 will be increased by about 9,500 ha in total across NZ. A proportion of this would be required to locate on land across Manawatū-Whanganui Region to enable supply to New Zealand processing facilities and to produce product at the right time of year in the required volumes.
119. Potatoes, onions, peas and carrots are grown within pastoral rotations and have a similar nitrogen leaching footprint to pastoral land uses. (Ford, 2014) (Ford, 2017)

### **National food system and human health**

120. Vegetables grown in the Manawatū-Whanganui Region are part of a national food system.
121. Potatoes, vegetables, and onions are grown in New Zealand from Northland to Southland, serving the domestic market at different times of the year.
122. The Ohakune growing area is harvesting in winter to supply winter vegetables for domestic supply, while the potato growers in Opiki are preparing to plant to harvest early season potatoes.

123. The Horowhenua District is one of a small number frost -free growing areas in NZ. It is important for the year-round supply of vegetables.
124. Having growing areas located in different parts of the country is important for food security. It creates resilience, if there is drought or a hailstorm, there is still likely to be continuity of supply from other growing areas.
125. Fresh vegetables cannot be easily imported to New Zealand, due to our relative isolation. New Zealand exports mainly processed and frozen vegetables, and imports mainly processed and frozen vegetables. (Plant and Food , 2019)
126. Current projections around New Zealand's expected population increase and annual food volumes available for consumption in New Zealand show that current domestic vegetable supply will not be able to sustain our future population consumption needs. (KPMG, 2017)
127. Already many New Zealanders are struggling to meet the recommended daily intake of three plus vegetables a day. In 2018/2019, only 53 percent of New Zealand adults and 52 percent of children met the recommended daily vegetable intake. The proportion of New Zealanders meeting the recommended intake of vegetables has been falling year on year. In 2012, only 67 percent of adults were meeting the recommended intake of vegetables. (Ministry of Health, 2019)
128. In 2019, one in five children New Zealand are living in food insecurity. (Ministry of Health, 2019)
129. The health benefits of fruit and vegetables are well documented but include protection against heart disease, stroke, high blood pressure, obesity and diabetes. (Ministry of Health, 2019) Low fruit and vegetable intake is identified as a leading risk factor in loss of health. In New Zealand, having a high body mass index (i.e. being overweight or obese) has overtaken tobacco as a leading cause in health loss. (Ministry of Health, 2013)
130. The Institute for Health Metrics and Evaluation (**IHME**) carry out the Global Burden of Disease (**GBD**) study. This study attempts to quantify the health loss due to various diseases and risks. For vegetable intake, this study only considers the link with cardiovascular disease. The study estimated that almost 800 deaths were caused by low vegetable intake in New Zealand

in 2017, as well as quality of life lost due to morbidity. (Moore, et al., 2019)

131. This equates to approximately 12,000 Disability-Adjusted Life Years (**DALYs**) lost due to inadequate vegetable consumption. To put this in perspective, this study estimates that low vegetable intake is responsible for 7.5 per cent of loss in health (measured in DALYs) due to cardiovascular diseases and 1 per cent of total loss in health across all factors. (Cleghorn, 2020) (Moore, et al., 2019)
132. Otago University has recently modelled the potential health impacts of increased vegetable prices. This study found that using the health costs of an increased on vegetable prices of 43 - 58%, (Deloitte, 2018) would be a loss of 58,300 – 72,800 Quality Adjusted Life Years (**QALY**), and health costs of \$490 - \$610 million across the population. (Cleghorn, 2020)
133. Treasury recommends investing \$33,000 for each QALY in its cost benefit analysis guidance, for assessing willingness to pay. (The Treasury, 2019)
134. Therefore, an investment of \$1.9 – \$2.4 billion over 110 years, or \$17 - \$22 million per year, could be considered justified in order to avoid losing the number of QALY's at risk due to the combination of urban encroachment in Auckland and prioritisation of contaminant discharge allocation to land uses, other than CVG, in the Waikato under Plan Change 1.
135. In the case of the existing One Plan, the potential impacts are more severe than modelling in the Pukekohe scenario. The risk is not only about preventing New Zealand growers being able to expand to provide for population growth, but the risk of losing existing growing areas. Approximately 20% (KPMG, 2017) of New Zealand's green vegetables are at risk, because currently no green vegetable grower can gain consent through the One Plan framework. Under the notified version of PC2, as outlined in HortNZ submission, there is no certainty that there is an economically viable pathway for existing vegetable growers to continue to supply vegetables to New Zealand consumers.
136. The proposed approach within the Section 42A report provides a more certain pathway for some green vegetable growers. However, as outlined in the evidence of Stuart Ford, the percentage reduction proposal of 35% for the Controlled activity pathway is likely to be unachievable for the majority of green vegetable growers.

137. The percentage reductions proposed in the Section 42A report Controlled activity pathway impacts on some rotations and crops more than others. The modelling undertaken by Dan Bloomer and the evidence of Stuart Ford, concludes this level of reduction is unlikely to be economically achievable for the modelled brassica rotation. Brassicas are the most affordable of green vegetables.
138. In the HortNZ submission, we sought for PC2 to provide for some expansion of the green vegetable rotations that exceed the leaching maximums in Table 14.2. The limited area of expansion was proposed to recognise the importance of these rotations for domestic food supply and human health.
139. As outlined in the evidence of Claire Conwell, expansion of the green vegetable rotations could keep up with population growth with a less than 1% increase in nitrogen load. The expansion of the extensive vegetable rotations found in the central and northern part of the region can occur with neutral water quality effects.
140. Domestic food supply is defined in the One Plan Glossary and "*means crops grown for human consumption under the Commodity Levies (Vegetables and Fruit) Order 2007 (SR2007/161)*". Schedule B Surface Water Management Values, is identified as a component of Part II - the Regional Plan and it is here where Surface Water Management Values are listed by Sub-zone and under Table B.13, where a particular production value is listed (i.e. Seed Potato Production, Vegetable Production). It is not particularly clear if this is a recognition of the value of domestic food supply from the perspective of the productive capacity of the Water Management Zone and Sub-zone itself, or if the issue is that water is suitable for domestic food production. The only place where the linkage to productive capacity is achieved is in Policy 5-8 in regard to nutrient management.
141. We recognise that PC2 is a transitional plan, and the allocation pattern in Table 14.2, is not well placed to providing for vegetable for domestic food supply. We accept that revising that framework is out of scope for PC2 and will need to be addressed through the future NPSFM 2020 process.
142. In our view, in all future NPSFM processes the importance of vegetables for domestic food supply should be considered.
143. In PC2, we welcome the recognition of food security within the policy framework proposed in the Section 42A report and

recommend the value of fresh vegetables is also included through addition to Policy 14-6(e)(xii).

### **National policy recognising the national benefit of vegetables**

144. The NPSFM 2020 recognises the Lake Horowhenua and Pukekohe vegetable growing areas as “specified vegetable growing areas”.
145. The provisions within the NPSFM requires Regional Councils to have regard to:
  - (a) the domestic supply of fresh vegetables; and
  - (b) maintaining food security for New Zealanders.
146. Where the FMU, or part of the FMU, is currently below the bottom lines, it provides the ability for Councils to choose to set water quality outcomes below bottom lines for the FMU or parts of the FMU, but equally communities could instead design allocation regimes and additional mitigations to enable freshwater outcomes and food security outcomes to be achieved.
147. Councils cannot choose to let the water quality decline and must ensure that vegetable growers are not exempt from any requirements aimed at achieving target attribute states.
148. Central to the NPSFM 2020 is the concept of Te Mana O Te Wai. Te Mana O Te Wai articulates a hierarchy of obligations. The first to water, the second the health needs of people and third to everything else.
149. A reliable and reasonably priced supply of fresh vegetables is essential to human health.
150. Te Mana o Te Wai also recognises that the health of people and of water and of the wider environment are intrinsically interlinked.
151. We recognise that PC2 is not implementing the NPSFM 2020 and is a transitional plan. However, in our view it is essential that PC2 does not drive land use change away from vegetable growing before the NPSFM 2020 process is undertaken in this catchment.
152. Instead the focus of PC2 should be on driving the uptake of workable and relevant GMP and BMPs for CVG, to achieve tangible improvements, prior to the NPSFM 2020 process taking place.

153. We support the recognition of food security within policy consideration proposed in the Section 42A report and recommend the value of fresh vegetables is also included through addition to Policy 14-6(e)(xii).

### **Managing impacts from the use of land on soil and water**

154. Soil underpins New Zealand's primary industries and contributes to healthy ecosystems by helping to clean water, cycle nutrients, store carbon and grow plants and animals. Creating new soil is a slow process and can take hundreds to thousands of years, which effectively makes soil a non-renewable resource.
155. The importance of our soil resource and the current issues faced are recognised by the Government in the proposed National Policy Statement for Highly Productive Land (**proposed NPSHPL**), which seeks to improve the way highly productive land is managed under the Resource Management Act 1991.
156. The type of soil in which commercial vegetable growers prefer to grow on are deep, free draining soils. These soils are relatively limited across the Manawatū-Whanganui Region and across New Zealand. In the Manawatū-Whanganui Region 18% of Land is LUC I, II and III. Over 80% of CVG is located on this highly productive land.
157. Other factors that limit access to quality growing environments include: land ownership; District Plan zoning; access to water; access to labour; transport networks; and previous land use (such as housing). Access to this type of growing environment needs to be enabled to ensure New Zealanders have fresh affordable food.
158. All these factors (mentioned above) mean that suitable growing land is limited and therefore Manawatū-Whanganui Region growing operations often extend across multiple catchments with non-contiguous grower areas, in order to meet demands.

### Natural capital and productive capability

159. The natural capital approach within the One Plan recognises the value of soils, underpinning agricultural productivity. However, the definition of natural capital within the One Plan which informs the allocation pattern across those soils in Table 14.2, is pastoral focused:



(a) **Natural capital** means the potential animal stocking rate that can be sustained by a legume-based pasture fixing nitrogen biologically, under optimum management and before the introduction of additional technologies. Using the "Attainable Physical Potential" in stock units/ha for each land unit listed in the extended legend of the **LUC\*** worksheets as a proxy for the soil's natural capital, these stocking rates are transformed to pasture production and used in the OVERSEER® nutrient budget model to calculate nitrogen leaching losses under a pastoral use

160. We accept that the scope of PC2 is limited and reviewing the allocation pattern is better resolved in future NPSFM complaint Plan change. However, within PC2 there are policies (14-6, e, ii) for activities that exceed the leaching maximums in Table 14.2, which require a proportional reduction related to exceedance of Table 14.2. Underlying this policy, is the assumption that the leaching maximums provided in the Table 14.2 are a proxy for good management practice aligned to the productive capability of the soils natural capital.
161. This comparison may be somewhat relevant for the CVG rotations that are within pastoral rotations, when the full rotation is considered. However, it is not relevant for green vegetable rotations, which include minor pasture phases.
162. Almost all green vegetable growers already have selected the land with the highest natural capital in the region to grow on (85% on LUC I and II and 94% on LUC I, II and III). There are limited options for most growers to select land with higher natural capital or productive capability than the land they already grow on.
163. We recommend an additional policy 14-6 e that is related to the outcome originally sought when the leaching maximums were devised, that is related to accounting for the productive capability of CVG land.

Mitigating soil loss and maintaining soil health

164. What is most relevant for managing the natural capital of the highly productive soils used for CVG, is GMP's that maintain the productive capability of these soils through mitigations to reduce soil loss and manage soil health through rotations.
165. In the evidence of Claire Conwell, the proportion of sediment load discharged to receiving waters attributable to

vegetable growers is quantified. This work illustrates that overall, half a percent of sediment load discharged to receiving waters in the Region is attributable to CVG, and one percent within the Horowhenua FMU.

166. In Andrew Barber's evidence, he describes the good management practices that growers use to manage sediment discharges. This work has been used to predict for the Hokio 1a case study, that is based on existing FEPs, that the sediment load discharge attributable to CVG is expected to reduce a further 40 to 60 percent over the next 5 years as these FEP action plans are implemented.
167. As outlined in the evidence of Claire Conwell, once the FEP action plans are implemented, the estimated proportion of the receiving water catchment load is predicted to reduce from one percent to less than half a percent.
168. The other aspect that is relevant to managing soil health is crop rotation. In the submission of HortNZ, we sought the ability of growers to manage their enterprises across the FMU. This would enable growers in the Horowhenua to move some growing areas from within the TWMSZ to outside, without reducing growing area. In the evidence of Claire Conwell, modelling that tests this concept indicates that it could result in neutral water quality or even marginal improvements overall for the FMU.
169. We accept that changing the spatial unit away from the TWMSZ, is not within the scope of PC2.
170. We support the Section 42A report definitions of, Crop rotation (with a minor change) and Enterprise, these definitions support soil health.
171. HortNZ supports the development of the proposed NPSHPL, and in future NPSFM plan changes, we consider policy that seeks to maintain the productive capacity of highly productive land should be included. We don't consider it is within the scope of PC2 to add this requirement.

### **Managing water quality effects from the discharge of nutrients**

#### Target Water Management Sub Zones (TWMSZ)

172. As outlined in paragraph 23 of the S42a technical report of Abby Matthews (Matthews, 2020), The overarching approach to water quality management in the One Plan is to maintain

water quality where it supports identified surface water management (Schedule B ) values, or enhance water quality where it does not.

173. As outlined in the evidence of Claire Conwell, since the water quality trend analysis across both the 10-year and 20-year periods suggested that on the whole, there were improvements across the region.
174. We consider the addition of additional TWMSZ, or the application of the Table 14.2 framework to all land in the Region is out of scope for PC2.
175. In our view, achieving long term freshwater outcomes would be better achieved through a future NPSFM process, and the focus of PC2 should be on driving the uptake of GMP and BMPs to achieve tangible improvements prior to the future NPSFM plan changes.

#### Cumulative leaching maximums

176. As outlined in the evidence of Stuart Ford, the adoption of the leaching maximums for the One Plan were based on Overseer estimates of leaching from Dairy Farms.
177. As Overseer is updated, the leaching estimates for activities have changed. These changes reflect changes in software not in the activity.
178. As outlined in the evidence of Stuart Ford, Overseer is a decision support tool, and is designed for relative assessments, to track the relative effect of the adoption of GMP over time.
179. As outlined in the s42A technical report of Abby Matthews, the water quality assessments that supported the original One Plan's adoption of the leaching maximums were informed by limited catchment scale water quality modelling. (Matthews, 2020)
180. Catchment scale water quality modelling is uncertain, and calibration factors are used to calibrate the difference between estimated discharge loads and the loads observed in receiving waters. This approach is explained in paragraph 37 of the s42A technical report of Tim Cox, where he explains the adjustment of attenuation coefficients and export coefficients. (Cox, 2020)
181. Earlier versions of Overseer estimated different discharge loads, the consequence of these difference for water quality

modelling, is a resulting change in the attenuation coefficients that would need to be assumed, no change would result in water quality outcomes.

182. HortNZ has numerous concerns about the way Table 14.2 was developed and is used within the One Plan and PC2. However, we consider those matters to be out of scope of PC2.
183. We support the updating of values within Table 14.2 to match the most recent version of Overseer, because there is no water quality impact from undertaking this update, and it makes PC2 more consistent with the original assessments that underpin the One Plan.

#### Intensive farming land uses.

184. Overall, the CVG in the Region contributes less than 1 percent of nitrogen load in the region. In the Horowhenua TWMSZ, CVG makes up 15% of the N load.
185. In paragraph 36 the S42a technical report of Abby Matthews for Horizons Regional Council, (Matthews, 2020). Ms Matthews explains the intensive farming land uses were targeted because it was thought seeking reductions from these activities would achieve the greatest improvements.
186. This logic does not hold for CVG, which makes a very small proportion of the overall nitrogen load, and the intensity of which varies widely for different rotations.
187. While HortNZ does not fully support the focus of the One Plan on those activities deemed intensive farming land uses, we accept the classification of activities as intensive farming land uses or otherwise is outside of scope for PC2.

#### Allocation of leaching

188. The leaching maximums in Table 14.2 cannot be described as limits from a planning perspective, because the NPSFM process was not followed to establish them.
189. Also outlined in the S42a Technical report of Abby Matthews, (Matthews, 2020) the leaching maximums provided for in Table 14.2, theoretically enable the nitrogen load in the Region to increase as Controlled activity, i.e. to become over-allocated.

1. As outlined in the evidence of Claire Conwell, the wording of the NPSFM and the NOF that the intent of the NPSFM prescribes a 'maintain' status and if desired by the community, to 'improve'. There is no accommodation in the NPSFM wording to allow a water body to degrade. Therefore, the leaching maximums provided for in Table 14.2, cannot be limits under the NPSFM 2020.
190. The critical point to be taken from the scenarios presented in the evidence of Claire Conwell and Technical report supporting Ton Snelder's evidence (Snelder, et al., 2020), is that Table 14.2 theoretically provides for over allocation, and therefore does not meet the definition of a limit in the NPSFM 2020.
191. Table 14.2 is not a limit, it is an allocation framework. As explained in paragraph 53 of the S42a technical report of Abby Matthews, (Matthews, 2020) the allocation pattern in Table 14.2 was designed to align activities with the land's productive capability. As discussed in the section above, this framework has limitations in its application to CVG rotations, since it was solely based on a pastoral notion of natural capital and productive capability.
2. As outlined in the evidence of Claire Conwell, the division, or allocation of that load, whether this be from the current landuse and investment (i.e. grandparenting) or the productive potential of the land (i.e. natural capital) are not directly a water quality management tools, rather these practices are largely a result of social and economic mechanisms, as well as cultural values, and efficiency.
192. As outlined in the evidence of Claire Conwell, from a water quality perspective, it is the load of contaminants at the sub-catchment scale that influences water quality.
193. The relevance of water quality load is described in the S42a technical report of Abby Matthews, in paragraph 33, (Matthews, 2020) when she describes loads as a useful Loads are a useful mechanism to relate the target concentrations to the contribution from various sources, including land use, to the concentrations measured in the river.
194. In her evidence Claire Conwell explains, the blanket approach of allocating a maximum load, such as the leaching maximums, on the basis of natural capital cannot take the relative sensitivities of downstream receiving environments into account when determining the maximum

load a contaminant can be discharged at from an individual site.

195. CVG make up less than one percent of the nutrient, sediment and pathogen load discharged to receiving waters. The overall potential benefits from reducing the contaminant load discharged from CVG could only ever be small.
196. When we consider the Horowhenua catchments, the percentage nitrogen load from CVG is larger than the regional average. The catchment with the highest proportion of CVG in the region is the Hokio 1a TWMSZ. The percentage nitrogen load from CVG in Hokio 1a is estimated 27 percent.
197. In Hokio 1a catchment, the other land uses by sector cumulatively contribute more nitrogen, but lesser or no reductions are sought from these activities in PC2. Urban land use is estimated to contribute 8 percent of the nitrogen load, it is permitted. Sheep and Beef farming is estimated to contribute 30 percent of the load, and it is a permitted activity. Dairy farming is estimated to contribute 31 of percent of the nitrogen load. Dairy farming is subject to PC2, however as far as we are aware, all dairy farms in this catchment have already been granted consents under the One Plan.
198. In my view there has been a misuse of the appropriate metrics in decision making in the One Plan and this persists in PC2. When assessing GMP, an intensity metric (kg/ha) may be appropriate. When assessing water quality effects and establishing limits, the assessment must be about the overall contaminant load (kg), discharged to the receiving environment.

*Estimating nitrogen leaching from vegetable crops*

199. Dr Brent Clothier from Plant and Food undertook modelling to predict leaching to inform the Section 42A report for the original One Plan. In his report, he estimates an “optimum” leaching rates for Potatoes, based on modelling good practice, as between 79 kg/ha and 46kg/ha, depending on the soil. For vegetables, the estimates were informed by from measured data, and he recommended that the measured leaching rate of 215kg/ha, could be reduced to about 165 kg/ha with a loss of yield of 10%. (Clothier, 2008)
200. This report from Dr Clothier was the best technical information at the time. On the basis of this information, the One Plan was designed with maximum leaching rates of 25/kg ha, providing

no pathway for specialist vegetables growers, as far as was understood by industry and horticultural experts at the time.

201. Since the One Plan development, there have been a number of studies looking at the predicted average annual leaching rates from vegetable growing in the Region, for representative rotations.
202. As explained in the evidence of Stuart Ford, there are serious limitations in representing vegetable rotations within Overseer, and this means that leaching estimates are uncertain.
203. Further, as explained in the evidence of Stuart Ford, Overseer has limitations at estimating absolute leaching rates, it is more suited to tracking relative changes overtime. This is exemplified by the increase in leaching estimates for the same rotation modelled in Overseer version 6.1 - 6.2.3 of between 50% and 165%. (Ford, 2017) (Ford, 2014)
204. As part of technical work to support PC2, Horizons and HortNZ determined to undertake more detailed grower surveys to inform modelling of leaching in the Lake Horowhenua TWMSZ.
205. HortNZ and growers agreed to work with Horizon's experts due to well documented limitations of representing vegetable growing in Overseer. The primary reason, HortNZ and growers agreed to working with Horizons on this work was to avoid a situation where experts disagreed on the technical work supporting the Plan Change.
206. Page Bloomer produced a report (Bloomer, et al., 2020) based on these surveys that estimated the baseline leaching rates from these rotations and estimated reductions with GMP and BMP.
207. As outlined in the evidence of Stuart Ford, he is of the opinion the modelling undertaken By Page Bloomer is by far the best possible and most accurate representation of Overseer modelling that is available to us for use in both determining both the properties status in terms of either meeting or exceeding the targets in Table 14-2 and the likely percentage changes possible as a result of adopting the various mitigations which we agreed upon in the expert conferencing.
208. The Page Bloomer report was then also used to inform the modelling described in evidence of Anne-Maree Jolly, and

then used to inform the economic analysis described in the evidence of Stephen McNally.

209. As explained in the evidence of Stuart Ford, the way the modelling developed by Page Bloomer was subsequently re-analysed by Anne-Maree Jolly and Stephen McNally, has led to unreliable results.
210. It is disappointing to HortNZ and growers that after agreeing that Horizons and the Horticulture sector's experts would work together in the development of modelling to support PC2, Horizons chose to engage different experts to re-analyse the agreed modelling approach without the involvement of sector experts.

*Estimating reductions in leaching for CVG related to GMP and BMP*

211. One of reasons given in the evidence of Anne Maree Jolly for proposing that a 35% reduction is reasonable is that it is consistent with that sought in the submission of Woodhaven Gardens.
212. This mis-represents the submission of Woodhaven Gardens, which sought to make significant reductions in the TWMSZ, in exchange for the flexibility to expand and outside of the TWMSZ and manage CVG inside and outside of the TWMSZ together.
213. HortNZ sought a similar flexibility in our submission, but we now accept that the scope of PC2 is limited and cannot provide certainty for expansion of CVG outside of the TWMSZ. To 'cherry-pick' some elements of a grower submission, without context is misleading.
214. Furthermore, Woodhaven is a CVG enterprise that has made an exceptional commitment to environment management, including implementing measures Stuart Ford describes in his evidence as 'systems change.', such as retirement. To set the Controlled and Restricted Discretionary activity standard at the standard that can be only be achieved by one of the very best and one the largest growers, is a considerably higher bar than set for dairy farming in the same rule.
215. The limitation of the setting the minimum leaching reduction in the Controlled and Restricted Discretionary rule, based on the weighted average, is that it doesn't recognise that different CVG rotations have different opportunities for reductions. This was recognised in the technical work of Page



Bloomer where the reductions at CVG and BMP ranged from less than 7% to 46%. The weighted average is in the order of 35% in the Horowhenua TWMSZ. (Bloomer, et al., 2020) However, the weighted average can't simply be applied to all CVG enterprises. These are separate businesses, growing different crops and competing with each other on the domestic market.

216. Setting the rate at 35% disadvantages the smaller growers, who don't have any land outside of the TWMSZ to manage losses in yield across. It also disadvantages the small growers described as market garden in the modelling of Stuart Ford, and the brassica rotation described in the modelling of Page Bloomer. (Bloomer, et al., 2020)
217. Overall, what can be concluded from the various modelling that has been undertaken to make estimates of baseline and GMP and BMP leaching from vegetable rotations can be summarised as follows:
- (a) The existing rotations grown in the North of the Region around Ohakune are permitted currently because they are outside of the TWMSZ. The predicted long-term average annual leaching from the full rotation, would likely be within the updated leaching maximums in Table 14.2, at GMP with no reduction in yield.
  - (b) The potato and process pea rotations grown in the central region in Manawatu and Rangitikei, are largely outside of TWMSZ, with some CVG area within the Rangitikei TWMSZ. The predicted long-term average annual leaching from the full rotation, would likely be within the updated leaching maximums in Table 14.2, at GMP with no reduction in yield.
  - (c) For the potato and onion rotation within the Hokio 1a TWMSZ, the predicted long-term average annual leaching from the full rotation, would likely be within the updated leaching maximums in Table 14.2, at GMP with no reduction in yield.
  - (d) For the intensive green rotations within the TWMSZ in the Horowhenua District, the predicted long-term average annual leaching from the full rotation, would certainly exceed the updated leaching maximums in Table 14.2. at GMP with no reduction in yield. The economically possible reductions in leaching for this

rotation are in order of 10 – 20% from baseline growing period leaching rates.

- (e) For the brassica and market garden style rotations within the TWMSZ in the Horowhenua District, the predicted long-term average annual leaching from the full rotation, would certainly exceed the updated leaching maximums in Table 14.2, at GMP with no reduction in yield. The economically possible reductions in leaching for this rotation are in order of 10 – 20% from baseline growing period leaching rates.
- (f) Setting the threshold at 35% for the Controlled and Restricted Discretionary pathway is a level that can't be achieved by many growers in the Horowhenua District TWMSZs. This threshold will force these existing growers into the Discretionary pathway. This will increase the costs of compliance, but is unlikely to achieve a better water quality outcome compared with setting the Controlled and Restricted Discretionary pathway threshold at an ambitious, but attainable level. Stuart Ford recommends the threshold is set at between 10 - 20%. In addition, the focus the assessment criteria should be on the implementation of GMP and BMP rather only on the attainment of a numeric threshold.

*The effectiveness of HortNZ's proposed approach*

- 218. The evidence of Claire Conwell summarises the nitrogen load reductions that are predicted for a range of scenarios for the Horowhenua FMU and TWMSZ.
- 219. The planned implementation of GMP and BMP over the next 5 years for CVG, is explained in the evidence of Andrew Barber.
- 220. The percent reductions, compared to baseline, for these measures is discussed in the evidence of Stuart Ford and is estimated to be 10 – 20 percent for most rotations, with larger reductions achieved with systems change.
- 221. As outlined in the evidence of Claire Conwell, when the commitment of existing growers to the uptake of GMP, BMP and in some cases elements of systems change, are accounted for the predicted weighted average rate of reduction would exceed a 20% reduction, if the minimum

reduction was set at 10% in the Controlled and Restricted Discretionary Rule.

222. As outlined in the evidence of Claire Conwell, for Horowhenua TWMSZ, if the weighted average reduction achieved was 35%, the load reduction would be 5%; compared with a 3% reduction in the nitrogen load, if the weighted average reduction achieved was 20%.
223. Claire Conwell concludes that reductions that can be achieved for CVG will result in improvements in water quality, and are consistent with the objectives of One Plan to improve water quality outcomes in the TWMSZ.

#### Achieving freshwater outcomes for Lake Horowhenua

224. PC2 can't tackle the longer-term challenge. The Horowhenua FMU requires a catchment specific process, compliant with the NPSFM. That process would enable communities to consider its values and set outcomes and limits to achieve those values over time. This is the view that is expressed in the s42A technical report of Nic Peet, for Horizons Regional Council when he explains in paragraph 3, where he states: "*The approach to setting limits, allocation and giving effect to the NPSFM 2020 are all to come on the journey to 2024 and lie outside of PC2.*"
225. As outlined in the evidence of Claire Conwell, the water quality within the Lake Horowhenua catchment is below bottom lines for a number of complex reasons.
226. The Lake Horowhenua catchment has unique hydrology that is unlike any other catchment in the region, including groundwater and surface water catchments that are not aligned. Surrounding the Lake catchment, in the wider Horowhenua Water management Subzone, there are complex interactions with Lake Papitonga and the Ohau river.
227. The potential range of groundwater inflow to the lake has been estimated to be in the order 36 and 62 percent of total flow, however there is uncertainty in these estimates, where the inflow occurs and how it varies in space and time. There is also little information on the role groundwater plays in maintaining lake health.
228. The Lake is in poor health. For many years it received the Levin wastewater discharge and continues to receive significant nutrient and sediment loading from the Levin urban area and

surrounding agricultural land. In addition there have been significant changes to the natural hydrological regime due to land drainage and urbanisation as well as rural discharges.

229. The low energy fluvial environments in the Horowhenua, are vulnerable to poor water quality, because of limited dilution and flushing. It is these gentle fluvial conditions that has provided for the deposition of the deep soils that are of great value for vegetable growing.
230. In the Horowhenua District, there are considerable areas of collectively owned Māori owned land, much of which is under-developed. There is collective Māori ownership of the bed of Lake Horowhenua and Hokio stream and the associated fishery. There are different iwi and hapu in the district. The community experiences high deprivation and unemployment and has rich cultural diversity, including a valued Chinese market garden history.
231. This is a very different catchment to others in the region, both in terms of the community and physical attributes; it is likely that it has a different set of values and outcomes which will be desired. We expect a different set of allocation priorities than the pastoral farming default allocation in the One Plan.
232. The approach within the NPSFM is one where it is envisaged that water quality and quantity bottom lines can be achieved by reducing discharges and abstractions. That is unlikely to be the case in the Lake Horowhenua catchment. In this catchment, additional projects such as the wetland treatment and restoration project, discussed below.
233. Strong investment in science is required urgently in the Horowhenua. Horizons Regional Council needs to develop an integrated water quality and hydrological model that includes the lakes – and considers all land and all discharges abstractions and discharges (e.g. Rural and urban, intensive and extensive). As outlined in the evidence of Claire Conwell the CASM model used to inform PC2 is not adequate for this purpose and would require further development and calibration.
234. This science is needed to determine a defensible and robust understanding of the catchments water allocation and discharge limits that will provide for the cultural, ecosystem, water quality and flow regime outcomes that are needed to deliver the compulsory national and local values and outcomes.

235. The audited NZGAP EMS, FEP process for delivering these on-farm improvements, will also establish a much stronger data set to build the analysis that will underpin the NPSFM process that will follow PC2.
236. That long-term solution to achieving freshwater outcomes in the Lake catchments, may well include some of the growing areas within the TWMSZ shifting, onto other highly productive land. At the moment within the PC2 framework the opportunity for this movement is constrained. For example, in the HortNZ submission we proposed provisions that would encourage growers to de-intensify rotations in some locations and to expand in areas that are less vulnerable to compensate for lost production. We recognise that the scope of PC2 is limited and the NPSFM 2020 process is required to consider alternative options to provide greater certainty for the long-term future land use in these catchments.
237. The provisions proposed in the evidence of Vance Hodgson provide a framework so that all existing growers have a viable consenting pathway dependent on implementing GMP and BMP. This will result in tangible reductions in discharge loads over the next 5 years.

Off site mitigation measures

238. The proposed policy 14.6 in s42A, enables the consideration of the potential benefits of off-site mitigation measures.
239. We support this consideration, however in our view catchment scale mitigations are likely to be the most effective. Catchment scale mitigations require collective action, and are unlikely to be progressed through individual CVG consents.
240. For example, the proposed Arawhata wetland has been developed over time by an alliance involving Horizons and Horowhenua District Council, horticulture growers, iwi and environmental groups, with 45 new jobs expected as a result of the project.
241. Science supporting the conceptual design has been undertaken by Jacobs and is discussed in the evidence of Claire Conwell. A very large wetland in this location, is expected to reduce nitrogen concentration within the Arawhata stream from 10mg/l to 1mg/l.

242. Growers have been actively involved in the development of this concept. One grower has funded some of the design work to date. Growers in the catchment are willing to making further contributions as the project progresses.
243. The costs of the proposed Arawhata wetland are estimated at more than \$12 million. The government has committed \$11.2 million to the costs. This cost is well outside of that which could be expected to be funded as part of mitigation for an individual consent.

Baseline growing period

244. In our view the date for assessing the baseline leaching should be 2012 – 2013, as proposed.
245. This date will ensure that those growers who have implemented GMP or BMP in the absence of a workable Plan are not disadvantaged.
246. It also does not disadvantage those businesses that were unable to invest fully in GMP and BMP without the certainty of a workable consenting framework.
247. The percentage reductions that have been assumed in the modelling undertaken by Dan Bloomer is consistent with the adoption of this date, because the biggest shift in GMP in the region, has occurred in the past 5 years as a result of research and extension projects, for example; Future Proofing Vegetable Production, Measure it and Manage it, Rootzone reality and Don't Muddy the Waters.

**Climate change - transition to a low emissions economy,**

248. The Eat-Lancet Commission found that food is the single strongest lever to optimize human health and environmental sustainability and without action, the world risks failing to meet the United Nations Sustainable Development Goals and the Paris Agreement.
249. The Report recommended a transformation to healthy diets by 2050 requiring substantial dietary shifts, with global consumption of fruits, vegetables, nuts and legumes having to double, and consumption of foods such as red meat and sugar being reduced by more than 50%.

*"The food we eat and how we produce it will determine the health of people and planet, and major changes must be made to avoid both reduced life expectancy and*

*continued environmental degradation." (Eat-Lancet, 2019).*

250. The measure of New Zealand's success in adapting our food production system in a way that contributes to global efforts to reduce global warming, will be to reduce the overall carbon intensity of New Zealand's food production, by changing, but not reducing our production.
251. Horticulture, and in particular vegetables for export, presents an opportunity for current and future generations to produce more food in New Zealand with much lower emissions than animal agriculture.
252. The greenhouse gas and water quality targets are challenging for existing farmers. However, the changes we make to farming systems in the next ten years will be critical in achieving the long-term climate and water quality outcomes. Farmers need options so they can respond to the challenges now.
253. Until recently, Regional Councils were not able to consider greenhouse emissions in decision making. However, the Resource Management Amendment Act 2020 made changes to Section 66, to include as matters to have regard to when developing Regional Plans: *'any emissions reduction plan made in accordance with section 5Z1 of the Climate Change Response Act 2002'*. The Climate Change Commission will set its first budget in 2021. In the interim, the Government has set a provisional emissions budget to guide the cap in-line with our 2050 Target. New Zealand will not achieve its 2050 emissions reduction target, without reductions of emissions from agriculture.
254. In my view, where land use change is unlikely to result in adverse cumulative water quality and quantity effects and produces lesser greenhouse gas emissions, it should be encouraged, not constrained.
255. In the context of the PC2, the extensive rotations that include potatoes, onions and carrot that have export potential, are also likely to be grown in rotations that have similar nitrogen leaching to existing pastoral land uses and would be expected to have leaching rates within than those provided for as a Controlled activity by Table 14.2.
256. The analysis undertaken by Land and Water People, considered a set of scenarios where all LUC I and II (and III)

land in the Region was used for extensive potatoes rotations. The impact of this scenario was neutral from a water quality perspective. (Snelder, et al., 2020)

257. In our view the definitions of Crop rotation and Enterprise are important in ensuring that there is flexibility to enable farmers to lease land to growers, and for growers to consent that activity as part of their CVG enterprise.

### **Audited farm environment plans**

258. HortNZ strongly supports audited FEPs and industry led initiatives to improve practice and achieve environmental outcomes.
259. As outlined in the evidence of Damien Farrelly, both Global GAP and NZ GAP operate under the Joint Accreditation System of Australia and New Zealand (**JASANZ**) auditing and assurance framework, which is accountable to the Minister of Commerce and Consumer Affairs.
260. The horticulture industry has recently developed an Environmental Management System (**EMS**) module for NZ GAP, to meet both market and regulatory environmental.
261. HortNZ is engaged in implementation work with Central Government on the regulations supporting the recent RMA amendment to Part 9A regarding freshwater farm plans. It is our expectation that the NZGAP EMS will meet the requirements of a certified and audited freshwater farm plan.
262. Growers support the NZGAP process, because they are already operating under this process and it creates national consistency in environmental standards.

### Good management practice and minimum standards

263. The horticulture industry has developed codes of practice that outline good management practices and best management practices for:
- (a) erosion and sediment control;
  - (b) nutrient management; and
  - (c) vegetable wash water.
264. The codes of practice are underpinned by research that has been jointly funded by the government and the horticulture



industry. This is discussed further by Andrew Barber in his evidence.

265. Relevant industry codes of practice are identified in an FEP and compliance (or actions towards compliance) with these are required to be demonstrated to pass the NZGAP EMS audit.
266. HortNZ have supported growers within the Lake Horowhenua TWMSZ to update their FEP's using the EMS method and have these audited.
267. As part of this process, the EMS checklists were translated into traditional Chinese. This enables growers to read and write their FEP's in Chinese, and with the audit supported by an interpreter.
268. The NZGAP EMS is discussed further by Damien Farrelly in his evidence.

Nutrient management plan

269. We support the proposed changes to the definition of a nutrient management plan in the s42A. We seek a process for the recognition of nutrient budgeting models. In other regions methods can be approved by the CEO of the Regional Council.
270. There are two aspects to nitrogen planning.
- (a) The first is about estimating the average annual leaching rate from intensive farming land use activity and the planned mitigations over time, so the leaching estimates can be compared with Table 14.2 for assessing activity status.
- (b) The second element is about budgeting to inform day to day decision making as part of implementation of GMP and BMP's, for assessing consent compliance.

Average annual leaching for comparison with Table 14.2

271. As discussed in the evidence of Stuart Ford, Overseer has well document limitations as a nutrient budgeting tool for CVG. Some CVG rotations may be able to be represented reasonably well, but for growers with a large proportion of crops that are not represented, it requires considerable work-arounds.

272. The alternative options to Overseer are limited. APSIM and SPASMO are research software, with few qualified users. These are unlikely to be realistic alternative options for individual growers to use for an Assessment of Environmental Effects.
273. In reality most growers would have to use Overseer, unless an alternative simpler option could be developed
274. An alternative approach is explained in the evidence of Stuart Ford is:
- (a) A set of proxy CVG rotations are developed, estimating baseline leaching; and
  - (b) A set of proxy GMP and BMP's for the CVG rotations are developed, with estimated effectiveness.
275. This approach is equivalent to the N-Check process used in Environment Canterbury.
276. Growers can then choose to use the proxy method (Horizons N-check) or to develop a farm specific Overseer model.

Nutrient Budgeting for day to day GMP and BMP implementation

277. For vegetable growers, Overseer is not a useful day to day decision support tool.
278. A much more useful approach is to compare practices against the implementation of GMP's and BMP's.
279. Calculating nitrogen demand, soil available nitrogen and fertilizer use should be part of nutrient GMPs. An example of a nitrogen balance decision support tool is the tool developed by Page Bloomer as part of the future proofing vegetable production research project. This tool is demonstrated in Andrew Barber's evidence.
280. In our view, growers should use a tool that can estimate average annual leaching for assessing consenting activity status, but for ongoing consent compliance the emphasis should be on demonstration of crop specific nitrogen budgeting and the uptake of other GMPs and BMPs through the NZGAP EMS.

Uptake of GMP and BMP

281. The evidence of Andrew Barber presents a case study of the implementation of the EMS with Horowhenua growers. This case study illustrates the opportunity that leveraging off

industry schemes presents to assist growers will uptake of research and improving GMP's.

282. The NZGAP EMS FEP process, enables the collection and bench-marking of a range of metrics that are meaningful for driving grower behaviour change.
283. This work that has been progressed in the Horowhenua over the past year, builds on previous FEP's and research, and can be used to quantify the predicted reductions in discharge load associated with the implementation of GMPs.
284. The evidence of Andre Barber illustrates that in the region as a whole over 50 percent of growers have registered to develop their FEP with the NZGAP EMS, and 40 percent have completed their FEP.
285. In the Hokio 1a TWMSZ (Lake Horowhenua) catchment, seven growers representing 90 percent of the area have completed their FEPs with six growers that cover the remaining 10 percent of the area working through their FEPs.
286. Andrew Barber's evidence documents the wide range of GMPS and BMP's that growers in the catchment are already undertaking and the commitments they have made to improve their practices over the next five years.
287. The evidence of Chris Pescini in **Appendix A** describes the research and extension projects growers have participated in. The evidence of Jeffery Wong in **Appendix A** describes his experience with the NZ GAP EMS process.
288. In our view, the improvements in water quality will occur if PC2 is designed so it provides CVG growers with the confidence that they can continue to invest in measures to reduce water quality impacts from CVG.
289. The NZGAP EMS process will be aligned with the freshwater farm planning process outlined in Section 9A of the RMA. We support the proposed amendment to the definition of nutrient management plan to align with the new RMA freshwater farm planning process.

## **CONCLUSIONS AND RECOMMENDATIONS**

290. Developing workable regulations for CVG has proven difficult for many regional councils in recent years. PC2 in Manawatū-Whanganui and Plan Change 7 in Canterbury have been

required, as it has become apparent that the earlier Plans were unworkable for CVG.

291. We are pleased to see the Section 42A report addressing many of our concerns. We do still have some outstanding concerns. We have proposed alternative provisions for reasons described in this evidence.
292. A summary of the changes to provisions sought is provided below.

### **Definitions**

293. We support the definition for crop rotation, although we seek the change that a rotation can occur across an area, we seek the removal of the word "same growing space". With this updated definition, when a consent for CVG is assessed, it would be the effects across the whole rotation and area that are assessed.
294. We support the definition for Enterprise, that recognises that CVG operates across non-contiguous parcels of owned and leased land.

### **Nutrient Management Plan**

295. We support the proposed amendments to the definition of nutrient management plan in the S42a. We also recommend that a process for approving a recognised nitrogen budgeting models is articulated.

### **Baseline commercial growing area date**

296. We accept the baseline growing area date for CVG enterprises can be 2012-13. This acceptance is on the understanding any grower can apply for a consent using the existing gateway, until the 2012-2013 baseline commercial growing area is exceeded.

### **Baseline growing period date**

297. In our view the nitrogen leaching from the baseline should be as proposed (2012 -13). This date means those that have invested are not disadvantaged, and neither are those that could not invest in the GMP and BMP, due to the uncertainty created for CVG due to weaknesses in the design of the One Plan provisions.

### **Crop Rotation Scale**

298. Crop rotation should be set at the scale of TWMSZ, and at the regional scale for the rest of the region outside of the TWMSZ. Setting the rotation scale at a smaller scale, would undermine the ability to maintain soils health through crop rotation.
299. In a future NPSFM plan change, it may be appropriate to consider sub-regional scales such as the FMU scale, as has been sought by HortNZ in other Plan changes. However, we consider this out of scope for PC2.

### **Consenting Pathways**

300. We support two pathways for CVG to be assessed - either as a CVG enterprise, or as CVG within a mixed farm.
301. Most CVG growers are specialists. The definition of enterprise will enable growers to align FEPs and consents for their CVG operation on owned and leased land as a CVG enterprise.
302. While most CVG growers in the Region are specialists, some farmers grow vegetables within their own mixed farm. In this case, it is important that the farmer doesn't need to gain a separate consent for their vegetable activity, and that they can average leaching maximum across their whole farm.
303. We support the separate consideration for CVG within the Controlled and Restricted Discretionary activity rules. This recognises that the GMP and BMP for CVG are different from other farming activities, and regardless of whether a grower is a specialist or a mixed farmer, they should adopt the relevant CVG GMPs and BMPs.

### **Activity Status**

304. The activity status should reflect the actual and potential impacts of the activity.
305. We do not consider that all CVG rotations in the Region have water quality risks higher than other activities, including activities that are currently permitted. However, we consider challenging the classification of activities as intensive farming land use activities or otherwise is out of scope of PC2.
306. In our view, the audited FEP process provided by NZGAP EMS, provides a sufficiently certain framework for managing CVG rotations as permitted activities outside of the TWMSZ. We

anticipate the NZGAP EMS will meet the regulations to be developed under Part 9A of the RMA.

307. We accept a Controlled activity status for new CVG and CVG rotations within the TWMSZ that can meet the leaching maximums in Table 14.2. This will be the activity status we anticipate will be accessed by the small number of growers of potato and process peas rotations within the TWMSZ's, and for any expansion of this type of rotation that may occur while PC2 is operative. Our analysis indicates that no green vegetable rotation within the Horowhenua TWMSZ's will meet Table 14.2.
308. We accept a Controlled or Restricted Discretionary activity status linked to achievable standards of GMP and BMP. We do not accept that CVG presents a higher risk than other activities, and we don't accept that the GMP and BMP standards required for growers should be less achievable than those required for other activities. Stuart Ford recommends that a range is set requiring minimum reductions of between 10 – 20 percent. We understand TWMSZ catchments have water quality challenges. Growers are very willing to continue to make improvements to contribute to achieving improved water quality outcomes, in these catchments and all catchments in the Region.
309. We accept that for growers that cannot achieve the GMP BMP standards of the Controlled and Restricted Discretionary rule or that wish to expand and cannot meet Table 14.2, are subject to a Discretionary pathway. We accept the expansion of CVG, where leaching exceeds Table 14.2, may present a risk in the context of PC2, because of the allocation that Table 14.2 affords to other activities as a Controlled activity. In the future NPSFM 2020 process, we would anticipate a review of the relative risks and benefits of activities, which may result in a different assessment of activity status for the full range of activities.

### **Policy**

310. There are three key matters that need to be recognised within the policy framework.
311. The first is related to the word "limit". This word has a specific meaning under the NPSFM 2020. We think is confusing to use this term in PC2, when it doesn't have the same meaning.

312. The second matter is related to the productive capability of CVG. This is not reflected in Table 14.2 due to limitation in the way the table was originally developed, and should be picked up as policy consideration for CVG
313. The third matter is related to the importance of inter-generational domestic food supply values associated with CVG, we support its inclusion in the Section 42A report, and recommend the value of fresh vegetables is added.

**Michelle Kathleen Sands**

25 September 2020

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**APPENDIX A – GROWER STATEMENTS OF EVIDENCE**

Statements of evidence of:

- Terry Olsen for the Tararua Grower Association
- Bruce Rollinson for the Ohakune Grower Association
- Andrew Yung
- Jeffrey Wong
- Chris Pescini
- Travis Sue
- Geoff Lewis

**Name:** Terry Olsen (Chair of Tararua Growers Association)

**Years in operation:** 45 years

**Location:** Opiki

**Area (ha):** Currently approx. 60ha (the area has varied over the years depending on the market, up to 80ha at one stage)

**Ownership of growing land (owned, leased or both):** Currently all on leased land.

**Crops grown and rotation:** Potatoes – for export (fresh) and process.

We previously rotated potatoes on our own land (dairy farm), for the last five years or so we have been rotating around a couple of farms on leased land, after the crop we plant the area in pasture and rotate on to new land.

My grandparents came to the area in 1937, they did some growing during WWII (but this was not the mainstay of their business). I am a second-generation grower, my father was also a grower, and my nephews are also involved in the business.

I have previously been the chair of Potatoes New Zealand and a member of the Horticulture New Zealand Board. I am currently the chair of the Horizons region Balance Farm Environment Awards committee and a sit on the national board of the New Zealand Farm Environment Trust, in addition to being the chair of Tararua Growers Association for six years.

**I made a submission on Plan Change 2, as did the Tararua Growers Association, in summary the key points of these submissions were that proposed Plan Change 2:**

- Doesn't recognize the value and importance of vegetable growing and undermine the potential for the highly productive land resource to provide for the essential health needs of New Zealanders now and in the future.
- Doesn't recognize that different farming systems and different vegetable growing systems have different environmental effects and benefits.
- Doesn't support crop rotation and recognise that growers use leased and owned land as part of their growing operations.
- Supported requiring all growers to operate at good management practice and sought a tailored approach for commercial vegetable production.

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## **FOCUS TOPIC – TARARUA GROWERS ASSOCIATION**

I have been asked by HortNZ to describe the Tararua Growers Association and the role of Growers Associations within the Horticulture Sector.

Vegetable growers pay a levy to Horticulture New Zealand, who presents all growers on pan-sector issues, such as environmental policy. Growers also pay levy to the

individual crop product groups, such as Vegetable NZ, Potatoes NZ, Onions NZ and Asparagus NZ, who represent growers on crop -specific matters such as research.

Growers throughout NZ have formed local voluntary District Associations, these provide a structure for growers to exchange information and ideas and to come together for mutual benefit, such as involvement in research projects, policy and farm environment planning.

While we are the face of growing within our regions of representation, we have the responsibility of being a catalyst in bringing together the other parties that have interest in Grower activities. District Associations provide a coordinated way of growers to provide input into the horticultural levy organisations work and to provide point of contact for other organisations such as government, councils, community and iwi.

### ***Tararua Growers Association***

The Tararua Growers Association represents growers on the west side of the Tararua's between Otaki and Rangitikei. There are currently 50 growers represented by the Tararua Growers Association. The group advocates for growers interests and provides a community support network for growers.

Across the area that the Tararua Vegetable Growers Association represents, outdoor vegetable growing contributes approximately \$100 million in GDP and 800 jobs. Specific to the Horowhenua District economy, outdoor vegetable growing contributes approximately \$50 million in GDP and 500 jobs.

The Tararua Growers Association, and vegetable growers from the north of the Region, worked alongside Horticulture New Zealand through the One Plan process, and now Plan Change 2. The other Growers Association that is active in the Horizons Region, is the Ohakune Growers Association.

### ***History of the Tararua Growers Association***

The Tararua Growers Association was formed 10 years ago and is an amalgamation of several smaller District Associations, including Otaki, Levin Horowhenua, Opiki, Palmerston North (Manawatu), and Rangitikei Growers. More recently Horowhenua Fruitgrowers merged in to the Association also.

All through Grower Association activity, the Chinese Grower Associations have been important. These have merged into the bigger Associations and importantly the Growers are still involved and make an outstanding contribution to the benefit of all.

The Growers Associations came into being essentially to form a collective voice for growers and to be a body of collaboration to enable grower activities to be enhanced.

While in essence the Associations existed to enable and foster the business of growing in earlier times, an important activity was to channel representation into the parent bodies that were at the time, New Zealand Fruitgrowers Federation and New Zealand Vegetable and Potato Growers' Federation (Vegfed) – now HortNZ. This involvement gave growers a stronger and indeed a collective political voice.

### ***Tararua Growers Association activities***

Tararua Growers Association represents a wide range of Grower business activities. The Growers represented range from corporate, large-scale operations that are influential in the market place and have a strong presence in the local area, through to in some instances specialise in one crop. These people in some cases are growing as an adjunct to other business activities.

In my own area, Opiki, the crops represented are potatoes and onions, these are generally grown as part of a rotation in conjunction with pasture-based activity (dairy farming, sheep and cattle and more recently, goat farming). In all instances leased land is an important component of business activities.

The face of growing has changed and while there may have been an increase in some crops (e.g. vegetables) there has been decline in other crops (e.g. potatoes). Another example is in the Opiki area at the end WWII there were 320ha onions grown and at that time the biggest onion producer in NZ. Change comes for a multitude of reasons and will continue to do so, however commercial forces will be the biggest determinate.

### *Social contribution*

As Growers we all face challenges and the Associations have provided a platform for Growers to meet and mingle. The social aspect is an ongoing aspect that is held in regard amongst the Grower fraternity.

Tararua Growers has one fundraising event annually this being our sole income. This event is in the form of an auction of donated goods, and is held with considerable community regard, being a special activity in the Horowhenua year.

The social aspect that Association has been involved with are considerable, but more importantly it exists for the Growers to come together. The spirit of collaboration needs constant revisiting, all major progress seemingly derived from this collective willingness.

### *Education*

Tararua Growers have recently established two scholarships to encourage prospective people into the Industry, as involvement in education is an important part of our existence. The scholarships will also provide a pathway for the Association to be visible in a wider community sense.

### *Environmental stewardship and good management practice*

As the challenge of the future evolves, Association activities will be increasingly focused around environmental and land use challenges. The business of the growing has to be profitable and there needs to be suitable labour supply and reliable infrastructure in place, enabling produce to customers with minimal constraints.

As Good Management Practice evolves, the Growers should expect to be considerably involved, and could involve financial commitments and or in-kind contributions. While we have good recent examples of these investments taking place, there must be an expectation that this will intensify into the future.

Looking forward, Tararua Growers must be mindful of remaining relevant into the future. This will require a vision that is constantly connected to a sense of purpose.

**Name:** Bruce Rollinson - Snow Country Gardens Ltd

**Years in operation:** 20

**Location:** Ohakune

**Catchments:** Whangaehu & Hautapu

**Area (ha):** 60

**Ownership of growing land:** Each season Snow Country Gardens grows about 5% of its crops on land it owns and the remaining 95% on leased land in rotation with growers of different vegetable crops or from pastoral farms not involved in vegetable production. A mix of growing on both owned land and leased land is typical of all growers in Ohakune with the percentages of each varying.

**Crops grown and rotation:** Snow Country Gardens grow Brussels Sprouts, Parsnip & Swede. Only one crop per year is grown in this cool climate. It is planted in spring/early summer and matures for harvest in Autumn/Winter. Our crop rotation is typically four years of vegetables followed a period of 6-10 years of pasture then back into another rotation of vegetables.

**Description of your growing business:** My wife and I started our business by purchasing a smaller existing operation in 2000. The limited expansion in our business over the period since has been mainly due to the exit from the industry by other growers. Prior to purchasing the business we both were involved in agricultural professions of marketing and soil science after completing tertiary education at Lincoln University. We have two daughters, one has completed her food and agribusiness studies at Lincoln University and is working in the sector. She wishes to become involved in the business and take it to a new level in market development. Snow Country Gardens supplies the North Island's domestic market through super markets, home delivery businesses that in recent years have greatly expanded and green grocers. We employ 16 locally based staff who live in Ohakune and Raetihi. There is demand to expand our operation with a growing domestic population and health conscious consumers seeking fresh locally sourced vegetables.

**I am a member of the Ohakune Growers Association and make this statement on behalf of the Association, the key points of the Ohakune Growers Association's submission were that proposed Plan Change 2:**

- Doesn't recognize the value and importance of vegetable growing.
- Doesn't recognize that different farming systems and different vegetable growing systems have different environmental effects and benefits.
- Doesn't support crop rotation and recognise that growers use leased and owned land as part of their growing operations.
- Supported requiring all growers to operate at good management practice and sought a tailored approach for commercial vegetable production.

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## **FOCUS TOPIC – OHAKUNE GROWING ROTATIONS AND OHAKUNE GROWERS DISTRICT ASSOCIATION**

I have been asked by HortNZ to describe the Ohakune growing rotations and Growers Association and the role of Growers Associations within the Horticulture Sector.

The Ohakune Growers Association represents 11 growers, growing across an area of 1500 hectares. The number of growers in Ohakune since our involvement (20 years) has decreased from 25 growers, following a peak of 40 in the 1980's. The total area of land grown on in Ohakune has not significantly changed in the last 20 years with the reduced number of growers. The crops grown within the area that the Ohakune Growers Association represents are mainly potatoes and carrots, with a smaller area of parsnips and brussels sprouts and even smaller area of swede, beetroot, cauliflower, cabbage and broccoli. The Growers are all NZGAP certified, audited byASUREQuality Kaitiaki Kai which covers all aspects of the growing operation from paddock to plate.

Ohakune has long been associated with supplying the North Island's winter vegetable crops where nature lends its hand. It is located beneath Mt Ruapehu at altitude. It has, friable volcanic soils and cool climate. It is an ideal vegetable growing area.

The Ohakune autumn/winter harvesting season complements the other growing regions in the North Island, filling this important gap that would otherwise exist when these vegetable types would not be available to the fresh market in the quantities required to meet domestic consumer demand.

Growers in Ohakune typically specialise in growing only 1 or 2 vegetable types, eg, carrots and potatoes, brussels sprouts and parsnips etc.

Only one crop per year is grown, being planted in spring growing over summer and mature ready for harvest in autumn and winter.

Leasing of land from other growers and pastoral farmers is the single most critical aspect of the sustainable land rotation in the Ohakune. This provides a greater pool of land to extend the years in between crop rotations out with a longer period in pasture. The rotation is important to maintaining the soil health of these volcanic soils maintaining soil structure and natural disease control of soil borne diseases.

In most cases growers own some land they grow on but also lease a significant percentage of land, or swap land with other growers growing complimentary crops in a rotation. Pastoral farmers also lease land to growers to renew pastures and earn a diversified income from a commercial lease.

I have described the crop rotation of Snow Country Gardens. This is typical of all growers. Some growers may use a stock fodder crop (brassica eg. turnips or swede) in the first year of the rotation followed by 3 years of root vegetables then planted back into pasture.



District Associations provide a coordinated way for growers to provide input into Hort New Zealand's work in science and advocacy and to provide point of contact for other organisations such as government, councils, community and iwi.

Our District Association has provided a vehicle to develop our Soil and Water Management Plan for growing vegetables in Ohakune and for coordinated scientific field trials with industry.

The Association also plays a vital role in the Ohakune's community and cultural wellbeing. It coordinates Ohakune's annual festival, provides sponsorship to other community events and more recently has developed the Ohakune Adventure Park at the southern town entrance into major visitor attraction.

**Name:** Andrew Yung

**Years in operation:** 36 years

**Location:** Te Horo – Kapiti Coast

**Catchments:** Wellington Regional Council

**Area (ha):** 16 ha

**Ownership of growing land (owned, leased or both):** 12 ha owned, 4 ha leased

**Crops grown:** Florence fennel, Celeriac, Chinese cabbage, Watermelon

### **Description of your growing business**

My father and uncle were partners in a market garden for about 45 years, before retiring in 1985. I decided to give up office work and take over the market garden business.

Initially, I continued to plant tomatoes, beans, spring onions, parsley before diversifying into less labour-intensive crops (lettuces, broccoli, cabbage, cauliflower, celery and pumpkin). As I am getting older, I am slowly starting to wind down the business by focusing on niche crops such as Florence fennel and celeriac. These are sold mainly to the hospitality industry.

To continue as a part-time grower, like my father and uncle did, is not an option because the cost of compliance makes it uneconomic. Unfortunately, my family have no intentions of entering into the business. My land will eventually be returned to pasture.

### **I made a submission on Plan Change 2 and the key points of my submission were:**

- The value of vegetable growing was not reflected in proposed Plan Change 2 and a tailored approach is required for commercial vegetable production to realise the value of food production, while achieving water quality improvements.
- Support for requiring all growers to operate at good management practice.
- Seeking provisions to enable movement of existing vegetable growing, account for crop rotation and leased land arrangements.

To explain further, there is a risk that smaller growers will not be able to gain consents. Compliance requirements can be so time consuming that it takes time away from their core operation. Employing admin staff to do this is not justifiable in the context of the size of the operation.

Crop failure and vegetable supply will become a greater risk, if numbers and areas of vegetable growing is decreased. If the land area of vegetable growing is decreased,

pressure on land usage increases. Without the ability to plant a green crop for crop rotation purposes, disease will become more prevalent, resulting in crop failures.

Vegetable growing areas should be able to increase to ensure supply can meet a growing population. Most growers are already operating at maximum efficiency. Any improvements in technology would only give small nominal increases in yield. My viewpoint is that technology will only minimise crop failures from occurring, therefore more land needs to be accessible to feed a growing population.

Growers need more land than they are growing on at any given point in time. For example, more land is required for winter production, because crops planted over this time period take a lot longer to grow.

E.g. The time needed for crops to reach maturity from planting.

<b>CROP</b>	<b>SUMMER</b>	<b>WINTER</b>
<i>Lettuce</i>	6 weeks	18-19 weeks
<i>Celery</i>	14 weeks	32 weeks
<i>Fennel</i>	10 weeks	19 weeks

Growers tend to sow their green crops (oats, grass or lupin) in the summer months where the demand for land is lower.

Brassica plants are recommended to be planted in alternating years to minimise club-root disease. Not all brassica plants have the club-root resistance gene, therefore this puts more pressure on land requirements.

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## **FOCUS TOPIC – HISTORY OF GROWING HOROWHENUA AREAS**

I have been asked by HortNZ to describe the history of the Otaki and Horowhenua Growing areas to improve decision makers understanding of vegetable growing.

In the past, many growers were based in Lower Hutt. After World War II, the Government reclaimed this land to build residential housing. These growers shifted their operations to the Otaki and Levin area in the late 1940's and early 1950's.

Otaki was renowned for growing tomatoes (two million tomato plants were grown), and the area supplied over 90% of the North Island's requirements. At its peak, the Otaki District Commercial Growers Society has over 150 registered growers. The average size of the garden ranged from half an acre to 5 acres – this is why the land is fragmented, because it used to be possible to work off small sites. Their income was also supplemented by growing greens such as lettuces, cabbage, cauliflower, beans, carrots and spring onions.

The larger growers were based in Levin. They planted the bulk crops such as potatoes, lettuce, cabbage, cauliflower and carrots.

In the past, blood and bone was the only source of fertiliser available. This gave Otaki an advantage over Levin because it has its own micro-climate and with its naturally rich river alluvial soils, crops coming out of winter were generally faster than those from Levin (being ready up to two weeks earlier).

When the tomato industry went indoor, the outdoor tomato industry in Otaki became uneconomic. The small land parcels and urbanisation of Otaki meant that the smaller (0.5 to 5ha) blocks were no longer large enough for a viable horticulture business.

In Otaki, there is now less than 10 growers still in operation, and of those, only two or three are supplying the central marketing system. The remainder are choosing to grow for the farmers market or road side stalls.

It was always important for growing areas to be near urban populations, but with the expansion of Wellington and Kapiti, the growing areas have been shifted north.

Freight and road transport used to be regulated, and produce used to have to go by train; this was one reason why people used to supply locally. Previously produce grown in Horowhenua was predominately sold in the Wellington/Palmerston North region (the exception to this was tomatoes). Levin dominated supply to Wellington.

Currently, produce from this region is now sent nationwide throughout New Zealand and as a result Levin as a growing area is more important nationally. Produce from Levin also goes to the South Island - however freighting produce to the South Island costs more than movement in the opposite direction (i.e. less expensive South Island to the North Island). In general, the South Island relies on Nelson, however land in Nelson can also go to fruit. There is a tendency for growing operations to become larger to gain the benefits of economies of scale.

Economies of scale need to be larger to be economic to survive now. This in turn has put pressure on small-medium sized operation; these growers are diminishing as they age and only two new growers in this area have entered the industry in the last five years.

By having more growers, there is less chances of shortages due to failures as a result of climatic conditions (it spreads the risk). At a regional/national scale, it is important to have sufficient land and growers spread around the regions to make sure that the system (and supply of vegetables) is resilient.

There is a risk that, like what has occurred in the Otaki area (due to the high value of land and its fragmented nature), could also occur in Levin and due to the value of land this would be lost to non-growing land uses.

**Name:** Jeffery Wong - J D & J P Wong Partnership

**Years in operation:** 30 Years

**Location:** Horowhenua

**Catchments:** Arawhata

**Area (ha):** 13ha

**Ownership of growing land (owned, leased or both):** owned and leased

**Crops grown and rotation:** Spinach grown year round for fresh market, Beetroot grown year round for fresh market and processing, Leeks are grown for harvest from April to end of September. Oats are grown in rotation as a green manure crop.

### **Description of your growing business**

My parents were commercial vegetable growers in Otaki. Our business started as a lifestyle change 30 years ago, when we leased 11.2ha of land where we grew cauliflower, broccoli, carrots, pumpkin, iceberg lettuce, spring onions and cabbage. 26 years ago, we specialised in broccoli, spinach, lettuce. In the last 20 years we have changed to just growing spinach, beetroot and leeks for the fresh market. The beetroot we grew then was 250 to 350 grams in size, since 2019 we have started to supply process grade beetroot which are up to 1500 grams in size.

Our operation is mainly run by ourselves with a family group up to 7 people to harvest our beetroot.

### **I made a submission on Plan Change 2 and the key points of my submission were:**

- The value of vegetable growing was not reflected in proposed Plan Change 2 and a tailored approach is required for commercial vegetable production to realise the value of food production, while achieving water quality improvements.
- Support for requiring all growers to operate at good management practice.
- Seeking provisions to enable movement of existing vegetable growing, account for crop rotation and leased land arrangements.

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## **FOCUS TOPIC – FARM ENVIRONMENT PLAN AND NZ GAP EMS**

I have been asked by HortNZ to describe My Farm Environment Plan and the work that I have done to align my Farm Planning with NZGAP EMS and the EMS audit process.

### **FEP and EMS**

With support from a Farm advisor, I have developed an Farm Environment Plan using the NZGAP Environmental Management System. As part of this process, I have

documented all of the good management practices that I am currently using on my farm. I have also done a risk assessment, and developed a plan to make further improvements in the next 5 years. My FEP has been independently audited as part of the NZGAP EMS Process.

Our FEP started about 5 years ago with grower meetings/workshop, to look at our land to see where runoff was going, then to put in grassed headlands to capture sediment runoff. Other actions include:

- Putting in cover crops to soak up the nitrates in the soil e.g. Oats, grass and mustard.
- Trail plots to use less fertiliser to see what the outcomes are.
- We are doing more quick N test's to see what nitrogen levels are and throughout the growing cycle of the crop and adjusting our fertiliser rate to best suit our crop yields.
- We've had the staff of Landwise help us test and calibrate our fertiliser equipment, they have also tested our boom irrigator to see much water we are applying.

We are all learning from what other growers are doing and what mistakes they have learned from on their journey.

**Name:** Chris Pescini – Pescini Bros

**Years in operation:** 45 years (75 years for the family business in Levin)

**Location:** Kimberley Road, Levin

**Catchments:** Lake Horowhenua

**Area (ha):** 150 ha (80ha onions and 70ha potatoes)

**Ownership of growing land (owned, leased or both):** Mostly owned, a few leased blocks

**Crops grown and rotation:** Onions and potatoes grown in a two-year rotation (two years onions, two years potatoes).

After onions, we put in a short-term rye grass. If it is a year when it is going to potatoes next, we leave it in grass longer to build up the organic matter in the soil. The rye grass also helps to suck up nitrogen and prevent silt run-off. We also graze some stock on grassed areas.

### **Description of your growing business**

Pescini Bros is a family business with my father and two brothers. I am a fourth-generation grower. My grandfather was growing vegetables in the Hutt Valley initially before moving up to Levin in about 1946. I have been involved in the family business since I left school at 17 (but have been involved throughout my life before that time as well.)

We have a staff of seven full-time employees (including myself and brothers) and employ locals. We grow for the domestic market and for export.

### **I made a submission and further submission on Plan Change 2 and the key points of my submission were:**

- The value of vegetable growing was not reflected in proposed Plan Change 2 and a tailored approach is required for commercial vegetable production to realise the value of food production, while achieving water quality improvements.
- Support for requiring all growers to operate at good management practice.
- Seeking provisions to enable movement of existing vegetable growing, account for crop rotation and leased land arrangements.

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### **FOCUS TOPIC – RESEARCH**

I have been asked by HortNZ to describe some of the research projects that I and other growers have been and are involved with, focused on reducing environmental impacts.

I have been involved in recent research projects that have been funded by Potatoes NZ, vegetable research and Innovation, Horizons and Government.

In the past Levin was important for vegetable research with the Crop and Food research facility based, in Levin.

### ***Future proofing vegetable production***

A significant research project I have been involved with is Future proofing vegetable production. This project, has built on previous research such as the Plant and Food and VR&I funded research project, Manage and Measure it, and the Plant and Food and VR&I project developing the updated crop demand handbook.

Dan Bloomer and the Landwise team, who ran the -research project spent considerable time with growers in Levin explaining research and working with growers on soil testing, nutrient budgeting and sediment management.

As part of this project, my farm has had Overseer Nutrient Budgets developed.

### ***PNZ79 (Potato Nutrient Emissions Project)***

Potatoes NZ has been undertaking research, including using my farm as a trial site in 2019, I had a soil testing probe located on my site. This project is now being developed into a multi-year research project, and my farm will continue to be a trial site, to improve the understanding about the nutrient demand and nutrient losses associated with potatoes and onion growing. This research is being used to improve Overseer, so it can better represent a wider range of crops and growing rotations.

### ***FEP and EMS***

With support from a Farm advisor, I have developed a Farm Environment Plan using the NZGAP Environmental Management System. As part of this process, I have documented all of the good management practices that I am currently using on my farm. I have also done a risk assessment, and developed a plan to make further improvements in the next 5 years. My FEP has been independently audited as part of the NZGAP EMS Process.

Good environmental practices are important. We still have improvements to make, but it is an ongoing process of improvement. For example, most of our paddocks have interception drains to try and stop water moving across the paddock and to keep water in the drains, but there are still places where we need to do more work to manage run-off.

### ***Field Days***

We have hosted grower sessions at my farm where we have discussed good management practices. My farm has been visited by numerous industry, Council and Government Officials, to demonstrate the research and good management



practices that we use on our farm, and to improve peoples understanding of vegetable growing.

**Name:** Travis Sue – BS Young & Co Ltd

**Years in operation:** Over multiple generations

**Location:** 69 Buller Road, Levin

**Catchments:** Lake Horowhenua, Lake Papaitonga, Lower Ohau

**Area (ha):** Approximately 95ha in total

**Ownership of growing land (owned, leased or both):** 70 ha owned, 20-25 ha leased

**Crops grown and rotation:** Lettuce, cabbage, cauliflower, broccoli, leeks, celery, pumpkin, onions, potatoes.

Most of these crops are grown all year around, except for pumpkins, onions and potatoes. Celery and leeks are seasonal so are only grown over the Winter months. Crops are planted to suit market requirements but we try and rotate pumpkins, onions, potatoes and leeks with brassica crops. Individual brassica crops do not follow themselves (i.e. cauliflower does not follow cauliflower).

The majority of our plants are seeded into trays on site, and grown on in their own greenhouses. This gives the business very good control over the product from inputs to the end product.

### **Description of your growing business**

BS Young & Co Ltd has a long history of growing crops in the Horowhenua. We are one of the larger market gardens in the area.

I have been involved in growing, in the Levin area, my entire life. I am a third-generation grower, alongside my father and brother. My family was originally involved in gold mining before turning to growing. My grandfather and father were both growers and my primary-school aged sons and nephews help out and one of my sons is interested in being involved in the business as the next generation. We will keep growing here for as long as we are able to.

We employ about thirteen full-time staff. The demand for work is not seasonal, but weather dependent. It can be a challenge finding labour.

### **I made a submission on Plan Change 2 and the key points of my submission were:**

- The value of vegetable growing was not reflected in proposed Plan Change 2 and a tailored approach is required for commercial vegetable production to realise the value of food production, while achieving water quality improvements.
- Support for requiring all growers to operate at good management practice.
- Seeking provisions to enable movement of existing vegetable growing, account for crop rotation and leased land arrangements.

My concerns are that to pick up and move, what do we do with our land if we can no longer grow here? We spend years perfecting how to grow decent produce all year round. The food that we harvest today can be in the local supermarket (that we deal directly with) by the afternoon and in someone's home that same night.

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## **FOCUS TOPIC – INVESTMENT IN GROWING SYSTEMS**

I have been asked by HortNZ to describe the tools and machinery that we use and other growers in use to manage environment effects and improve our efficiency.

In summary having the right equipment improves efficiency, means we can get work done in the optimum weather, and helps to avoid effects on soil and water quality. It is important in being able to us produce a crop that is marketable and avoid waste as much as we can.

### ***Investment in equipment***

The investment in equipment and machinery (in total) is massive.

Margins are getting less and less every year. We are getting close to a point where the amount of investment required does not stack up in terms of the returns – high land prices, the cost of new machinery and technology. The price of cabbages is roughly the same as 30 years ago, but the costs of inputs has increased three-fold (particularly for labour).

For example, a new sprayer might be close to \$1m, we need to consider the time it takes to make this money back. This is a challenge if we have to reduce our growing area and still need to be able to produce a marketable crop. Certainty is a big concern (and limiting factor) in this aspect. It is a question of whether we can afford to continue to invest in new equipment, which can help to reduce the environmental footprint.

### ***Type of equipment and benefits***

You need the right gear for the right job, so you can make the most of good conditions. We have moved to having bigger gear (e.g. bigger tractor and power harrower) than in the past which means that a job that used to take a day takes a few hours. This is important in being able to get on the ground at the right time to get a good seed bed.

If the ground gets too wet this can lead to soil damage, erosion, and the growth of the plant is not as good. Having the right gear means being able to avoid these conditions. During Winter and Spring is a trickier time of year, because the forecasts are not always accurate – after it rains you have to wait until the ground is dry for example.

Our equipment is GPS controlled, this results in precision planting – all the plants in straight lines and it means that fertiliser can be applied right where it needs to go.

### Fertiliser

We do band spreading for fertiliser, so it is applied right where the plant is. Our fertiliser equipment is calibrated so that fertiliser is not wasted. We also do our own fertiliser application (rather than using contractors), this means that we can apply fertiliser at the most appropriate time, in favourable conditions.

There are also biological products available which help plants to take up more nutrients, so less that fertiliser can be used.

### Spraying

Good practice spraying is the same principle – you are trying to get as much on the crop as possible and not have wastage. We currently use an air assisted sprayer that blows the spray down towards the plant to get the spray on the plant. I am looking into a new sprayer which has camera's that identify the plants and only sprays the plants – this sprayer is worth almost \$1 million.

### Irrigation

Irrigation is required in the summer. We have invested in an underground irrigation line and have six travelling irrigators. Again, we need to get the water on the crop (at the right time) to get a marketable crop. Accurate irrigation is one way to optimise crop yields. Irrigation requirements are variable depending on crop e.g. celery needs water in summer, whereas cabbages are hardier.

### Cool storage

We also have cool storage so we can keep our produce at an optimal temperature. This is important in situations where, if we cannot sell the produce on the day that we harvest, we can store it for a few days until it can go to market.

**Name:** Geoff Lewis – Lewis Farms/Tender Tips

**Years in operation:** 39 years

**Location:** State Highway 1, Levin-Foxton Highway

**Catchments:** Coastal sand country, Manawatu Alluvial Plain

**Area (ha):** Total farming operation approx. 1000ha, part dairy and beef operation, part horticulture.

**Ownership of growing land (owned, leased or both):** 115ha hort land.

**Crops grown:** Asparagus, tunnel house strawberries and raspberries

### **Description of your growing business**

Liz and Geoff Lewis started growing asparagus in 1981 as process growers, evolving through the development of fresh export to Japan, to the development of the New Zealand fresh domestic category and the evolution of centralised marketing.

Geoff has been at the forefront of:

- marketing, travelling to Japan numerous times to visit customers
- technology development
  - developing MPI approved non chemical quarantine treatments
  - developing Postharvest automation
  - taking an industry lead in harvest automation
- Industry-good politics, having twice taken the chair of the NZ Asparagus Council, also chairing the National Labour Governance Group for 6 years, the Government/Industry team that shaped the development of the RSE Pacific seasonal labour scheme

Son Cameron and daughter-in-law Catherine have become partners in the business and leading the move into berryfruit. Cameron made a submission on the proposed Plan Change 2.

Strategic Goals

- To grow the berryfruit operation and create more diversity
- To create an increasing number of fulltime roles from the community seasonal team.

**I made a submission and further submission on Plan Change 2 and the key points of my submission were:**

- The value of vegetable growing was not reflected in proposed Plan Change 2 and a tailored approach is required for commercial vegetable production to realise the value of food production, while achieving water quality improvements.

- Support for requiring all growers to operate at good management practice.
  - Seeking provisions to enable movement of existing vegetable growing, account for crop rotation and leased land arrangements.
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## **FOCUS TOPIC – RSE SCHEME AND TASTE TRAIL**

I have been asked by HortNZ to discuss labour and the Recognised Seasonal Employer (RSE) scheme and the Levin Taste Trail.

### ***The Tender Tips Hort Labour Team***

Tender Tips draws on a wide range of groups to make up its hort team. With the development of the berry fruit operation, the company has gone from 1 full time hort staff member to 12. Tender Tips also employs approximately approx. 125 seasonal staff:

- 44 RSE (Harvesters)
- 50 locals (Postharvest) –regulars, self-recruiting or WINZ clients
- 15 Grey Nomad campers - mobile NZers living in caravans on-site, who follow the harvest trail
- 15 Refugees (in region - NZ Red Cross)

Most of the harvesters are highly skilled and work on contract rates, as they can earn more than on hourly rates (\$19.00 - \$26.00/hr). Packhouse staff are generally paid by the hour (\$18.90- \$25.00/hr).

### ***History of RSE with asparagus growing in NZ***

Progressively it has become increasingly difficult to find staff to harvest spring field crops such as asparagus and strawberries. These crops need harvesting every day and require a committed and reliable workforce.

Nationally, growing operations have reduced in numbers, and, as with Tender Tips, have gotten much larger. This combined with the loss of local seasonal workers to full-time work has meant that without the RSE scheme, Tender Tips could not function.

RSE teams are particularly suited to asparagus harvesting. With large growing operations having many blocks, the teams can move consecutively from block to block allowing the perishable crop to be transported to the packhouse immediately after harvest.

Lewis Farms/Tender Tips was one of the very first RSE employers in NZ, helping to develop many of the important characteristics of the scheme that have now become the hallmark of its success. Geoff Lewis has taken an industry lead role in RSE and is passionate about ensuring the maximum benefits flow back to the Pacific Islands.

Accommodation consists of specialised on-farm RSE accommodation, or outside providers such as cabins in camping grounds.

These RSE teams are all long-term employees with well-established connections with the Pacific community in Levin, church, sport and recreation. Meals, banking, transport, health and wellbeing care systems are provided.

Significant benefits of the RSE scheme includes support to RSE home families. For example, new homes to withstand cyclones, education for children, investment and skills for setting up in small business.

Benefits to the local economy and nationally include providing jobs for kiwis along with opportunities for higher skills training, and benefiting accommodation providers. Overall, the RSE scheme has allowed the asparagus industry to remain viable.

### ***Levin Taste Trail***

The Horowhenua Taste Trail was created by a group of food producers in the Horowhenua to:

- Showcase the Horowhenua as a small region of excellent and diverse food production
- Create an opportunity for the general public to experience and get close to the operations and the people who produce high quality food
- Allow the people of the Horowhenua to share in showing the rest of NZ what they get to experience every day

The key element of this day was to open the gates of these farms and production sites, and allow the general public to visit and experience the skill and commitment of the producers in providing NZ with superb safe food.

This award-winning event has received national recognition for excellence of purpose and presentation. It has successfully bridged the gap between production, post-harvest and consumers.

The owners, staff and other stakeholders use the event to passionately demonstrate their commitment to producing reliable, safe food.

The Horowhenua Taste Trail Trust has been in operation for 4 years, with six main sites as well as a number of smaller producers joining the larger operations on the day. It draws over 2000 visitors for the day.

The two key horticulture sites are greens grower Woodhaven Gardens (over 10% national greens supply) and asparagus and berryfruit grower Tender Tips (30% national asparagus supply).

Events such as the Horowhenua Taste Trail are a massively important in the context of connecting production communities with large urban populations. The location of the Horowhenua with its excellent climate and diversity of production and closeness to the Wellington Region makes it very strategic in achieving this goal.