BEFORE THE ENVIRONMENT COURT	**ENV-2021-WLG-000020**
AT WELLINGTON	**ENV-2021-WLG-000021**
I MUA I TE KŌTI TAIAO	**ENV-2021-WLG-000022**
I TE WHANGANUI-Ā-TARA ROHE	**ENV-2021-WLG-000023**

IN THE MATTER	of the Resource Management Act 1991 (**RMA** or **the Act**)
AND	
IN THE MATTER	of appeals under Clause 14(1) of the First Schedule of the Act in relation to a decision of Manawatū-Whanganui Regional Council on Proposed Plan Change 2 to the Horizons One Plan
BETWEEN	**TE RUNANGA O RAUKAWA** **Appellant**
	ANDREW DAY **Appellant**
	WELLINGTON FISH AND GAME COUNCIL **Appellant**
	NGĀTI TURANGA **Appellant**
AND	**MANAWATŪ-WHANGANUI REGIONAL COUNCIL** **Respondent**

STATEMENT OF EVIDENCE OF MICHELLE SANDS (INDUSTRY) ON BEHALF OF HORTICULTURE NEW ZEALAND

13 OCTOBER 2023

HOLM | MAJUREY

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EXECUTIVE SUMMARY

1. In our view significant changes will be required to the One Plan to give effect to National Policy Statement for Freshwater 2020 **(NPSFM)** and to address technical and planning problems within the One Plan.

2. However, we recognise the scope of Plan Change 2 **(PC2)** is limited. In the context of that limited scope, and with a view to seeking more significant changes for the regulation of commercial vegetable growing **(CVG)** in the NPSFM 2020 plan change to be notified in 2024, our position on PC2 is that we support the planning provisions proposed by Dr Drury.

3. The planning provisions proposed by Dr Drury are minor refinements to add clarity for plan implementation, and are a result of the completion of the CVG Nutrient Risk Assessment Tool **(NRAT)**, which was not complete at the time of mediation.

4. The purposes of the PC2 from our perspective are to achieve an improvement in water quality while providing:

   (a) flexibility to undertake CVG rotations on changing land;

   (b) two controlled consenting pathways for the consenting of existing CVG the Target Water Management Sub-Zones (**TWMSZ's**);

   (c) the ability to use a nitrogen risk assessment method, as an alternative to Overseer;

   (d) a discretionary consenting path for existing CVG within the TWMSZ's that cannot meet the controlled activity pathway; and

   (e) alignment with certified Freshwater Farm Plans.

5. We recognise that the updates to Table 14-2 potentially provide an opportunity for the expansion of some CVG rotations in the Region, but that for the green vegetable rotations, on which New Zealanders rely to meet their health needs, there is no viable expansion pathway under PC2.

6. PC2 will reduce the negative effect on food supply and food security that the One Plan has created, but PC2 does not adequately enable the supply for fresh vegetables for New Zealanders. This is a matter that will need to be more fully addressed in the NPSFM 2020 plan change to be notified in 2024.

INTRODUCTION

Qualifications and experience

1. My name is Michelle Kathleen Sands. I am the General Manager of Strategy and Policy with Horticulture New Zealand **(HortNZ).** I manage HortNZ's Environment team, which is involved in national, regional and district planning processes across New Zealand. I have worked for HortNZ since 2018.

2. I hold a Bachelor of Science Honours from Victoria University (1995). 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 roads. I led the development of catchment scale water quality and hydrological models to inform the NPSFM limit setting process in the Ruamāhanga, and te Awarua-o-Porirua whaitua processes.

4. My experience includes being an expert witness on water quality and quantity issues at council hearings, Board of Inquiry and Environment Court processes.

5. In my current role, I provide technical leadership on water policy for HortNZ's involvement in all national and regional freshwater processes.

6. I lead HortNZ's involvement in national water policy, particularly providing input into developing the NPSFM National Environmental Standard for Freshwater and the National Freshwater Farm Plan regulations.

7. Since beginning my role at HortNZ, I have met with growers across New Zealand to understand better their horticultural operations and how resource management issues impact them.

8. 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.

Overview of Horticulture New Zealand

9. HortNZ is the industry good body for the horticulture sector, representing growers who pay levies on fruit and vegetables sold either directly by growers to customers or through a post-harvest operator, as set out in the Commodity Levies (Vegetables and Fruit) Order 2013.

10. HortNZ is affiliated with the Tararua Growers Association and the Ohakune Growers Association. These groups advocate for growers interests and provides a community support network for growers.

11. Alongside these local associations, several Product Groups representing specific product categories are also affiliated to HortNZ, for example: Vegetables NZ, Potatoes NZ, Onions NZ and Process Vegetables NZ.

Involvement in project

12. I have worked closely with growers throughout the Manawatu – Whanganui region to develop a clear understanding of CVG in the region, the issues with One Plan, and to determine HortNZ's position on PC2.

13. I assisted with HortNZ's submission on PC2, I provided industry evidence at the Council hearing, and I attended the PC2 mediation in March 2023. I have worked with the HortNZ team of experts as they have developed their evidence for this hearing.

14. I have also worked alongside HortNZ teams actively involved in supporting growers to develop Farm Environment Plans (**FEPS**) and with vegetable product groups undertaking and extending research in the Region.

PURPOSE AND SCOPE OF EVIDENCE

15. This evidence provides an overview of CVG in the region including:

    (a) The vegetables grown, area of growing, and number of growers;

(b) The importance of crop rotation;

(c) The expansion potential of CVG in the region;

(d) The importance of fresh vegetables for human health;

(e) National Policy direction;

(f) The effectiveness and uptake of good management practices to manage risks to freshwater from CVG; and

(g) The need for planning provisions to support crop rotation.

LAND AREA AND NUMBERS OF COMMERCIAL VEGETABLE GROWERS

16. The Manawatū-Whanganui Region is an important part of the national food production system. As outlined in the calculations of Mr Easton, as appended to the evidence of Ms Holmes, there is approximately 3,500 ha[1] of CVG with approximately 919 ha of the CVG in the Region is in the TWMSZs.

17. There are 47 vegetable growers registered with NZGAP in the Manawatu-Whanganui Region.

18. The permitted threshold for CVG within the One Plan and proposed PC2 is 4 ha. NZGAP data indicates that 7 vegetable growers in the Region have operations less than 4 Ha.

19. Vegetable growers in the Region are of an ageing demographic. The uncertainty created by the One Plan has undermined the confidence of current growers and created uncertainty for succession planning.

MANAWATU-WHANGANUI REGION PRODUCES A RANGE OF VEGETABLES

20. There are three main growing areas within the Region. Each of these growing areas supports a different type of crop rotation. These areas represent different soil and climatic conditions, and these natural conditions provide for distinctive crop rotations. The three growing areas are:

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[1] 3500 ha has been used by Stuart Easton for the water quality calculations to support Ms Holmes evidence, this is based on the LCDB. The estimate of CVG in the region, in Freshfact 2023 is 3004 Ha. Fresh Facts available here: Fresh-Facts—-Online-version-2023.pdf (unitedfresh.co.nz)

(a) the north of the region including Ohakune;

(b) the central region located in the Manawatu and Rangitikei, including Opiki; and

(c) to the south in the Horowhenua District (Waiopehu Freshwater Management Unit **(FMU),** including the area around Levin.

Northern Region - Ohakune

21. This area is important for the winter supply of vegetables. Key crops in this area includes carrots, potatoes, onions and brussels sprouts. The Region produces 15% of New Zealand's carrots.[2]

22. 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 and area of CVG fluctuates as part of the crop rotation, and as lease arrangements change.

23. The Ohakune autumn/winter harvesting season complements the other growing Regions in the North Island. The supply fills 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.

24. The leaching and economics of a representative proxy rotation is described as Waimarino a 2014 report[3] undertaken by Stuart Ford. Updated Overseer version modelling results for the Waimarino rotation are described in Ms Holmes evidence.

25. The growing area to the north of the Region, around Ohakune, is not within the TWMSZ's.

Central Region - Manawatu and Rangitikei catchments

26. The central growing area is large and includes growing within the Manawatu and Rangitikei catchments and the area around Opiki.

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[2] Fresh Facts available here: Fresh-Facts—-Online-version-2023.pdf (unitedfresh.co.nz)

[3] AgriBusiness Group "Nutrient Performance and Financial Analysis of Horticultural Systems in the Horizons Region" (June 2014) Available here: Nutrient-Performance-and-Financial-Analysis-of-Horticultural-Systems-in-Horizons-Region-2014.pdf

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.

27. Manawatū-Whanganui Region has around 10% of the New Zealand potato area, 87% of potato production is currently for domestic food supply.[4]

28. Seed potato production in the Rangitikei District operates across dairy pasture, utilising a paddock once across a five-year period. The potato cultivation is often utilised to return soil health after damage caused by pugging from stock.

29. Potato production in the Opiki area occurs within a mix of maize, dairy cattle, and potato production rotated on a shorter term due to the soil.

30. The leaching and economics of a representative proxy rotation is described as cash cropping in modelling undertaken by Stuart Ford,[5] and with updated Overseer version results described in Ms Holmes evidence.

31. The majority of the central growing area, including Opiki, are not within TWMSZs; however, there are potatoes and seed potatoes grown in the Coastal Rangitikei TWMSZ.

Southern Region – Horowhenua (Waiopehu FMU)

32. 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. The

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[4] Fresh Facts available here: Fresh-Facts-–-Online-version-2023.pdf (unitedfresh.co.nz)

[5] AgriBusiness Group "Farm Scale Economic Impact Analysis of One Plan Intensive Land Use Provisions" (October 2017) Available here: Ford-S-Farm-Scale-Economic-Impact-Horizons-One-Plan-Final-October-2017.pdf (hortnz.co.nz); AgriBusiness Group "Nutrient Performance and Financial Analysis of Horticultural Systems in the Horizons Region" (June 2014) Available here: Nutrient-Performance-and-Financial-Analysis-of-Horticultural-Systems-in-Horizons-Region-2014.pdf

Region produces approximately 20% of New Zealand's brassica's and other vegetables. [6].

33. There is one large potato and onion grower. The remaining growers grow green vegetables with a range of other crops in rotations.

34. The leaching and economics of representative proxy rotations is described by Stuart Ford as intensive vegetables and Market Garden,[7] and more detailed Overseer modelling of three representative rotations were modelled: potatoes/onions, intensive vegetables and Brassica, by Bloomer associates for PC2[8]. The Bloomer modelling results are described in Ms Holmes evidence.

35. 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 rotations found in the northern and central part of the Region.

36. Vegetables in the Waiopehu FMU 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 growing locations do change over time as leased land arrangements alter and as land is periodically rested.

37. The evidence statements from Mr Clarke in **Appendix B** of this statement, provides more detail about CVG in the Waiopehu FMU.

CROP ROTATION IS FUNDAMENTAL TO CVG

38. The practice of crop rotation is ancient. The earliest records of this practise by growers are from the ancient Middle East, the Han dynasty, the Indus civilization, ancient Greece, the Romans, and by

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[6] "Fresh Facts 2023 – New Zealand's Fresh Fruit and Vegetable Industry" available here: Fresh-Facts—-Online-version-2023.pdf (unitedfresh.co.nz)

[7] AgriBusiness Group "Farm Scale Economic Impact Analysis of One Plan Intensive Land Use Provisions" (October 2017) Available here: Ford-S-Farm-Scale-Economic-Impact-Horizons-One-Plan-Final-October-2017.pdf (hortnz.co.nz); AgriBusiness Group "Nutrient Performance and Financial Analysis of Horticultural Systems in the Horizons Region" (June 2014) Available here: Nutrient-Performance-and-Financial-Analysis-of-Horticultural-Systems-in-Horizons-Region-2014.pdf

[8] Bloomer, D, O'Brien, G and Postuma, L. 2020. Modelled loss of nutrients from vegetable. 2020.

Māori growers in pre-European times.[9] The sequence of vegetable crops in rotation is designed to manage plant and soil-borne pests and diseases, and to build soil fertility through the re-integration of plant residue.

39. Vegetable rotations are fundamental to CVG. Despite this, the planning provisions in One Plan do not provide the flexibility for vegetable growing to move from one property to another, or the flexibility for the intensity of the activity on a given property to fluctuate over time to represent the varying nutrient demands of crops within the rotation. If growers are unable to complete full rotations of crops in sequence, CVG cannot occur sustainably.

CROP ROTATION HAS TEMPORAL AND SPATIAL DIMENSIONS

40. Temporal dimension of crop rotation: On a single property a grower will grow plants and fallow land in a sequence over time to protect soil and plant health. The plants that are grown vary, and may include vegetable crops, arable crops, cover crops, and pasture. In some instances, the grower is not the farm operator for all the phases of the rotation that occur on a property. For example, a grower may lease land to grow vegetable crops, however the pasture phase that proceeds or follows is managed by another farmer. In some cases, a grower may be a farmer as well as a grower, and rotate crops in sequence with their pasture over time. In other cases, a grower will grow a range of vegetable and other crops in sequence to achieve a rotation, with infrequent pasture phases.

41. Spatial dimension of crop rotation: The spatial dimension of crop rotation means that on any given property a grower may not be able to grow a particular vegetable because the property is currently in a different phase of its rotation. To ensure there is a reliable supply of a range of vegetables, most growers operate over

[9] For valid references see the following webpages: [https://www.stuff.co.nz/life-style/homed/garden/127806399/the-whakapapa-of-soil#:~:text=As%20an%20example%2C%20in%20pre,sites%20for%20the%20interim%20periods,] [https://www.novapublishers.com/wp-content/uploads/2019/01/Legume-Cereal-Crop-Rotation-Systems-in-China.pdf,] [https://phys.org/news/2016-11-rice-farming-india-older-thought.html#:~:text=The%20research%20also%20confirms%20that,which%20required%20different%20watering%20regimes], [https://en.wikipedia.org/wiki/Agriculture_in_ancient_Greece]

multiple properties, owned and leased. In some cases, this occurs within a pastoral farm that the grower owns. In many cases growers are specialists, and they don't own all the land they grow on. They may lease blocks from a farmer, moving vegetables across a farm or multiple farms over time. For other rotations, a grower may operate over a range of owned and leased properties, where they are the farm operator for their rotation across multiple properties in different stages of a rotation. For example, one property in brassica, one property in cover crop, one property in lettuce, one property fallow. The properties will seldom be contiguous because, suitable land is scarce, distances between certain crops supports integrated pest management, and growing crops in a range of locations provides resilience against local weather-related risks such as frost and hail.

CROP ROTATION IS ESSENTIAL FOR SOIL AND PLANT HEALTH

42. Producing the same crop in one location can result in poor crop performance. If a crop requires the same mineral nutrients in similar proportions derived from the same depth in the soil, over time, the nutrients at that depth can become depleted, resulting in a decline in crop performance.

43. Crop rotation supports improved soil structure and health. Different crops have varying shallow and deep rooting systems. Growing different crops in sequence can reduce impediments to crop root growth, increase water holding capacity and drainage, reducing erosion and compaction, and encourage the action of beneficial soil biota.

44. Cover crops are used when it is necessary for a break in the rotation, for example, when a field might be fallow between commercial vegetable crops. Cover crops are used to soak up excess nutrients, maintain soil structure, and stabilise topsoil to minimise erosion and sediment loss. Cover crop residues encourage the surface and topsoil feeding of soli fauna such as earthworms which benefit soil structure by the creation of soil pores, improving soil water and air movement and plant root growth.

45. Rotating crops breaks pest and disease cycles by removing host material for a period and reducing pest populations and the inoculum levels of pathogens.

46. Some crops and their residues can act as soil bio-fumigants. For example, in NZ there are certain sorghum and brassica species used in this way. Some crops are auto-allelopathic, which means, in continuous cropping their growth becomes suppressed by self-emitted metabolites.

47. The horticulture industry has led research and development in the management of crop pests and diseases, considering a range of factors. As better tools, such as introduced biological control agents, softer chemistry, and knowledge became available, these tools began to be incorporated into Integrated Pest Management programmes. These programmes take into account of some of the wider interactions, especially between pests, agrichemicals and beneficial species.

CVG EXPANSION POTENTIAL - EXPORT AND IMPORT AND DOMESTIC DRIVERS

48. Over 80% of vegetables grown in New Zealand are for domestic supply.

49. Fresh green vegetables are generally not grown for export due to loss of freshness with distance to market. For the same reason that greens are not exported, they are also rarely imported. Fresh vegetables would need to be airfreighted to NZ, and the costs of that are not viable, given the price that can be achieved in NZ markets, but also the volume of fresh produce that needs to be consumed by New Zealanders, exceeds the volume that can practically be imported.

50. Attempting to move substantial volumes of fresh produce from domestic to offshore production would be complex and constrained by factors outside New Zealand's ability to mitigate, either partially or fully. This is likely to result, at best, in fresh vegetable imports only being available at higher prices, lower volumes, and

reduced/alternate seasonality compared to the pricing, volumes, and seasonality available with Zealand production.[10]

51. Imports will not typically be cheaper or of equivalent price to domestic production, except in unusual circumstances, such as following extreme weather.[11]

52. Because green vegetables are grown for domestic consumption, the expansion potential for greens rotation is linked to NZ population growth. Under the One Plan, and the updated PC2 Table 14-2 ,it is unlikely these rotations could meet the cumulative nitrogen leaching maximums.

53. Some vegetables are suitable for export. In the Manawatū-Whanganui Region the main crops that are currently exported are onions, potatoes and process peas.

54. Potatoes, onions, peas and carrots are grown within pastoral rotations and have a similar nitrogen leaching footprint to pastoral land uses, as described in Ms Holmes evidence. Therefore expansion of these crops would likely be neutral from a nitrogen perspective, and these rotations may be able to be within the cumulative nitrogen leaching maximums in table 14-2 of PC2, but not the One Plan currently.

VEGETABLE PRODUCTION IS ESSENTIAL FOR HEALTH OF NEW ZEALANDERS

55. Vegetables grown in the Manawatū-Whanganui Region are part of a national food system.

56. 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.

57. 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.

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[10] Agchain 2023: Sensitivity Of Domestic Food Supply To Loss In Vegetable Growing Production In Specified Vegetable Growing Areas, technical report produced for MfE.

[11] Agchain 2023: Sensitivity Of Domestic Food Supply To Loss In Vegetable Growing Production In Specified Vegetable Growing Areas, technical report produced for MfE.

58. Mr Tappin's evidence provided in **Appendix C**, explains the Horowhenua rowers make a significant contribution to the domestic supply of vegetables in New Zealand, and the price of vegetables for domestic consumers is directly related to supply of vegetables.

59. As outlined in the evidence of Mr Ford, the margins of vegetable growers are relatively low and their ability to reduce nitrogen leaching without reducing vegetable production is limited.

60. Mr Clarke, evidence provided in **Appendix B**, is clear that meeting the nitrogen leaching loss limits in Table 14-2 of PC2 is not economically feasible, for their green vegetable rotation.

61. Agchain found in their recent report for MfE, found beyond the 20% production constraint, permanent and irreversible commercial impacts were expected to occur, with the majority of impacts beyond what the industry could mitigate.[12]

62. The health benefits of fruit and vegetables are well documented and include protection against heart disease, stroke, high blood pressure, obesity and diabetes. Low fruit and vegetable intake is identified as a leading risk factor in loss of health. [13]

63. The Institute for Health Metrics and Evaluation carried out the Global Burden of Disease study. 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).[14]

64. Otago University has recently modelled the potential health impacts of increased vegetable prices. This study found that using the health costs of an increase in vegetable prices of 43 - 58% (Deloitte, 2018) would result in a loss of 58,300 – 72,800 Quality Adjusted Life Years

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[12] Agchain 2023: Sensitivity Of Domestic Food Supply To Loss In Vegetable Growing Production In Specified Vegetable Growing Areas, technical report produced for MfE.

[13] Report from the New Zealand Burden of Diseases, Injuries, and Risk Factors Study "Health Loss in New Zealand 1990-2013" available here: Health Loss in New Zealand 1990–2013 | Ministry of Health NZ

[14] David Moore, Ben Barton and Michael Young "The Value of local vegetable production" (August 2019) available here: Moore-D-The-Value-of-Local-Vegetable-Production.pdf (hortnz.co.nz)

and health costs of $490 - $610 million across the population (Cleghorn, 2020).[15]

65. In the case of the existing One Plan, the potential health impacts are more severe than modelling in the Otago modelling scenario, which tested the impact of policy that would prevent CVG expansion to provide vegetables for population growth. Under the One Plan, approximately 20% of New Zealand's green vegetables are at risk, because currently no existing green vegetable grower in the TWMSZ can gain consent through the One Plan framework, and no expansion of green vegetable rotations can occur. The existing green vegetable growers will rely on the alternative controlled and discretionary consenting pathways in PC2.

NATIONAL DIRECTION RECOGNISES THE IMPORTANCE OF VEGETABLES.

66. The reluctance of regional councils, including Manawatu Whanganui Regional Council, to develop proportionate rules to manage water quality risks from CVG, and their propensity to prioritise other activities, has led to the need for national direction to elevate the importance of vegetable supply in natural resource decision making.

NATURAL AND BUILT ENVIRONMENT ACT - ENABLING THE SUPPLY OF FRESH FRUIT AND VEGETABLES

67. The Natural and Built Environment Act is one of three Acts that will replace the Resource Management Act.

68. The Natural and Built Environment Act introduces a National Planning Framework **(NPF).** Within the NPF the Act identifies matters that National Planning Framework must provide direction on, this includes:

> enabling the supply of fresh fruit and vegetables.

69. PC2 is operating under the RMA; however, the current national policy under the NPSFM 2020 and direction signalled in the NBA, is

[15] Dr Cristina Cleghorn "The health and health system cost impacts of increasing vegetables prices over time" (August 2020) available here: The-health-and-health-system-cost-impacts-of-increasing-vegetables-prices-over-time.pdf (hortnz.co.nz)

clear that the supply of vegetables is a matter of national importance.

70. To the degree that PC2 can, it should develop provisions that do not frustrate the clear intention of future national policy to enable vegetable growing.

NSPFM - TE MANA O TE WAI - PROVIDING FOR THE HEALTH OF THE NATION

71. In the NPSFM 2014 the description of Te Mana o te Wai recognises the connection between water and the broader environment – Te Hauora o te Taiao (the health of the environment), Te Hauora o te Wai (the health of the waterbody) and Te Hauora o te Tangata (the health of the people.[16]

72. In the NPSFM 2020, the Te Mana or te Wai definition has been further developed to include the hierarchy of obligations and six principles.

73. The first priority is to the health and wellbeing of water bodies and freshwater ecosystems.

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

75. Food, particularly vegetables, is essential for human health needs. In the High Court decision on the Horowhenua SVGA, the decision[17] states: *Continuity of supply in fresh vegetables is important for national food security and human health.*

76. Recognising vegetables within the second priority obligation of Te Mana o te Wai doesn't negate the need for vegetable growers to manage their environmental effects through good management practices and to contribute to achieving the freshwater outcomes sought in the catchments they are operating within.

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

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[16] National Policy Statement for Freshwater Management 2014 amended 2017 at Policy AA1 https://environment.govt.nz/assets/Publications/Files/nps-freshwater-ameneded-2017_0.pdf

[17] *Muaūpoko Tribal Authority Inc and Te Rūnanga o Raukawa Inc v Minister for Environment* [2022] 23 ELRNZ 721

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

79. The six principles of Te Mana o te Wai provides guidance on who makes resource management decisions and the matters to be considered.

80. The Te Mana o te Wai principles most relevant to providing for the health needs of people are Manaakitanga, and Care and Respect.

81. Care and respect is defined as the responsibility of all New Zealanders to care for freshwater in providing for the health of the nation.

82. The people of New Zealand will rely on decision-makers on PC2 to apply the principles of Manaakitanga, and Care and Respect in a way that supports growers in the Manawatu-Whanganui to produce vegetables to supply to its regional population, and also to supply food for people living in other regions that have less favourable climates, less fertile soils and more urbanisation.

NSPFM - SPECIFIED VEGETABLE GROWING AREA AND THE CONTRIBUTION TO FRESH VEGETABLE SUPPLY AND FOOD SECURITY

83. This NPSFM 2020 includes two specified vegetable growing areas (SVGA). One is the Horowhenua growing areas which is Hokio 1a and Hokio 1b. For the SVGA, the NPSFM requires:

> When implementing any part of this National Policy Statement as it applies to an FMU or part of an FMU that is in, or includes, all or part of a specified vegetable growing area, a regional council must have regard to the importance of the contribution of the specified growing area to: (a) the domestic supply of fresh vegetables; and (b) maintaining food security for New Zealanders.

84. When applying the NPSFM to the SVGA FMUs, a regional council may choose to set a target attribute state below the national bottom lines, if achieving a bottom line would compromise the domestic supply of fresh vegetables and maintaining food security for New Zealanders. Modelling undertaken by MPI[18] to support the

[18] Modelling to reduce nitrogen in Pukekohe (Whangamaire stream) available here: www.mpi.govt.nz/dmsdocument/42078-Pukekohe-Modelling-Report

SVGA policy indicated that achieving bottom lines in some of the Lake Horowhenua catchments without compromising the supply of fresh vegetables would require land use change for other activities, or significant catchment scale mitigations.

85. While I acknowledge that PC2 was notified prior to the NPSFM 2020, the Environment Court Decision on the Northland Regional Plan, concluded the NPSFM 2020 was a matter to which the decision should have regard:[19]

> We conclude from this that the NPS-FM 2020 is a matter to which we should have regard and if there is a difference in outcome from the application of the NPS-FM 2020 rather than the NPS 2014, we need to consider whether it is more appropriate to achieve that outcome than that under the NPS-FM 2014.

NSPFM - LETTER FROM MINISTER FOR ENVIRONMENT TO ALL REGIONAL COUNCILS

86. In April 2023, the Minister for Environment wrote to all Regional Councils and Unitary Authorities, including Manawatu Whanganui Regional Council,[20] requesting information about council intentions to provide for vegetable production when implementing the NPSFM 2020.

87. The letter from the Minister for the Environment is attached in **Appendix A**, this letter specifically asks about mechanisms that councils are developing to enable:

(a) vegetable growers to practice crop rotation, moving their production (and associated discharges) from one property to another – for example allowing a grower to lease land in different properties within a freshwater management unit;

(b) an expansion of the total area of production – noting this will almost certainly lead to an increase in Nitrogen-related discharges, and potentially other discharges, from new land brought into vegetable production.

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[19] *Minister of Conservation & Ors v Northland Regional Council* [2021] NZEnvC 001

[20] Evidence of Urlwyn Treblico, Appendix 3

88. In the context of PC2, to the degree possible, decision-makers should consider how provisions can be designed so as not to compromise the supply of fresh vegetables and food security.

89. As identified in the letter from the Minister for Environment there are two critical issues that if not provided for, may compromise the supply of fresh vegetables: these are: crop rotation at the FMU; and expansion of CVG to meet population demand.

90. We accept PC2 does not provide scope to address these issues sufficiently. They will need to be addressed in the NPSFM 2020 plan change. However, an improvement to the One Plan for these matters can be achieved in PC2 by clarifying that:

    (a) Crop rotation can be achieved through a hybrid land use consent, and

    (b) There must be viable consenting pathways for all vegetable crops.

THE IMPACTS OF EXISTING VEGETABLE GROWING CAN BE MANAGED

91. Since the PC2 decision, the Overseer review has highlighted the limitations of Overseer. The review's findings largely echo the concerns raised by Mr Ford in the council hearing.

92. The NRAT is an alternative approach discussed by Mr Barber. This tool draws on industry research to drive on-farm decisions that reduce sediment and nutrient losses. The NRAT drives block scale action and assesses risk for the overall rotation at the TWMSZ scale.

93. Mr Baber discusses how the NRAT can be delivered through nutrient management plans within Farm Plans. The tool has been tested by 4 growers covering 1040 Ha (866 Ha productive area) of CVG in the Region, including growers in the Waiopehu TWMSZs.

94. In Mr Baber's evidence he explains, in his opinion a 35% reduction in nitrogen loss is achievable through the implementation of these GMPs and BMPs that the NRAT will drive growers to take up.

95. PC2 provides the NRAT to be delivered within a Nutrient Management Plan, and also as part of a certified Freshwater Farm Plan, regulated under Part 9a of the RMA.

96. The Horticulture sector is well prepared for the implementation of the Freshwater Farm Plans (**FWFPs**). All growers in NZ that sell to a supermarket or export are required to be independently audited against standards and certified by NZGAP or GLOBALG.A.P. Both NZGAP and GLOBALG.A.P. 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.

97. NZGAP has developed an Environmental Management System (**EMS**) module for all GAP growers, to meet both market and regulatory environmental requirements. HortNZ has been working closely with MfE through the development of the FWFP regulations. We are confident that the EMS framework will deliver on the FWFP requirements.

98. 90% of the CVG within the Hokio 1a, and 1442 Ha (1108 Ha of productive area) of CVG in the Region has the NZGAP EMS and is developing a plan to meet Freshwater Farm Plan requirements.

99. As explained in Mr Baber's evidence, growers are making progress with their FEPs. In 2020 41 actions were identified, in 2023 29 of these have been implemented, a further 11 actions were identified as new or ongoing.

100. The recent amendment to the RMA Section 217 KA, provides a pathway for Regional Council to approve industry organisations to provide certification or audit services for FWFPs. It is HortNZ's expectation that NZGAP will be approved by Horizons to deliver FWFP certification and audit based on the NZGAP EMS system.

101. PC2 provides a pathway for a nutrient management plan to be delivered as part of a certified FWFP. It will be important that Manawatu- Whanganui Regional Council has processes in the plan to ensure that all TWMSZ are prioritised in the roll out of certified FWFPs, to ensure this path indicated in PC2 is viable, and that Horizons has processes in place to approve industry organisations.

PC2 WILL CONTRIBUTE TO IMPROVED WATER QUALITY OUTCOMES

102. HortNZ does not support the grass curve approach to nitrogen allocation within Table 14-2 of the One Plan, because it is not

effective from a water quality and an integrated environmental outcomes perspective, as well as being unworkable from a planning perspective. The nitrogen leching maximums have not been calculated to achieve target attribute states and the increases provided in the table are not offset by the decreases in leaching sought. Nitrogen leaching is not a proxy for all diffuse discharges, for example CVG has low *E. coli* losses. The approach has no regard for greenhouses emissions, (as now required under Section 61 2(d) of the RMA). We accept that PC2 scope is limited to resolve these technical limitations and that these will need to be addressed in the NPSFM 2020 plan change.

103. As outlined in the evidence of Ms Holmes, the contribution of CVG as a proportion of total contaminant load in the Region is small, for example 0.7% of the N load, 0.4% of the P load, and less than 0.5% of the sediment load.

104. Ms Holmes anticipates that the provisions in PC2 will result in an improvement in water quality as it drives the implementation of GMP and BMP practices. CVG contributes a relatively small proportion of the contaminant loads, therefore improvements that are achieved will also be relatively small.

105. Ms Holmes considers the water quality risks associated with crop rotation are minimal, and any change in localised effects can be managed with the NRAT, as outlined in Mr Barber's evidence.

PC 2 PLANNING PROVISIONS MUST SUPPORT CROP ROTATION

106. Supporting crop rotation, requires planning provisions that assess risk across the full rotation and that enable growers to move on and off land.

Providing for crop rotation requires planning provisions that assess risk across the full rotation

107. The Plan Table 14-2 requires that every year a leaching rate of the actual activity on the given farm must be calculated and the leaching rate must be maintained within the maximums. In the case of vegetable growing, when viewed as a full rotation over time, the full sequence of crops may be within the leaching maximums for some rotations, However, the interannual variability may be such

that in some years the phase of the rotation will be well below the maximums and other years may exceed the maximums. This is not as a result of the activity intensifying or because the grower is not operating a best practice for that crop, but because the rotation has a variable intensity over time associated with the rotation sequence.

108. As outlined in Mr Fords evidence, Overseer has several limitations when applied to vegetable growing and when misused in regulation. In Mr Ford's opinion it is more appropriate to use Overseer to represent the full rotation rather than single crops, or single years, and not to use the results from Overseer as absolute numbers.

Providing for crop rotation requires planning provisions that enable growers to move vegetables on-to and off-of land.

109. While some growers are mixed farmers, most growers in the Region are specialists vegetable growers. Not all vegetables rotations include a frequent pasture phase and nor should they.

110. 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[1] 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. They supposed that farmers would consent 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.[21]

111. This was a particularly unrealistic scenario for green vegetable growers, who grow in vegetable-dominated rotations on fragmented land with infrequent pasture phases. The absence of consents granted in this manner bears this out.

A hybrid landuse-discharge rule can provide for crop rotation

112. Growers need the flexibility to consent their own activity, recognising this is activity is spatially and temporally dynamic.

113. As outlined in Dr Drury's evidence it is her opinion that a hybrid consent (a combined land use and discharge permit) should be issued that enabled CVG across owned and changing blocks of leased land within a TWMSZ, with consent conditions requiring a grower to update council on the locations of all blocks owned and leased as part of nutrient management plan reporting.

CONCLUSIONS

114. The existing vegetable growers in the TWMSZs have struggled for many years with regulations in the One Plan that were never fit for purpose. The intensive farming land use provisions within the One Plan have been the cause of stress and uncertainty for growers and the sector. The One Plan provisions undermine the ability of the sector to produce sufficient vegetables to provide for the health needs of New Zealand.

115. Vegetable growers are committed to reducing their water quality impacts. Most CVG within the TWMSZs, and many outside of the TWMSZ are implementing actions as part of industry FEPs using the NZGAP EMS.

116. If PC2 provides a workable consenting pathway for existing CVG in the TWMSZ, it will provide growers with greater confidence that they can continue to invest to achieve reductions in diffuse contaminant losses from CVG.

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[21] *Day v Manawatu-Wanganui Regional Council* [2012] NZEnvC 182 at [5-81].

117. In our view the changes to the provisions proposed by Dr Drury are critical in ensuring the alternative pathway for CVG is workable and that crop rotation can occur in a manner that supports plant and soil health, and supports a range of fresh vegetable crops to support the health of New Zealanders.

118. With the changes to the provisions proposed by Dr Drury, PC2 will result in water quality improvements.

119. PC2 does not solve all the One Plan's issues. A critical issue is the One Plan does not adequately enable the supply of fresh vegetables. We accept that the scope of PC2 is limited and that some of HortNZ's concerns will need to wait to be addressed in the NPSFM 2020 plan change.

120. To the degree that PC2 can, it should develop provisions that do not frustrate the clear intention of future national policy to enable vegetable growing.

Michelle Sands

13 October 2023

APPENDIX A LETTER FROM MINISTER FOR ENVIRONMENT TO MANAWATU – WHANGANUI REGIONAL COUNCIL.

Hon David Parker BCom, LLB
Attorney-General
Minister for the Environment
Minister of Revenue
Associate Minister of Finance

COR4118

Chair and Councillors of Horizons Regional Council

CC: Michael McCartney, CEO, Horizons Regional Council

rachel.keedwell@horizons.govt.nz
michael.mccartney@horizons.govt.nz

Dear Rachel Keedwell and Councillors

Information request – Horizons Regional Council intentions to provide for vegetable production when implementing the National Policy Statement for Freshwater Management 2020 (NPS-FM)

Thank you for the recent Te Uru Kahika Progress Report on regional planning implementation of the NPS-FM. I am pleased to see steady progress is still being made towards notifying your plan no later than December 2024, despite the challenges outlined in the report.

Among other issues, this summer's extreme weather has highlighted the importance of a wide geographic distribution of fresh vegetable production so that New Zealanders can continue to access healthy food options at a reasonable cost. The resilience of our food system will no doubt continue to be tested as the effects of climate change gain severity.

There is uncertainty as to how plans currently in development under the NPS-FM will enable continuity for vegetable growing and expansion of the domestic supply in line with future growth of New Zealand's population. New Zealand's population is forecasted to grow 8% between 2023 and 2033.[1]

I am therefore requesting information on Horizons Regional Council's intentions to provide for vegetable production in your region through your NPS-FM freshwater management planning instruments (land and water plans). Please include the rationale for your approach.

The information provided should include details about any mechanisms the Council is developing that enable:

- vegetable growers to practice crop rotation, moving their production (and associated discharges) from one property to another – for example allowing a grower to lease land in different properties within a freshwater management unit;

[1] StatsNZ projections 2022 - 2073 - available at https://www.stats.govt.nz/information-releases/national-population-projections-2022base2073/#:~:text=New%20Zealand's%20population%20(5.13%20million,and%205.85%20million%20in%202033.

- an expansion of the total area of production – noting this will almost certainly lead to an increase in Nitrogen-related discharges, and potentially other discharges, from new land brought into vegetable production.

In addition, please also provide information about your intentions regarding the use or otherwise of section 3.33 of the NPS-FM , including considerations referred to in NPS-FM section 3.33(3)(c).

I would like to keep the reporting burden to a minimum. My expectation is that the information will be brief, but specific enough to understand whether and how the Council is intending to provide for the matters outlined above.

I acknowledge that the first report date is too early in plan development for specific details on possible plan provisions and understand any proposals need to be thoroughly tested with your community. However, please respond with your intended approach on the basis of currently available knowledge. If the Council has any queries about what reporting is required, please contact Bryan Smith through email bryan.smith@mfe.govt.nz or phone 027 5183327.

My request is in accordance with section 27 of the Resource Management Act 1991 (RMA). The first report is required by **19 May 2023**, with reporting to continue on annual basis until 19 May 2025, with a view to capturing any further decisions and their rationale made in the intervening period. Officials will follow up with Council staff after reports are received should any clarification be needed.

I appreciate the sensitivities involved in this early phase of your regional freshwater management planning process. The information will not be shared beyond the cross-agency project team (Ministry for Environment and Ministry for Primary Industries officials), except where needed to meet statutory requirements, such as under the Official Information Act 1982.

Yours sincerely

Hon David Parker
Minister for the Environment

APPENDIX B – INDUSTRY STATEMENT MR CLARKE

BEFORE THE ENVIRONMENT COURT **ENV-2021-WLG-000023**
AT WELLINGTON **ENV-2021-WLG-000022**
I MUA I TE KŌTI TAIAO **ENV-2021-WLG-000021**
I TE WHANGANUI-Ā-TARA ROHE **ENV-2021-WLG-000020**

IN THE MATTER	of the Resource Management Act 1991 (**RMA** or **the Act**)
AND	
IN THE MATTER	of appeals under Clause 14(1) of the First Schedule of the Act in relation to a decision of Manawatū-Whanganui Regional Council on Proposed Plan Change 2 to the Horizons One Plan
BETWEEN	**TE RUNANGA O RAUKAWA** **Appellant**
	ANDREW DAY **Appellant**
	WELLINGTON FISH AND GAME COUNCIL **Appellant**
	NGĀTI TURANGA **Appellant**
AND	**MANAWATŪ-WHANGANUI REGIONAL COUNCIL** **Respondent**

STATEMENT OF EVIDENCE OF JOHN JOSEPH CLARKE (WOODHAVEN GARDENS) ON BEHALF OF HORTICULTURE NEW ZEALAND

13 OCTOBER 2023

[redacted] HOLM | MAJUREY

Paul F Majurey/Nicole Buxeda
PO Box 1585
Shortland Street
AUCKLAND 1140

Solicitor on the record	Paul F Majurey	Paul.Majurey@holmmajurey.nz	(09) 304 0420
Contact solicitor	Nicole Buxeda	Nicole.Buxeda@holmmajurey.nz	(09) 304 0424

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EXECUTIVE SUMMARY

1. Woodhaven Gardens is a long-established horticultural business producing fresh vegetables for the domestic market. As a business, Woodhaven Gardens is responsible for approximately 15% of the supple of fresh green vegetables to the domestic market.

2. Woodhaven Gardens is a significant and responsible employer, providing a considerable amount of support to its employees and community through provision of scholarships, sponsorship and donations, supporting schools, clubs, and other community groups.

3. Woodhaven gardens and growers have been actively working towards implementing GMP/BMP through use of the NZGAP EMS add-on and by implementing a variety of other environmental mitigations.

4. Commercial vegetable production is centred on the production of a successful marketable yield. Crops therefore need to be grown to meet market specifications. This requires growers to have transparency and oversight of crop requirements and to ensure irrigation, nutrients and crop needs are met at all stages of the growth cycle. This requires regular soil testing and that on farm decisions are supported by science and advice. Production of a non-marketable yield results in greater N loss due to the crop being 'wasted' or ploughed into the soil.

5. Horizons Regional Council needs to ensure there is a realistic and achievable consenting pathway that has reasonable consenting requirements focused on adoption of GM/BMP through use of programmes such as the NZ GAP EMS add-on.

INTRODUCTION

Qualifications and experience

1. My name is John Joseph Clarke. In 1978 my family established and continues to run Woodhaven Gardens, which is a large fresh cut vegetable growing business in the Horowhenua.

2. Along with being a director of Woodhaven Gardens Ltd I also hold roles as a director of MG Group (A large multinational co-operative fruit and vegetable grower and wholesaler) and a director of Vegetables New Zealand Inc.

3. I am a Chartered Accountant and a recognised leader in sustainable vegetable production who is regularly asked to speak on sustainable growing practices both in New Zealand and Australia.

Involvement in PC2

4. Woodhaven Gardens has remained committed to contributing to the consultation throughout the PC2 process; from attending pre-notification meetings with Horizons Regional Council staff; appearing before and addressing councillors directly; meeting with other stakeholder groups such as Iwi/Hapu, HECA and Horowhenua District Council; through to providing evidence before Commissioners.

5. Our message has been consistent and simple; that growers are committed to delivering improved environmental outcomes through on farm investment and practice change that will lead to water quality improvements; that vegetable production occurring in the Horowhenua FMU and especially in the targeted WMSZ's is an essential activity in terms of its local economic impact and significant role in national healthy food security; and that restricting production of "greens" vegetable production to the leaching rates described in table 14.2 would make this production system unviable, reducing the availability of healthy vegetable production throughout the country and dramatically increasing the cost to consumers of the remaining product.

WOODHAVEN GARDENS

6. Woodhaven Gardens is a large family-owned fresh cut vegetable growing business in the Horowhenua established in 1978. Woodhaven Gardens was also a founding partner in Kapiti Green Ltd in 2002. In the years following, Woodhaven Gardens brought out the other two partners (Andrew Yueng and David Young) and completed a full merger of the two farming businesses. Woodhaven Gardens now grows a range of 23 Vegetable crops and two catch crops in a varied rotation across the Horowhenua Fresh Water Management Unit, taking advantage of different soil types, microclimates and access to irrigation water.

7. Woodhaven Gardens crops across the Waiopehu FMU with owned and leased properties in the Ohau, Hokio, Koputaroa, and Waikawa catchments. Despite owning or leasing approximate total of 1200ha, our effective area totals around 850ha. This is a land utilization rate of 70% in the crop system. Woodhaven Gardens crops most of its land two times per year.

8. Woodhaven Gardens employs between 220-250 people. Approximately 80% of employees are NZ residents or citizens, with approximately 40+ people that whakapapa Maori.

9. Woodhaven contributes $40-45mil to local GDP. Woodhaven produces approximately 30+ million consumable pieces per year and would account for approximately 15% of New Zealand's fresh cut greens market. Virtually all the vegetables grown by Woodhaven Gardens are sold and consumed here in Aotearoa New Zealand, and therefore has a direct positive effect on the well-being of our nation.

10. Woodhaven Gardens was voted runner up Best Large Business in the Electra Horowhenua Kapiti Business Awards (**EHKBA**) 2018. Woodhaven was also recognised for the large amount of community contributions it supports by winning the Give Where You Live Award in the 2018 EHKBA's. In 2020, Woodhaven Gardens won the Horizons Ballance Farm Environment Supreme Award for the work done to improve environmental management. In 2021 Woodhaven Gardens won the Horticulture New Zealand Environment Award.

11. Woodhaven Gardens holds a close relationship with the land that it farms and the Horowhenua district. Woodhaven Gardens is a multigenerational business that recognises the importance of being good caretakers of our land and environment so that future generations to come may be able to continue to play an important role in supplying our country with healthy food and providing employment and development opportunities to the people of our community.

12. As one of only three growing enterprises in the Horowhenua with owners under 50 years of age, Woodhaven Gardens is very aware of the need to ensure it continues to supply New Zealand with domestic healthy food. The descendants of Woodhaven Gardens current shareholders whakapapa to Ngāti Raukawa. This means over the next 10-20 years, Woodhaven will transition into a Māori owned and run enterprise, advancing the Māori economy and the role of Māori in horticulture.

13. Prohibitive compliance regimes only hasten the loss of knowledge and skills needed to ensure the security of New Zealand's supply of healthy vegetables. As such, Woodhaven Gardens is committed to operating an enterprise that positively impacts its community through sensitive management of its environmental, cultural, and economic effects.

THE ROLE OF HOROWHENUA IN COMMERCIAL VEGETABLE SUPPLY

14. The Horowhenua plays an extremely important role in the supply of vegetables. The Horowhenua enjoys fertile, low slope, LUC 1&2 soils that are relatively frost free. There is regular summer rainfall, lessening reliance on irrigation.

15. Horowhenua is located on SH1, enabling easy product distribution, and has several townships supporting the local communities with supplies and labour.

16. This ecosystem of special soils, climate, topography, water, labour and infrastructure are unique and are why the Horowhenua plays such an important part in our nation's food security. The loss of any one of these factors, or our ability to meet our crops nutrient

requirements would make commercial vegetable production unviable.

17. The Horowhenua region is estimated to supply up to 30% of New Zealand's leafy green vegetables. Woodhaven Gardens supports consistent regulation of commercial vegetable growing practice throughout New Zealand to ensure this vital supply of domestic, healthy food is produced in an environmentally efficient manner.

18. With New Zealand now the 3rd most obese country in the world, diseases such as diabetes becoming rampant and large portions of our community living with food insecurity, it is crucially important that commercial vegetable growing in Horowhenua is enabled. This view is independently supported in the Sensitivity of Domestic Food Supply to Loss in Vegetable Growing Production In Specified Vegetable Growing Areas.[1]

19. A recent Otago University study found that be simply increasing New Zealander's consumption of vegetables by a single extra serving each day could save the New Zealand health system nearly $1billion.[2]

EFFICIENCIES IN COMMERCIAL VEGETABLE PRODUCTION

20. Commercial vegetable growing is an extremely environmentally efficient food production system when compared to pastoral farming systems in terms of nitrogen use efficiency, water use and land use. Woodhaven Gardens also captures 3x times more carbon than it emits due to stable soil carbon levels and no biological emissions. What is does emit in relation to nitrogen and lime fertilizers, are more than offset by the 40ha of plantation forestry on its unproductive land. Vegetable production also provides a far greater positive social and economic impact per ha compared to pastoral farming.

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[1] Sensitivity of Domestic Food Supply to Loss in Vegetable Growing Production In Specified Vegetable Growing Areas, produced for the Ministry for the Environment, Maurer& Lawes, (2023).

[2] The Health and Health System Cost Benefits of Increasing Vegetable Intake by One Serve for all New Zealanders, Chelghorn, (2023).

21. If an achievable consenting pathway cannot be found for commercial vegetable growing in the Horowhenua, then the alternative land uses will be housing or dry-stock sheep and beef farming.

22. It is Woodhaven Gardens position that forcing the conversion of commercial vegetable growing land to sheep and beef production will have a significant negative impact to the community, and produce adverse environmental effects across many attributes. It would also be unviable economically for any landowners and would force conversion of the land into residential subdivision.

23. The current regime caps the productive land use inside the targeted WMSZ's to that of an average dairy farm and essentially allocates out all available leaching to pastoral farming activities that have poor environmental efficiency. Furthermore, the vast majority of food produced by the pastoral sector is exported offshore (dairy approximately 98% exported and meat approximately 80% exported).

24. The approach set out in Table 14.2 will mean most pastoral operations will continue as normal with no requirements to improve nitrogen losses from their system. This is in sharp contrast to Woodhaven Gardens which estimates a drop in leaching of approximately 40% since 2015/16. If forced to meet table 14.2, would be required to reduce leaching by a further 30-40%. When production is occurring using Good Management Practices the only way this is achievable is through a reduction in vegetable production.

25. The approach provided for under Table 14.2 leaves no room for viable vegetable production, which has a greater positive impact on the local economy, employment, and health outcomes of New Zealanders. It is a backwards step in terms of environmental management that contradicts the approach being taken by other regional and international authorities that are attempting to promote increased vegetable production due to its environmental and societal benefits. The approach of capping the productivity of the land to that of dairy farming has been heavily criticised by the Minister for the Environment, the Hon. David Parker MP, who has

written to all Regional Councils across New Zealand asking them to provide evidence on how they will support the enablement of fresh vegetable production within the freshwater planning regulations.

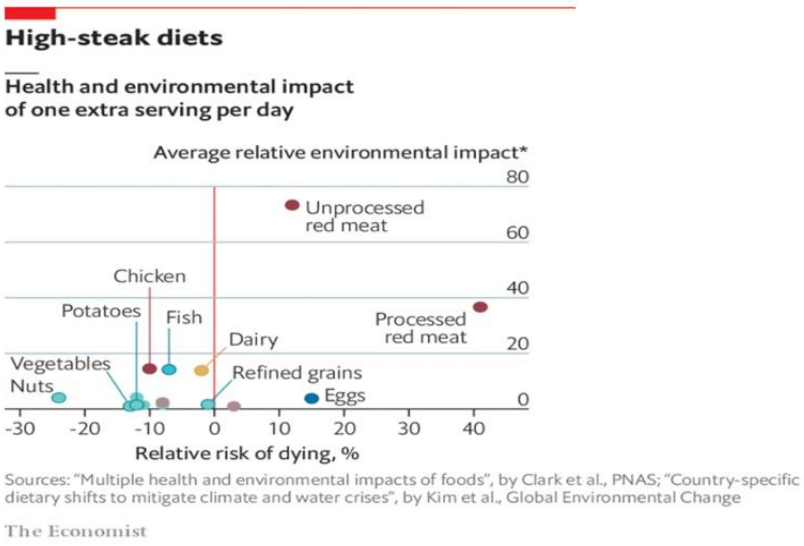
Fig 1.

Pastoral Farming v Commercial Vegetable Production – 118ha Farm

Metric	Dairy Farm	Fresh Veg	Sheep & Beef
N Loss Per Ha	30-60kg/ha	70-100kg/ha	10kg
Yield per Ha	11 tn milk	70tn to mkt	.6tn
N Loss Per Ton of Food	2.7-5.4kg/tn	1.0-1.4kg/tn	16kg/tn
Employment FTE	4-5	50-60	1-2
Amount Spent Locally	$585k	$6,600k	200k
E-Coli and Other Bacteria, GHG Emissions, Water Use, Land Use	High	Zero - Low	High

26. The graph below shows that green vegetable production has the single lowest environmental impact per serving, whilst also having the second highest benefit to human health.

Fig 2.



COMMUNITY IMPACT

27. Woodhaven Gardens has a longstanding history of positive community impact through employment opportunities, donations of money, time, and food (in excess of $100,000 per year) and by ensuring the supply of healthy food to our country.

Employment

28. Woodhaven Gardens employees between 220 – 250 full time staff, approximately 2% of the Horowhenua's employment. We have a proud history of providing work opportunities for those that have found it hard to gain employment elsewhere. Woodhaven tries to wrap a high level of support around its staff, teaching them new skills and life disciplines that help them to grow as employees and people. Three of our most senior management positions are held by individuals that started their employment at Woodhaven Gardens in their late teens and have worked their way through various roles over many years, learning new skills along the way. A large portion of the staff have been employed for over five years, with many staff being employed with us for over twenty years.

29. Woodhaven supports programs such as the Mana in Mahi program providing work and training opportunities for people in hardship, works with the Horowhenua Learning Centre to provide opportunities to graduates, works with Lincoln/Massey University and the three local high schools to enable students to explore opportunities within the commercial vegetable growing industry through hosting of farm open days.

30. Woodhaven Gardens is a culturally and gender diverse business. Although approximately 80% of our staff are New Zealand residents or citizens, they come from many different ethnic backgrounds to create a wonderful team of hardworking staff. This carries right through to our senior management where we employ:

    i. Four NZ Europeans;

    ii. One NZ Māori;

    iii. Two NZ Pacific Islanders;

iv. Two NZ Asian;

v. Two NZ Chileans;

vi. Two Chileans; and

vii. One NZ South African.

31. Woodhaven Gardens provides several roles for both males and females with a little under 50% of the staff being female. Woodhaven Garden has a 'Working Mums' team with special starting and finishing times. These staff members work and live across the wider region, contributing in their own rights to the fabric of our vibrant community.

32. Woodhaven Gardens recognises the financial challenges that many of our staff face, who often support large multigenerational families. Woodhaven Gardens support staff by paying 10-15% of profits back to staff in the way of bonuses, interest-free loans are offered to staff to help cover unexpected expenditures to avoid reliance on high interest money lenders and all staff are given access to free product to ensure their families always have access to healthy food. Woodhaven also provides wellness services on-site such as breast/cervical screening, vaccinations, and smoking cessation to increase staff health and wellbeing.

Charitable and Not for Profit Support

33. Woodhaven Gardens further demonstrates its commitment to be a socially responsible enterprise through its charity and not for profit support. Woodhaven Gardens have been recognised for its efforts by receiving the 2018 Give Where You Live Award in the 2018 Electra Horowhenua Kapiti Business Awards. Listed below is a selection of the community support Woodhaven has undertaken:

(a) Purchasing small fleet of fishing boats in Kiribati to ensure income can be generated by RSE workers back in their home Islands;

(b) Increasing transparency of fresh food production through support of the Horowhenua Taste Trail and other community farm tours;

(c) Providing 3 $5000 scholarships to the children of staff members attending any form of tertiary education;

(d) Supporting local Iwi through supply of free product to Marae throughout the Horowhenua to support Tangi and special Hui;

(e) The delivery of free product to specific pataka kai sites to help lower socioeconomic communities access healthy food for their whanau;

(f) Supporting a range of charitable and social enterprises throughout our local community;

(g) Free product for fundraising for;

i. Levin Bowling Club; and

ii. All local Primary School fairs and fetes;

(h) Sponsors of;

i. Levin Hustlers Baseball Club;

ii. Levin Wanders Rugby Club;

iii. Levin Touch Rugby;

iv. Waikanae Surf Club;

v. Wellington Special Children's Christmas Party;

vi. Horowhenua Hockey;

vii. Levin Hustle Baseball; and

viii. Levin Golf Course;

(i) Financial Donations to;

i. Cure Kids;

ii. Hinemoa Community House;

iii. Levin Food Bank;

iv. Ronald McDonald House;

v. Life Flight;

vi. Levin Riding for the Disabled;

vii. Autism NZ;

viii. Heart Kids;

ix. Cystic Fibrosis New Zealand;

x. HDC Mayoral Fund;

xi. Levin Gymnastics;

xii. Gold Coast Motorcross;

xiii. Levin Cycling;

xiv. Whanganui Junior Darts;

xv. Horowhenua College; and

xvi. Te Horo School.

ECONOMICS

34. Woodhaven Gardens has a turnover of $40-46mil, approximately 3.5% of the Horowhenua Regional GDP ($1245mil 2022). Wages amount to approx. 30% ($14mil) of turnover with an approximate $16.9mil further spent with local contractors and suppliers (further costs such as interest, commission, case cost insurance etc have been excluded).

35. Pre-tax margins are slim and typically range between 3-7% or $1000-3500 per ha, but can fluctuate to losses in years where yields are poor or market conditions are unfavourable, in favourable years margins can be up to 10%.

36. The room to absorb additional costs due to compliance is therefore small, before enterprise becomes uneconomic. This may cause growers to become financially incentivised to work with district council to develop the land and reinvest any capital elsewhere due to Return on Investment becoming too low.

37. This is especially true in the commercial vegetable industry where costs cannot simply be passed on as the pricing of product is set by the purchasers and **not the growers**.

38. Commercial Vegetable growing is a domestically competitive industry where growers with the lowest costs of production are able accept lower market pricing and maintain market share.

39. Many other regions in New Zealand have little to no compliance requirements for commercial vegetable growing, making growers in the Horizons region especially exposed to risk associated with increased Horizons compliance costs. Therefore, Woodhaven Gardens and other leading growers in New Zealand have campaigned with MfE and MPI for a National Environmental Standard for Commercial Vegetable Production (**NES CVP**) to bring alignment across the country and restore the environmental and commercial equilibrium to the commercial vegetable growing market. The National Party has publicly declared that it is their intention to develop an NES CVP within their first year of government if successful in the 2023 general election.

40. The value of commercial vegetable growing land is directly tied to the productivity of that land, and the productivity of the land is tied directly to nutrient use and irrigation availability. Irrigated land being the most productive and therefore the most valuable. Irrigated land in the Hokio and Waikawa Target WMSZ's would expect to sell for between $85,000 - $90,000 per ha at current market values. Currently two-thirds of Woodhaven Gardens irrigated land is located in target WMSZ's.

41. The loss of productivity on this land would drastically effect Woodhaven Gardens ability to continue its entire business as markets demand product to be available 365 days a year and the irrigated land provides Woodhaven with surety of supply over dry summers. The land value is also based on being able to crop the land two times per year with a productive catch crop. Any regulatory changes that limit the productivity of the land by reducing productive capacity either by forcing land retirement or reducing the number of cash crops per year due to nutrient

restrictions will drastically impact the value of the land and the viability of Woodhaven's operation.

42. For example, 40ha of sheep and beef grazing land on Hokio Sands Road, under 3km away from Woodhaven Gardens Joblins Road yard, has an RV of only $12,500 per ha. This represents an 86% loss in value for the land owner if commercial vegetable growing land was forced through land use change to become sheep and beef grazing land.

43. Commercial vegetable growing requires a large capital investment in equipment and infrastructure that is not required in pastoral farming systems. Woodhaven Gardens holds approximately $25mil in plant and equipment (current book value), that would be redundant if land use change to another farming system was to be enforced. Most of this plant and equipment is located in the target WMSZ's in the form of cool stores, offices, staff facilities, packing sheds, irrigation infrastructure and specialized equipment for commercial vegetable farming etc. This infrastructure and equipment would have little to no value in a forced sale. If a transition to sheep and beef grazing was forced on Woodhaven Gardens land in the Target WMSZ's, Woodhaven would expect to lose approximately $35mil in asset value and would be foreclosed upon by its banking partner.

44. Therefore, if forced to comply with table 14.2, it would be Woodhaven Gardens intention to immediately apply to Horowhenua District Council to subdivide land for residential housing inside the target WMSZ's under the provision of permanent environmental restriction provided for within the National Policy Statement for Highly Productive Land.

45. This would result in the closure of Woodhaven Gardens entire operation, the loss of 200-250 jobs, the loss of 15% of New Zealand's fresh cut vegetable supply, the loss $45mil from the Horowhenua GDP and loss of some of our most important soils in the country from food production forever.

ENVIRONMENT

46. Woodhaven Gardens acknowledges that commercial vegetable growing, like all human activities, has an impact on the surrounding environment. For commercial vegetable growing, key focus areas are nitrogen and sediment/phosphorus loss. Both nitrogen and phosphorus are macro-nutrients that are essential for plant growth and health. Irrespective of whether these are introduced to soil by synthetic or organic means, the elements are chemically identical and have the same effect to the plant and to the environment.

Nitrogen

47. Nitrogen that is available to plants predominately takes the form of nitrates that are negatively charged and are therefore soluble and bind to water. Nitrogen is required by plants for to produce chlorophyll and photosynthesize. Nitrogen can be made available to plants in two ways, either by addition of organic or synthetic sources.

48. Organic nitrogen is derived from either pre/companion planting of nitrogen fixing crops that pull nitrogen from the atmosphere and fix it nodes in the plant, or, in the form of introduced organic matter (plant or animal manure). Some of the issues with solely using organic N are described below and it is important to note that yield-adjusted nitrogen leaching from solely using Organic N, is roughly the same as solely using Synthetic N.

49. Woodhaven Gardens uses a mixed approach by growing rye grass as a green manure to be reincorporated into the soil, using locally sourced compost and its own packing shed green waste in the warmer/drier months. This complements the use of synthetic nitrogen and help maintain good levels of organic matter, soil carbon and optimum soil microbiology.

50. Organic Nitrogen:

    (a) Helps manage soil health through increase organic matter and promoting good soil microbiology.

(b) Requires more cultivated land when growing your own organic matter as that land is lost from the production system for that time.

(c) Increases risk of carbon and sediment loss due to increased requirements for cultivated land.

(d) Preloads soil with nitrogen leaving it vulnerable to leaching risk.

(e) Difficult for growers to know the amount of nitrogen produced leading growers to overcompensate rather than risk not having enough available nitrogen.

(f) Can introduce other pathogens to soil which can led to food safety risk and can be detrimental to waterways.

51. Synthetic N:

(a) Exact amount applied always known;

(b) Can be applied throughout life of crop until crop closure;

(c) Can be applied as compound with other nutrients to ensure optimum plant uptake; and

(d) Does not introduce bacteria or other pathogens to the soil.

52. It is estimated that vegetable growing contributes approximately 20% of N loss to waterways in the Hokio sub-catchment.[3]

53. Woodhaven Gardens data shows average N use rates of between 100-200kg/ha across the total land area farmed inside the target WMSZ's. This is due to the fact that although the amounts applied to the roots zones of the crops are much higher than this, they are offset by the amount of land taken up with tracks (10%), trams (18%), buffer strips (6%), infrastructure and non-productive land (6%). These areas received no fertiliser and do not contribute any additional leaching to the system.

[3] Sensitivity of Domestic Food Supply to Loss in Vegetable Growing Production In Specified Vegetable Growing Areas, produced for the Ministry of the Environment, Maurer & Lawes (2023).

Sediment/Phosphorous

54. Phosphate is an organic mineral that is use by plants to develop root growth so that the plant can uptake nutrients and water. Phosphorus can be lost to the environment when soil is lost from the farming system. The main way this occurs is through topsoil loss in rain events. Woodhaven Gardens actively monitors its Phosphate levels in its soils through independent monitoring of annual soil tests across all its land ensuring the Phosphate levels are not increasing or decreasing detrimentally. Phosphate levels must be maintained at appropriate levels across all paddocks to ensure all land is available for Woodhaven Gardens rotations.

55. All Phosphate maintenance is completed in the summer months when risk of run off is lowest. Small amounts of Phosphate is also used in a compound fertilizer form as starter fertilizer during crop establishment. This is incorporated into the soil profile by being knifed or rolled in using specialized equipment to decrease the risk of run off. Most sediment loss occurring in the Woodhaven Gardens farming system occurs when the Hokio drainage network fails 2-3 times per year.

56. Woodhaven does not experience large degrees of sediment loss when the drainage network is working correctly, evidenced by imprints from the transplanters, which are only 1-2mm are still observed on beds after significant rain fall events. There are, however, suspended solids that escape the system, soil particles so small and fine that they remain suspended in water leaving the farm. This is something that happens all over the Horowhenua and vegetable growing land is by no means the only contributor. It is estimated that vegetable growing only contributes approximately 14% of the phosphate lost to water in the Hokio sub-catchment.

GOOD/BEST MANAGEMENT PRACTICE AND SYSTEMS CHANGE

57. To mitigate environmental risks associated with nitrogen/phosphorus use, and other environmental impacts, Woodhaven Gardens use a number of good and best management practices (**GMP/BMP**), some of which are listed below. Woodhaven supports a compliance regime that ensures growers are adhering to GMP/BMP with the use of Farm Environment Plans and Independent Audits. Woodhaven

Gardens supports the use of the Horticulture New Zealand NZGAP EMS program to achieve this.

58. GMP soil:

(a) Soil testing for base fertiliser every year including trace elements, organic carbon and organic matter;

(b) Soil testing for nitrogen using quick N test before every nitrogen application to determine exact plant need;

(c) Soil testing deep nitrogen every year;

(d) Cultivation soil when conditions are appropriate;

(e) Minimise soil tillage as much as practicable;

(f) Minimise cultivation passes;

(g) Minimise fallow periods between crops:

i. Rye Grass sown if fallow for 10 weeks or more;

(h) Incorporate crop residual when appropriate:

i. Winter mulching, minimum tillage;

(i) Planting catch crops in between vegetable rotations;

(j) Only cultivate on days when the weather conditions are suitable: not when there are high winds;

(k) Full Farm Environment Plan with Hazard and Mitigation Identification Maps for Every Paddock;

(l) Planting of riparian margins or buffer stripes at the bottom of each paddock (minimum 5m);

(m) Use tramlines throughout the farming system;

(n) Keep Sediment in Paddock (excl grass buffers); and

(o) Have appropriate infrastructure in place to prevent sediment losses (culverts, drains, bunds).

59. GMP nutrients:

(a) Plan fertiliser inputs for each crop taking into account all nutrient inputs (nutrient balance);

(b) Managed applications of fertiliser taking into account weather and soil conditions;

(c) Matching soil testing results to plant requirements;

(d) Split fertiliser application;

(e) Using most suitable types of fertiliser for crops;

(f) Applying fertiliser only where it is required, follow instructions for application, avoid waterways;

(g) Avoid broadcast fertiliser application where it can be:

i. Designed and Development of Single Bed Broadcast machine;

(h) As much harvestable crop as possible is removed - optimum crop health leads to maximum crop removal;

(i) Fertiliser to be stored and loaded to avoid spillages into waterbodies or transfer into waterbodies;

(j) Fertiliser and Environmental plans receive annual audits; and

(k) Yearly calibration of fertiliser spreading equipment.

60. GMP water and irrigation:

(a) Yearly calibration of irrigators application rates and uniformity checked;

(b) Water usage is metered;

(c) Plan irrigator requirements for both short term and long-term use;

(d) On site soil moisture monitoring is conducted on crops that require 'wet' soils;

(e) Irrigation scheduling is tied in the soil moisture monitoring;

(f) Irrigation is applied to maintain soil moisture between wilting point and field capacity where possible;

(g) Irrigation applied allows achievement of the yield target for fertiliser applied; and

(h) Non-irrigation water is used efficiently (eg wash water).

61. GMP other:

(a) Maintain records of activities and applications undertake o Development of proprietary farm management software to enable data capture and reporting www.hortrac.com;

(b) Provide training to all operators: Soil testing, irrigation, and fertiliser equipment:

i. Code of Best Practice established, and all operators trained;

(c) Planting catch crops in between vegetable rotations:

i. Rye Grass used as Nitrate Catch Crop in between cash crops;

ii. Mazie used as Nitrate scavenger crop on some paddocks over summer:

(d) Develop short and long term environmental objectives:

(e) Develop a FEP for every paddock:

(f) Undertake community and stakeholder engagement;

i. Meetings conducted with WECA, MTA, Raukawa, Otaki Porirua Trust Board, Horowhenua District Council, Horizons Regional Council, MfE and MPI; and

ii. Formation of Arawhata Wetland Alliance alongside WECA, HDC and MTA to promote and lobby for the re-establishment for the Arawhata Swamp;

(g) Advocated for Arawhata Wetland to Minister David Parker and under wrote $1.2 million local seed funding to ensure application for funding could be put forward to government;

(h) Retire or actively manage marginal land to ensure soil conservation measures are in place (including organic manures):

i. approximately 25% of land not included in cropping system;

ii. On-farm mahinga kai values have been identified;

iii. FEP identifies areas of cultural and environmental significance;

(i) Mahinga kai values are considered when implementing other environmental actions (eg. Riparian areas):

i. Full riparian planting of total length of Kuku stream in Woodhaven owned and leased land;

ii. Planting of 20000 other native plants across Horowhenua Fresh Water Management Unit;

(j) Native vegetation and/or habitats are protected by:

i. Native forest gifted to QE Trust; and

ii. Wetland restoration on Hokio Sands Road property.

62. Other BMP/Systems Change:

(a) Retirement of 2/13 of all beds for control traffic tram ways. No fertiliser on this land, ever. Totals 18% reduction in productive land across the farm;

(b) Quick N bests prior to all Nitrogen Applications;

(c) Additional grass buffers alongside parallel drains;

(d) Class leading precision agriculture including in soil incorporation of all starter fertilizer, weight cell vicons, full

GPS of all production tractors, design and development of single bed broadcast machinery;

(e) Rumble strips, in paddock wash down systems and road sweepers to keep sediment away from roads and drains;

(f) All fertilizer budgets and applications pair reviewed by trained team of agronomists;

(g) 40ha of Pines planted on marginal land as start of carbon offset. Study completed with Massey Uni to establish carbon footprint;

(h) Additional Quick N Tests before and After Crop in WMSZ's;

(i) 40ha of land in low Fert Maize to "Scavenge" for Nitrate below the vegetable root zone;

(j) 18% of land in no fertiliser, Rye Grass at some point during the year;

(k) Installation of 240 solar panels to power cool stores and packhouses;

(l) Installation of land base wash water discharge capture system to ensure no wash water is lost off farm and can be returned to the aquifer via recharge;

(m) Use of compost, humates and other organic sources of fertility to optimise synthetic fertiliser use; and

(n) Development of digital decision support tools to support agronomy decisions.

63. Alongside the above practices, Woodhaven Gardens supports growing in accordance with peer-review nitrogen budgets. This provides a good starting point for assessing actual application rates used during an annual audit, however it should be noted that the budgets themselves are guidelines and are not prescriptive.

64. It is Woodhaven Gardens position that budgets are established for every planting of every crop throughout the year, are fair and accurate most of the time. However there can be times, especially

in winter and spring, where nitrogen losses through volatilization, denitrification and leaching may be higher than anticipated.

65. There is a need for flexibility to allow for times, especially in winter and Spring, growers will need to exceed the budget guideline applications in order to get a marketable crop. This is not consistent for any particular crops and may occur at different times of year depending on the climatic conditions.

66. Woodhaven Gardens emphasises that any audit process reviewing application rates needs to consider the observed Quick N test results, climate data, and provide a sensible degree of tolerance when comparing actual application rates to the established budgets. Growers should be able to exceed the budget application rates from time to time, but these instances should be accompanied with evidence of why the budget guidelines were exceeded as part of the annual audit process. The planned and actual application rates should be signed off by a trained independent agronomist as part of the annual audit process.

67. The cost of implementing Woodhaven Gardens GMP/BMP and Systems Change program is approximately $2million per year ongoing of OPEX and $10million in CAPEX. These costs exclude depreciation and interest which the business also must incur to maintain its GMP/BMP and Systems Change practices.

68. Woodhaven Gardens is very aware that its ability to sustain this economic impact inside the target WMSZ's is because approximately 5/6th's of its land is outside the target WMSZs and does not require a consent. Many of these mitigations are not able to be expressed in models such as Overseer. For example, practices like controlled traffic farming that improve soil health and microbiology or minimum tillage through winter mulching rather than crop incorporation, will reduce leaching but cannot currently be modelled in Overseer.

The effects of GMP/BMP and Systems Change on Production

69. Included in the costs of implementing Woodhaven Gardens system of GMP/BMP and System Changes is the leasing of additional land to replace land retired from active production. Although

Woodhaven Gardens has generally retired lower yielding land as part of its GMP/BMP and systems change process, it has still resulted in loss of production per ha.

70. This includes land lost to grass buffers (6% of productive land), no crops in controlled traffic trams (18% of productive land) and land to grow maize and rye grass as a nitrogen scavenger crops (20% of productive land inside WMSZs). To maintain consistent food supply, jobs and other social/economic benefits, Woodhaven Gardens is replacing that lost production outside of the target WMSZs.

71. This has been inside the combined footprint of Woodhaven Gardens and the former Kapiti Green enterprises. This has been achievable due to Kapiti Green's decision to retrench the size of its broccoli program to optimise production around one harvesting team not two. This enabled Woodhaven to replace the production lost due its GMP/BMP and systems change implementation inside the former maximum land use area of Kapiti Green. Woodhaven stresses that this option may not be available to all growers, which may restrict their ability to implement all of Woodhaven's practices and remain economically viable.

Horizons Balance Farm Environment Supreme Award Winner 2020, Horticulture New Zealand Environment Award Winner 2021

72. Woodhaven Gardens commitment to community engagement, developing/sharing, improvement, management practices, reducing nutrient/sediment loss, and improving biodiversity was recognised in 2020 by becoming the first Commercial Vegetable enterprise to receive the Horizons Balance Farm Environment Supreme Award. In 2021 Woodhaven Gardens won the Horticulture New Zealand Environment Award, this was the first time the award had been won by a vegetable growing enterprise. These independent endorsements of the work undertaken by Woodhaven Gardens adds weight behind Woodhaven Gardens commitment to continue to improve its practices as science and farming systems develop.

CONSENTING

73. Overseer has many limitations as a nutrient leaching model for commercial vegetable growing. It lacks all crops grown in the region, is time consuming and expensive to use and does not account for all mitigations that growers may use to reduce nutrient losses. The system lends itself to stable pastoral or broadacre farming systems that do not have large degrees of variations in inputs required or outputs observed. The goal of a compliance tool should be to ensure that, on average, the elements of the cropping system within the control of the farmer are undertaken responsibly and are in line with the requirements of the crop.

74. The main role Overseer should play in commercial vegetable production is to support councils, and others, to estimate losses per ha of the overall rotation occurring across an FMU.

75. Overseer numbers should reflect long term averages and be based on the target yield the farm is aiming to grow to crop completion. Overseer should not be used to assess yearly actuals, as these can vary significantly. This view is supported by professional consultants such as AgriMagic and has been adopted for consenting purposes in the Canterbury region. This way, elements outside of the grower's control such as unexpected pest/disease, lack of market support or one off negative climatic event do not penalise the grower further by potentially putting them outside of a consenting requirement.

76. Woodhaven Gardens does not support the use of Overseer as a tool for demonstrating leaching amount above or below of the leaching rates described in Table 14.2. To complete 3 years of modelling of actuals and planned crops for just 1/6th of its total farming area, it cost Woodhaven Gardens approximately $100k in data capture, data processing, and consultancy fees.

77. Woodhaven Gardens' own modelling within Overseer shows reductions in nitrogen leaching ranging from at least 40% per ha within the target WMSZs. The total reduction may in fact be much larger due the fact some mitigations cannot be modelled within Overseer.

78. At a farm level, consenting should focus on adherence to Good Management Practices through regular independent audits using the NZ GAP EMS program. This will ensure that growers are still able to produce the important healthy food while ensuring environmental impacts are minimised. This will bring the Horizons region in line with the likes of Environment Canterbury, the proposed regulation from the National Party, and proposed amendments to the RMA that will require Regional Authorities to ensure the production of fresh vegetables is enabled.

Monitoring Compliance

79. As discussed above, Woodhaven Gardens does not support the use of Overseer for ongoing compliance with consents. Instead, annual independent audits should be undertaken to access the compliance of growers with GMP/BMP. Woodhaven Gardens supports the use of the Horticulture New Zealand NZGAP EMS for this process. The audit should include assessment of nutrient application rates being in line with recommend practice for the crops planted and the time of year. This assessment should be undertaken by an independent trained agronomist. Total actual nitrogen use should be in line with the budgeted plan, with allowances for exceptions where budgeted guidelines had to be exceeded due to climate, pests or disease, and can be evidenced by growers.

80. The auditor should set out areas of concern, corrective actions agreed and timeframes for implementation where growers are not currently meeting GMP/BMP. Woodhaven acknowledges the cost of implementation of the GMP/BMP practices above are large and therefore proposes timeframes for compliance that allow growers time to reinvest in their business to bring their growing systems up to standard.

CONSENTING LAND USE

Leased land

81. Leased land plays a hugely important role in Woodhaven Gardens and other grower's businesses. Although many of these leases are long term relationships, from time to time landowners will decide to reclaim the land to sell or use for other purposes. In the past 3 years

Woodhaven has lost approximately 160ha of leased land that it has had to replace. This highlights the importance of the consents issued being for the amount of crop grown and not for a specific land area or specific block of land. This gives growers the flexibility to move from block to block as leasing arrangements change.

82. The constraint to this is no additional intensive growing in the target WMSZs beyond the industry total resulting from PC2. Additional growing should be permitted outside of the target WMSZs to enable growth to meet demand for vegetables and to encourage growers to exchange leased-land with land away from the Target WMSZs, where possible, over time. For example, Woodhaven Gardens is actively trying to forgo production on non-irrigatable leased land inside the targeted WMSZs over time, as land and regulations allow.

Replacing lost production

83. It is important to highlight the need to enable the replacement of lost production inside the target WMSZs due to implementing GMP/BMP and systems change practices. As mentioned above, implementing GMP/BMP and systems change inside the target WMSZs has resulted in a large amount of lost production from that land. This lost production needs to be replaced outside of the target WMSZs over time and any planning regulations need to enable this.

84. This enables growers to sustain the total productivity from their businesses, ensures food supply remains and economic/social benefits are retained while decreasing leaching within the target WMSZs. This can be achieved by consenting the total production of crop inside and outside of the Target WMSZs pre-implementation of the GMP/BMP and systems change with conditions that restrict additional growing within the target WMSZ to the post PC2 consented levels but allow for freedom of rotation of total pre PC2 consented crop production outside the target WMSZs.

Rotation

85. Growers need to be able to rotate their crops across the FMU both from the practical perspective of replacing leased land that may be lost but also due to crop and soil health. Each crop will give and take from the health of the soil. Soil borne diseases/pests such as

clubroot and nematodes can leave paddocks unable to be cropped for years at a time for certain crops. To be able to protect their businesses and provide food security, growers need to be able to rotate on and off different paddocks. However, land in the same sub catchment may not always be available. Even though Vegetable production pays higher lease and purchase prices, finding landowners that are wanting to sell or lease their land is difficult. Therefore, growers need to be able to rotate across the FMU but should be limited by not increasing the total industry production levels inside the targets WMSZs. This means the consent needs to be attached to the activity and the business, not the land parcel. The importance of this can not be overstated.

FUTURE PLAN CHANGES

86. Additional plan changes are required to enable new growing to be permitted outside of the Target WMSZs to enable growth to meet future demand for vegetables and to provide a pathway for absorption where growers will pick up production that is being retired by other growers that are exiting the industry. A failure to provide for this creates a shrinking lid on vegetable production that will ultimately drive up the cost of healthy food to unsustainable levels for most New Zealanders.

OTHER

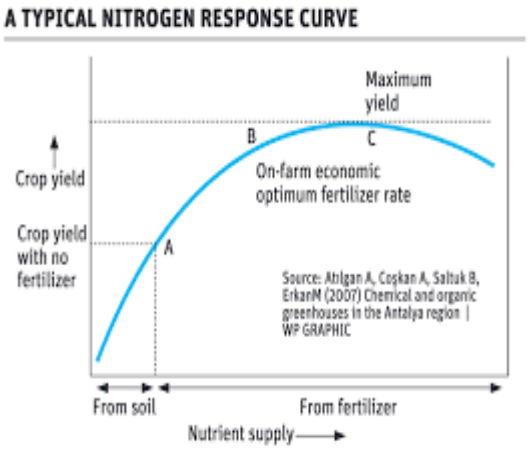
Nitrogen, Yield, Leaching

87. As described above nitrogen, phosphorus and other minerals are required by vegetables plants to grow. The relationship between soil Nitrogen concentrations and Yield is often described as a logarithmic curve where the x axis represents Nitrogen and the y axis represents Yield (see Fig 2). This description of Nitrogen and Yield is correct for many broadacre crops such as potatoes, maize and wheat, however, it is not at all an accurate reflection of the relation between Nitrogen and Yield in fresh cut green vegetable production. For the 23 vegetable crops grown by Woodhaven Gardens, the market provides a detailed product specification for the appearance, weight and size of each crop for it to be sold in the market.

88. This means that if a crop runs short of nitrogen and does not meet these product specifications then the Yield falls to zero. Correspondingly, if too much nitrogen is applied, the crops can become too soft, oversized, split and susceptible to pests and disease. Therefore, in the fresh cut vegetable sector, the relationship between Nitrogen and Yield becomes more of a flat bell curve shape (see Fig 3). Where Yield is zero until enough nitrogen is used to ensure the crop meets market specification, there is a small amount of room for Yield optimization and Yield will start to decrease through overuse.

89. This unique relationship between Nitrogen and Yield also plays out in terms of environmental risk. The maximum risk to the environment occurs when not enough Nitrogen is used, and the crop does not meet market specifications. This results in the entire crop being terminated, high crop residue levels, and high risk of Nitrogen leaching, all for no social or economic benefit as no crop is harvested. Therefore, it is extremely important that growers are given the flexibility to meet crop nitrogen demands to achieve market specification for their crops.

Fig 3.



COMMITMENT TO SCIENCE

90. Woodhaven Gardens has shown a large commitment to understanding the environmental effects of commercial vegetable growing and how they may best be mitigated. Alongside developing its own set of GMP/BMP and system change practices. Woodhaven Gardens has also played an active role in the Future

Proofing Vegetable Production study, the Massey University Lysimeter Trials, Massey University Carbon Loss Study and the SVS Tech Group. Woodhaven Gardens has also holds open days with other growers to share its knowledge and improve environmental outcomes across the region.

CONCLUSION

91. Woodhaven Gardens has provided a pathway that ensures the community of the Horowhenua can continue to enjoy the large social and economic benefits of commercial vegetable growing, the nation can continue to enjoy affordable access to healthy food, deliver improved food security and provide significant environmental improvements. Woodhaven Gardens remains adamant that any position that does not provide an achievable consenting pathway for commercial vegetable growing will result in large negative social and economic impacts for little to no environmental improvement. Woodhaven Gardens urges the Court and others to work with industry to provide pathways for environmental improvement while retaining a vibrant commercial vegetable growing industry in the Horowhenua.

John Joseph Clarke

13 October 2023

APPENDIX C - INDUSTRY STATEMENT MR TAPPIN

BEFORE THE ENVIRONMENT COURT	**ENV-2021-WLG-000020**
AT WELLINGTON	**ENV-2021-WLG-000021**
I MUA I TE KŌTI TAIAO	**ENV-2021-WLG-000022**
I TE WHANGANUI-Ā-TARA ROHE	**ENV-2021-WLG-000023**

IN THE MATTER	of the Resource Management Act 1991 (**RMA** or **the Act**)
AND	
IN THE MATTER	of appeals under Clause 14(1) of the First Schedule of the Act in relation to a decision of Manawatū-Whanganui Regional Council on Proposed Plan Change 2 to the Horizons One Plan
BETWEEN	**TE RUNANGA O RAUKAWA** **Appellant**
	ANDREW DAY **Appellant**
	WELLINGTON FISH AND GAME COUNCIL **Appellant**
	NGĀTI TURANGA **Appellant**
AND	**MANAWATŪ-WHANGANUI REGIONAL COUNCIL** **Respondent**

STATEMENT OF EVIDENCE OF ELLERY TAPPIN, MG MARKETING ON BEHALF OF HORTICULTURE NEW ZEALAND

13 OCTOBER 2023

HOLM | MAJUREY

Paul F Majurey/Nicole Buxeda
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EXECUTIVE SUMMARY

1. MG Marketing is a large aggregate-wholesaler specialising in the wholesale distribution of fresh produce through its national network.

2. Green vegetable production is one of the most important horticultural industries in New Zealand, allowing our population to access fresh, healthy food.

3. Horowhenua horticultural production plays a key role, supplying a range of fresh produce for the domestic market. Horowhenua supplies a significant volume of fresh greens to MG Marketing that is distributed throughout the country.

4. Fresh produce is seasonal, and pricing is driven by supply and demand. Weather events and other events that impact production of a marketable yield can cause a reduction in supply and an increase of price.

5. Geographic diversity is important for ensuring ongoing supply of fresh produce through weather events. Having a large number of growers and areas that crops are grown is important for risk managing supply disruptions.

INTRODUCTION

Qualifications and experience

1. My name is Ellery Tappin, General Manager Communications and Sustainability at Market Gardeners Ltd (**MG Group**).

Involvement in PC2

2. The MG Group is providing evidence of the fresh produce market and Horowhenua / Horizons role in the national food network.

Scope of evidence

3. The scope of the evidence includes information outlining the significance of vegetables grown commercially in the Horowhenua / Horizons region to the national food supply, affordability and food security in New Zealand.

MG GROUP

4. Established in 1923, Market Gardeners Limited, trading as the MG Group (**MG**), is a grower co-operative and leading fresh produce supplier, servicing the entire market with a full range of fruit and vegetables through a network of 11 branches (including two virtual branches).

5. MG plays a key role in New Zealanders accessing fresh produce through partnering with local and international growers, along with retail and food service customers.

6. MG also owns, or has a stake in, a number of complementary businesses including IP, exporting, flower auctioning and growing.

7. Over 380 people are employed in the market operation with over 1,000 across the wider MG Group.

THE ROLE OF HOROWHENUA IN COMMERCIAL VEGETABLE SUPPLY

8. Green vegetable production is one of the most important horticultural industries in New Zealand, allowing our population to access fresh, healthy food.

9. Growers in the Horowhenua / Horizons region produce a wide range of vegetable crops on a commercial scale to meet market demands.

10. Over 97 percent of all fresh vegetables sold through MG are grown in New Zealand.

11. The geographical spread of vegetable grower allows New Zealand growers to maintain near year-round supply, with the Horowhenua / Horizons region playing a significant role in the national supply.

12. Green vegetables represent MG's largest domestic category both in regard to volume and sales.

13. The range of green vegetables grown in the Horowhenua / Horizons region is diverse, with more than 35 individual vegetable commodities contributing to the overall green vegetable category.

14. The Horowhenua / Horizons region represents MG's largest supply base for green vegetables, with product from this region supplied to the entire MG network throughout the country.

15. While most product from the Horowhenua / Horizons region is sourced from large commercial growing operations, MG (a co-operative) also gets supply from smaller (fewer than 20 hectares) growing operations.

16. Based on the 2022-2023 year:

    (a) MG's estimated share of the entire New Zealand green vegetable category is 46 percent;

    (b) 31 percent of green vegetables sold through MG are sourced from commercial growers in the Horowhenua / Horizons region.

17. The produce market is driven by supply and demand, therefore the fewer green vegetables in the market, the higher the price. Restricting supply from any one region, particularly a region supplying large quantities of green vegetables, has a significant impact on the cost for New Zealand families.

18. Geographic spread of vegetable growers distributes the risk from extreme weather events, as was highlighted by the devastating

weather events impacting Auckland, Pukekohe, Hawke's Bay and Gisborne during 2023. During this period, the Horowhenua / Horizons region played a crucial role in New Zealand's food security, filling gaps in the market and ensuring access to fresh vegetables was maintained.

Ellery Tappin

13 October 2023