BEFORE THE HEARING COMMISSIONERS APPOINTED BY WAIKATO REGIONAL COUNCIL

IN THE MATTER	of the Resource Management Act 1991 ("**the Act**")
AND	
IN THE MATTER	of the hearing of submissions on The Proposed Waikato Regional Plan Change 1 – Waikato and Waipa River Catchments

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INDUSTRY STATEMENT OF LUCY CLARKE DEVERALL

FOR HORTICULTURE NEW ZEALAND

15 FEBRUARY 2019

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SUMMARY

1. The overall position of Horticulture New Zealand (**HortNZ**) on Plan Change 1 (**PC1**) is set out in the following paragraphs.

2. HortNZ supports the need to improve water quality generally and does not propose changes to timeframes for achieving objectives, or changes to the proposed water quality states.

3. HortNZ believes that PC1 as proposed does not adequately provide for commercial vegetable production. Although HortNZ was involved in the Collaborative Stakeholder Group, finding consensus within the group on appropriate regulatory objectives, policies and methods proved difficult during this process. It has since become evident that key aspects of the proposed framework fundamentally conflict with good horticultural practice.

4. The PC1 framework goes some way in recognising the importance of commercial vegetable production. However, HortNZ believes greater emphasis is required in the values and objectives to better reflect and support the wider planning framework. In particular, specific reference should be given to the commercial vegetable systems around Pukekohe and Pukekawa given the prominent role of these areas in New Zealand's domestic food supply chain. This is discussed further in the evidence of Mr Keenan, Mr Hodgson and Mr Ford.

5. HortNZ supports the controlled activity status for existing commercial vegetable production activities

6. HortNZ seeks provision for limited new commercial vegetable production where it can be proven that effects are lesser than, or equal to, those of the previous activity. HortNZ seeks that this be provided for either as a restricted discretionary or discretionary activity.

7. HortNZ opposes the emphasis placed on nitrogen as a proxy for intensification and note the s42A report recognises the PC1 framework takes an unnecessary scrutiny on nitrogen. HortNZ believes that a more balanced, multi-contaminant approach will be more effective in achieving water quality targets.

8. HortNZ believes that use of catchment collectives to manage sub-catchment contaminant loads is an effective and efficient means of meeting proposed water quality targets and achieving the Vision and Strategy.

INTRODUCTION

Qualifications and experience

9. My name is Lucy Clarke Deverall. I am the Environmental Policy Advisor – North Island, with Horticulture New Zealand (**HortNZ**). I manage HortNZ's involvement in North Island regional and district planning processes in regions where fruit and vegetables are grown commercially. I have been in this role since September 2017.

10. I hold a Bachelor in Sociology and Political Studies (2005) and a Master in Planning Practice (2007) from the University of Auckland. I am an intermediate member of the New Zealand Planning Institute (NZPI). I have eight years planning experience. During this time, I have performed the functions of a local authority planner and policy advisor and a consultant planner in various locations in New Zealand.

11. My planning experience includes preparation and analysis of land use and subdivision consent applications and presenting technical hearing evidence for both private clients and local authorities. It also includes preparation of submissions and appeals and participation in Environment Court mediations on regional and district planning matters.

12. Since beginning my role at HortNZ, I have visited growers across the North Island, including Waikato Region, to better understand their horticultural operations and how resource management issues impact them.

Purpose and scope of evidence

13. This evidence provides a statement about horticulture in the Waikato Region and how the Proposed Plan Change 1 will affect those operations.

14. This statement covers:

    (a) Background information about HortNZ;

    (b) Horticulture in the Waikato Region;

    (c) Key components of successful horticulture;

    (d) Key submission points including:

        - A separate pathway for commercial vegetable production

- A multi-contaminant approach
- Sub-catchment load limits and the catchment collective approach.

15. While I am a qualified Planner and member of NZPI, I am not appearing in the capacity of an expert planner to this hearing panel. My role in this hearing is as the submitter's (HortNZ's) representative and advocate.

16. This statement provides the context for the key issues raised in HortNZ's submission and outlined in the expert evidence. This statement expands on the horticultural perspective to those issues to assist the Hearing Panel's understanding of what horticulture in Waikato needs to be successful and thrive.

17. HortNZ's position has been informed by our involvement through the Collaborative Stakeholder Group process, guidance provided by Jacobs and The Agribusiness Group in work commissioned by HortNZ and consultation with industry members, including meetings and workshops held across the Waikato and Waipa River Catchments to better understand the implications to the local area and to explain the process to industry members.

18. This statement addresses a range of issues, in a high-level manner, that are relevant to HortNZ's submission. This approach reflects the high-level analysis provided in the s42A report and the structure of the hearings process generally.

19. We have had difficulty in responding to the s42A report which has separated out objectives from methods, including policies and rules. HortNZ's key submission points present a package of mechanisms to provide an alternative pathway for commercial vegetable production, which better relates to horticultural operation. These submission points are inter-related and in separating out objectives and methods, HortNZ's submission has been taken out of context by the s42A report

20. HortNZ's overall position on PC1 is set out in the first section of my evidence.

BACKGROUND TO HORTICULTURE NEW ZEALAND

21. HortNZ was established on 1 December 2005, combining the New Zealand Vegetable and Potato Growers' and New Zealand Fruitgrowers' and New Zealand Berryfruit Growers Federations.

22. On behalf of all active growers HortNZ takes a detailed involvement in resource management planning processes as part of its national environmental policy. HortNZ works to raise growers' awareness of

the RMA to ensure effective grower involvement under the Act, whether in the planning process or through resource consent applications. The principles that HortNZ considers in assessing the implementation of the RMA include:

(a) The effects based purpose of the Act;

(b) Non-regulatory methods should be employed by councils;

(c) Regulation should impact fairly on the whole community, make sense in practice, and be developed in full consultation with those affected by it;

(d) Early consultation of land users in plan preparation;

(e) Ensuring that RMA plans work in the growers interests both in an environmental and economic production sense.

23. HortNZ manages issues that cover and affect the whole horticulture industry (excluding winegrowers and winemakers). Many of the issues are common between plans, so HortNZ provides input to policy at the national level, as well as regional and district policy processes.

24. HortNZ also undertakes work in partnership with product-specific horticultural groups aimed at developing and increasing grower awareness of environmental good and best management practice. HortNZ's website is a library resource for the many guidance documents, Codes of Practice, discussion documents and submissions that HortNZ has generated or contributed to.

25. The sector represents 5,000 growers producing around 110 crops (focused on producing food for people). Approximately, $3.44 billion is generated in export revenue annually and $2.23 billion in domestic revenue (both excluding viticulture). Over 60,000 people are employed in the industry.

26. HortNZ as the industry body is committed to continuous environmental improvement and has invested significant resource on good management practices and the development of industry guidance and codes of practice including:

- Erosion and Sediment Control Guidelines for Vegetable Production[1]

[1] http://www.hortnz.co.nz/assets/Natural-Resources-Documents/ES-Control-Guidelines-1-1.pdf

- Vegetable Washwater Discharge Code of Practice[2]
- Code of Practice for Nutrient Management 2014[3]
- A Growers' Guide to The Management of Greenhouse Nutrient Discharges June 2007[4].

27. HortNZ supports the adoption of Independently Audited Self-Management (IASM) schemes to enable growers to meet Good Agricultural Practice (GAP)[5] standards for the management of environmental issues relevant to regional council in New Zealand.

28. HortNZ is the umbrella organisation for 22 separate product groups covering 110 crops that are outlined in the Commodity Levies (Vegetables and Fruit) Order 2007. Product groups are also levy collecting organisations working on sector specific matters in collaboration with HortNZ.

HORTICULTURE IN THE WAIKATO REGION

The current state

29. HortNZ's submission to Variation 1 of PC1 detailed the broad extent of produce grown in the Waikato Region. The most prominent fruit and vegetables include:

- Potatoes
- Onions
- Carrots
- Asparagus
- Tomatoes (indoor)
- Brassicas (broccoli, cauliflower and cabbage)
- Kiwifruit
- Berryfruit

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[2] http://www.hortnz.co.nz/assets/Natural-Resources-Documents/VegetableWashwaterDischargeCOP.pdf

[3] http://www.hortnz.co.nz/assets/Uploads/Code-of-Practice-for-Nutrient-Management-v-1-0-29-Aug-2014.pdf

[4] http://www.hortnz.co.nz/assets/Uploads/A-Guide-to-Managing-GH-Nutrient Dischargesfinal.pdf

[5] https://www.newzealandgap.co.nz/

- Apples

30. As set out below, the Waikato Region plays an important role in local and national food supply. This is due to a unique supply of high class soil (Land Use Capability 1 – 3, noting soil quality is only relevant for outdoor horticulture), large areas of unfragmented rural land and proximity to markets and key transport routes, including export ports in Auckland and Bay of Plenty.

31. The lower Waikato Catchment has a high concentration of these prime growing factors and as such this is where the majority of Waikato's horticulture is located, particularly outdoor commercial vegetable production. Overall though, the outdoor commercial vegetable sector only accounts for 0.6% of land area in the Waikato, as it relates to PC1 (encompassing both Waikato and Waipa River Catchments).

32. Changes in local government planning in Auckland and Waikato (described below) and improved transport infrastructure have seen an increase of commercial vegetable production in other areas of the Waikato region such as Matamata-Piako District.

33. Overall, the horticultural industry contributes a range of social, economic and environmental benefits to the Waikato Region:

(a) Social value:

Broccoli, carrots, onions, potatoes and tomatoes (fresh and chilled) are an important food source for New Zealander's. In 2017, these were all in the top 10 vegetables for consumer spend[6].As outlined above and in HortNZ's submissions, these are prominent produce types grown in the Waikato Region. In particular, the region contributes significantly to the domestic supply of onions (32%), tomatoes (28%) and potatoes (19%).

At a local level, the horticultural industry provides much needed employment opportunities. The onion industry employs 1,500 people nationally. In 2016, 67% of onions (domestic and export) was produced in the Franklin/Waikato area, indicating the majority of employment would be based in these areas. The kiwifruit industry employs approximately 355 seasonal staff over 556ha.

[6] Fresh facts, 2017 http://www.freshfacts.co.nz/files/freshfacts-2017.pdf

(b) Economic value:

The horticultural industry contributes significantly to the local economy. In 2017, the onion industry generated $29 million revenue in Waikato, accounting for 19% of the contribution of onions to the overall national revenue. In 2017, the Waikato kiwifruit industry generated $46 million to regional GDP.

(c) Environmental value:

The Codes of Practice developed and supported by HortNZ are grounded on scientific research and are developed with the purpose of improving environmental outputs and efficiencies in practice. This is discussed briefly further in this statement and will be discussed in more detail further in later hearings. The continued adoption of good management practice by the Waikato horticulture industry will assist in managing and, in some cases, enhancing environmental outcomes.

Many growers also undertake ecological restoration projects on their sites, not just to mitigate environmental impacts, but because of their strong association with the land upon which they operate. Similarly, many growers have invested significantly in technology to improve power and fuel efficiency. These efforts contribute to achieving higher-order national targets around carbon emissions. More detail on grower efforts will be provided later in the hearings process.

DOMESTIC FOOD SECURITY

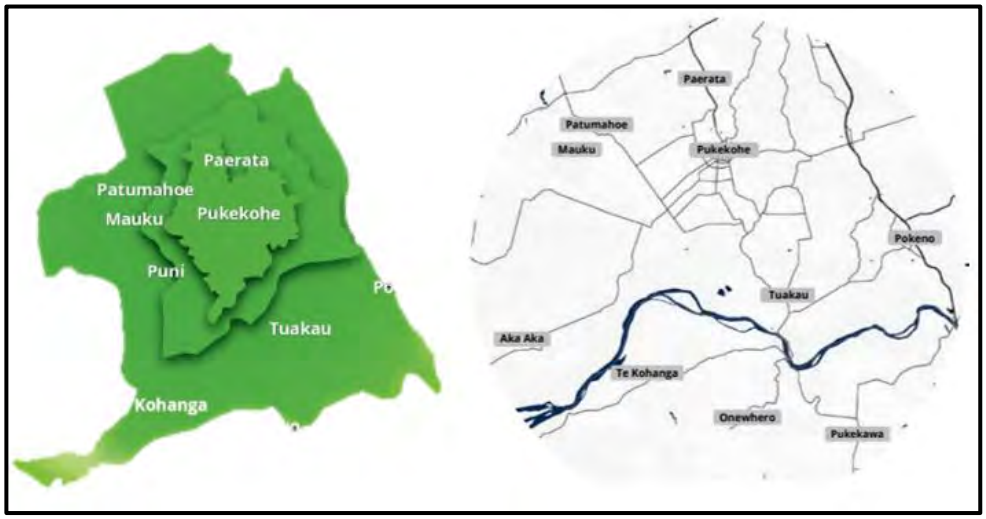
Food security and the role for Waikato Region

34. In 2018, HortNZ commissioned an analysis of the horticulture sector in Pukekohe, one of New Zealand's most prominent growing areas[7]. The purpose of the analysis was to understand the social, environmental and economic, values and constraints, provided and faced by, the local industry.

35. The report identified the horticultural 'Pukekohe Hub' area to include a significant portion of the northern Waikato region including, Tuakau, Pokeno, Aka Aka, Te Kohanga, Onewhero and Pukekawa.

[7] http://www.hortnz.co.nz/assets/Deloitte/New-Zealands-food-story-The-Pukekohe-hub.pdf

Figure 1 – The Pukekohe Hub[8]



36. Key findings of the report show that:

- With an area of 4,359ha, the hub is only 3.8% of New Zealand's total fruit and vegetable growing area. But contributes to 26% of the value earned from national production of vegetables and some fruit.
- 90% of the produce grown in the hub is for the domestic market.
- The hub contributes significantly to the vitality of local communities through social contributions to community groups and cultural diversity.
- The hub contributes $261million to GDP and employs 3,090 full time equivalents.
- Due to good growing conditions there are times of the year when the hub supplies the whole of New Zealand for certain produce, namely carrots and potatoes. It is also able to produce year-round supplies of leafy greens.
- Between 2002 – 2016 there has been a 30% reduction in vegetable cropping land across New Zealand.

37. Failure to adequately provide for continued operation and on-going development of horticulture in the hub, will impact the ability to meet future demand for fresh fruit and vegetables. In the next 25 years, the analysis predicted:

[8] Ibid.

- a reduction in production of fruit and vegetables of between 46% - 55%
- price increases between 43% - 58%
- Up to 4,500 job losses
- An economic loss between $850 million and $1.1 billion.

38. As set out in the HortNZ submission to Variation 1 of PC1, New Zealand's domestic food supply is under mounting pressure, such as changing market demands (both in relation to the quality and provenance and types of crops); increased competition for land, water and infrastructure; climatic factors and adaptation to climate change; challenges faced by the unintended consequences of regulations on water quality and use. This pressure on horticulture production results in impacts on the consumer as prices increase as a result of these pressures on production.

39. Overtime, changes to land use in Auckland have seen some of the country's most highly productive land lost to urbanisation. Similarly, the land use restrictions presented through PC1 are already severely restricting horticultural activities in the Waikato and Waipa River Catchments (discussed further in this statement). Proposed changes in the Waikato District Plan will see further loss of high class soil to urbanisation around Tuakau and a rule framework that will restrict the development and operation of horticulture[9].

40. Given the findings from the above analysis, the cumulative effects of these changes will have significant consequences on New Zealand's domestic food supply.

41. This is a relevant issue as already New Zealanders, particularly vulnerable communities, are struggling to meet the recommended daily intake of 3 plus vegetables and 2 plus fruit a day. In 2016/2017, only 38.8 percent of New Zealand adults and 51 percent of children met the recommended daily fruit and vegetable intake[10]. Those living in the most deprived neighbourhoods were less likely to meet the recommended intakes and were more likely to be obese[11]. A

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[9] Submissions on the Proposed Waikato District Plan closed October 2018. Further submissions are anticipated to be notified early 2019.

[10] https://minhealthnz.shinyapps.io/nz-health-survey-2016-17-annual-data-explorer/_w_e9a07e83/_w_aa03fb73/_w_320818d4/_w_26fa6ce8/_w_f50ad45f/#!/explore-indicators

[11] Ibid

2008/2009 study showed that "Maori females were significantly less likely to meet" the required intake than non-Maori females[12].

42. These statistics are also relevant to the local Waikato community. Waikato is the second fastest growing region in New Zealand, seeing a 2.4% increase in population growth in 2016/2017 compared to Auckland's 2.6%[13]. It has a much higher Maori population than the national average (22.9% compared to 15.8%) and has more people in the most deprived population (25% in Quintile 5 – most deprived and 24% in Quintile 4) compared to the national average (20% respectively)[14]. In 2013/2014, Waikato had the highest proportion of obese adults in New Zealand (34.4%)[15].

43. Additionally, in response to increasing pressure for resources (land, water and infrastructure) in Waikato, some large-scale Waikato vegetable growers have begun looking outside the region for new growing locations. There are examples of Waikato-based growers cropping in the Far North and transporting produce for processing back to Waikato or Auckland. The on-going relocation of commercial vegetable cropping from the Waikato region will have adverse impacts on employment and revenue contributions provided by the industry to local communities.

44. Cropping in Northland is less preferable due to increased costs of transportation and difficulties in access a regular and skilled local labour supply. The different climate also impacts soil health and yield. It is inevitable that increased costs will ultimately be reflected in prices of fresh vegetables. Where costs cannot be transferred to the consumer, the horticultural activity becomes less profitable and may also result in diminished cropping and therefore diminished supply which in turn affects price.

45. In conclusion, it is the view of HortNZ that there is a fundamental need to support the long-term, sustainable growth of the horticulture industry in the Waikato region. Planning decisions made in the PC1 hearings process must, therefore, be seen in the context of the impact such decision have on the local and national food supply, in particular of commercial vegetables.

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[12] https://www.health.govt.nz/publication/focus-maori-nutrition

[13] https://www.stats.govt.nz/tereo/news/population-growth-fastest-in-northland-auckland-and-waikato

[14] https://www.health.govt.nz/new-zealand-health-system/my-dhb/waikato-dhb/population-waikato-dhb

[15] http://socialreport.msd.govt.nz/health/obesity.html#regional-differences

Investigations on a National Policy Statement

46. In recognition of the pressures facing rural production land and implications on domestic food supply, Environment Minister David Parker has instructed the Ministry for the Environment and Ministry for Primary Industries to investigate a National Policy Statement (NPS) for Versatile Land and High Class Soils. Following this, a series of regional workshops and stakeholder meetings have been held, of which HortNZ has been an active participant.

47. Council's and decision-makers will be required to consider the objectives and policies of this NPS alongside those of existing NPS's on urban development and freshwater management. The NPS will elevate the importance of high quality rural production land, such as that found in Waikato, at a national, regional and local level.

KEY COMPONENTS OF SUCCESSFUL HORTICULTURE:

48. There are a number of factors that contribute to land being suitable for horticulture. These include:

- Soil quality
- Access to water
- The right climate – temperature, sunshine hours, rainfall, wind
- Proximity to reliable transport routes, to markets and to labour.

49. The Waikato Region provides a high concentration of all of these factors, making it one of New Zealand's biggest horticultural regions. In addition to these factors, the practices of a horticultural operation are also fundamental to ensuring high quality, high yield supply of fresh fruit and vegetables. In particular:

- The efficient use of nutrients to manage plant and soil health
- The application of Good Management Practices

50. Below is a brief overview of the role that these factors play in successful horticultural operations. While decisions made in PC1 impact on wider sector operations, including on such matters as proximity to transport, markets and labour, I do not cover them here. We will return to these in future hearings when we discuss more the detail behind our proposed regime for commercial vegetable production.

Soil quality

51. New Zealand's different soil types are classified based on Land Use Capability (LUC), a pastoral-based system. Typically, outdoor horticulture is best suited to land classified LUC 1-4, with outdoor commercial vegetable production being best suited to LUC 1-2. This type of land is in short supply, with LUC 1 – 2 representing only 5% of New Zealand's landmass and LUC 1 – 3 representing 14%[16].

52. The classification and quality of soil has a significant impact on the efficiency of outdoor commercial vegetable operations. Good quality soils assist in production of high quality, high yield produce. Soil quality helps manage the uptake and release of nutrients and water for plants. Compared to poorer quality soils, good quality soils enable higher volumes of production with a smaller footprint, both physically, in land area, and environmentally, in terms of loss of nutrients (Jacobs, 2018).

53. Crop rotation is a critical practice in outdoor commercial vegetable production, to maintain soil and plant health. Soil-borne diseases are common where vegetables are grown in the same location continuously. These diseases can reduce the yield, shorten storage life or often render crops completely unsaleable.

54. Given the rotational requirements, lease and land swap arrangements are common in outdoor commercial vegetable production to enable land to be rested and rotated through the system.

55. Typical crop requirements are[17]:

- Potatoes: 1 crop then it can't be grown in the same location for 6 to 8yrs
- Brassicas: 1 (or 2) crops then it can't be grown in the same location for 3 to 4yrs
- Onions: 3 crops then it can't be grown in the same location for 8 to 10+yrs.

56. New leased or swapped land needs to have good quality, deep, free draining soils which haven't previously been used for the same crop

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[16] Fiona Curran-Cournane, Melaine Vaughan, Ali Memon, Craig Fredrickson '*Trade-offs between high class land and development:Recent and future pressures on Auckland's valuable soil resources'* 2014 https://ac.els-cdn.com/S0264837714000489/1-s2.0-S0264837714000489-main.pdf?_tid=5b7e5b49-7e73-495c-8ec3-369768f8c264&acdnat=1549862995_9760292b4378403cd35bfc49fb0434c3

[17] This will vary depending on the grower and location

(within the period above). A visual snapshot of a typical crop rotation over a four-year period was provided in Appendix 5 of the submission to Variation 1 of the Plan Change.

Access to water

57. Reliable access to good quality water is another critical component for successful horticulture. Similar to soil quality, water has an even more vital role in the quality and yield of produce. Water is not only critical to nourish and grow the plant. It also assists in managing uptake of nutrients.

58. For instance, too much water could result in higher discharge rates due to soil disturbance and as the plant has not had time to absorb nutrients. Too little water can also result in higher discharge rates as wilted plants have difficulty absorbing nutrients. Low water supply can also result in a reduction in yield, which then results in a reduced nutrient uptake also.

59. This is particularly an issue in Waikato Region where access to water has been severely restricted following Variation 6 (operative April 2012) and the granting of the Watercare consent (2017) to take 200,000 m^3 per day (totalling 350,000m^3 per day) from the Waikato River for Auckland's municipal supply.

60. The impacts of water on nutrient uptake and implications of Variation 6 are discussed at length in the Jacobs 2017 report, attached to HortNZ's submission.

61. Water quality is important to prevent disease and support high yields. Recent changes to New Zealand's Food Act also have implications on water quality for irrigation and vegetable washing to protect human health.

Use of nutrients

62. It is acknowledged that the management of nitrogen is being dealt with further in the hearings process. However, below is a brief explanation to demonstrate why nutrients are used and why efficient management of nutrients is critical to successful horticulture.

63. Nutrients are critical to plant growth. This includes nitrogen which is also one of the essential nutrients humans obtain from eating fruit and vegetables.

64. Plants take nutrients from the soil. Once a crop is rotated, if the next crop on that land requires more nutrients that what is left in the soil, nutrients will need to be replaced to grow that next crop.

65. Growers use a range of methods to replace nutrients removed by harvested crops in order to maintain sufficient nutrients within soils to grow another crop, these methods include:

- Vegetable rotations, which include incorporation of plant residues from the proceeding crop and can include cover crops that fix nitrogen.
- Arable rotations, some vegetable crops rotate with pasture and utilise the nutrients left in soils from animals that have previously grazed the pasture.
- Synthetic fertiliser
- Organic fertiliser

66. Synthetic fertilisers enable growers to more accurately match the nutrient needs of the crop with the nutrients available in soils at the time of planting.

67. Regardless of how nutrients are replaced in the soil, where there are more nutrients in the soil than plants can take up, there is a risk that water stress could result in higher rates of nutrient discharge. HortNZ has developed the Code of Practice for Nutrient Management which assists growers is managing these risks and potential environmental effects.

68. This code applies a risk based approach to managing nutrients and includes a range of methods that reduce the amount of nitrogen lost and maximise the amount of nitrogen taken up in our food.

69. This code of practice and the relevant methods will be discussed in more detail further in the hearings process.

Good management practice

70. It is acknowledged that good management practice is not being dealt with in detail in this block of hearings. However, HortNZ believes good management practice is critical to successful horticultural operation.

71. Paragraph 146 of the section 42A report notes that there is lack of consensus within, and between, farming sectors as to what constitutes good management practice. However, generally, horticulture is a unique farming system which is very different from other farming sectors. Therefore, HortNZ is able to clearly identify what constitutes good management practice for its sector.

72. As mentioned, HortNZ has invested in scientific research to support the development of a range of Codes of Practices which are specific to the needs of the horticultural sector.

73. These Codes of Practice have industry recognition and have been adopted into the regulatory framework by a number of Council's including the Auckland Unitary Plan, Southland Regional Water and Land Plan 2018, and Bay of Plenty Regional Council Plan Change 9 to the Land and Water Plan.

74. As well, the Codes of Practice are applied by New Zealand Good Agricultural Practice (NZGAP). NZGAP is a certification body that is part of a network of Good Agricultural Practice (GAP) programmes around the world. NZGAP standards are best practice, relevant and internationally recognised.

75. NZGAP certification identifies the growers who have been audited and can prove they meet the requirements of the Food Act, the Health & Safety at Work Act and other market-driven standards that are essential for international trading.

76. HortNZ will present detailed expert evidence on these matters in the relevant hearing blocks.

KEY SUBMISSION POINTS

A separate pathway for commercial vegetable production

77. HortNZ believes the overall framework of PC1 does not allow for the efficient operation of commercial vegetable production. HortNZ has proposed a package of mechanisms which better provides for the unique farming system of commercial vegetable production, while still achieving the targets proposed in Table 3.11 and aligning with the Vision and Strategy. It is important to reiterate that this is a package in that the mechanism proposed cannot be uncoupled or 'cherry picked' as they are inextricably linked.

78. Key mechanisms can be summarised to include:

- A proxy farming system to manage new and existing commercial vegetable production
- Restricted discretionary or discretionary activity status for new commercial vegetable production
- Sub-catchment load limits managed through catchment collectives to achieve PC1 proposed short-term targets
- Allowing proven mechanisms to effectively manage commercial vegetable production (such as Industry approved Codes of Practice and NZGAP).

79. The s42A report and general hearings process for PC1 is structured in a way that separates out objectives from methods (including

policies and rules). This takes the core components of our submission out of context as many of the mechanisms proposed are interdependent.

80. HortNZ believes this alternative pathway is necessary to sustain commercial vegetable production in this region. The unique farming system for horticulture is outlined in paragraphs 40-68 above. As discussed, cropping rotations are critical to maintaining soil and plant health and horticulture is largely restricted in where it can effectively operate due to a reliance on soil types which are limited in availability.

81. As mentioned, the majority of growers rely on leasing land in order to rotate crops. There is the potential for the proposed rule framework in PC1 to have negative implications on these contractual agreements.

82. Land leased for commercial vegetable growing has increased in value due to the associated Nitrogen Reference Point (NRP). Under PC1, the rights to the NRP are given to the landowner through a landuse consent. Although the framework intends to enable movement of existing growers, some lease contracts are stipulating that the NRP remain with the landowner following lease expiry. This causes complications for the lessee grower when trying to calculate NRP on new area of land.

83. Similarly, there are complications for other farming activities when a commercial vegetable activity moves off the land. If another farming type is to be established, such as sheep and beef, it is unclear how the NRP is calculated if the land was in commercial vegetable production during 2014 – 2016.

84. Furthermore, mitigations established by commercial vegetable lessees are at the cost of the lessee enterprise. However, it is the landowner who reaps the benefits of the mitigations and associated increase in land value once the commercial vegetable activity moves on.

85. The alternative pathway proposed by HortNZ is not an easier pathway for commercial vegetable production (an overview is provided below in this statement). Rather, HortNZ seeks a pathway which:

- Relates to the operational needs of existing commercial vegetable production
- Provides for limited new commercial vegetable production to meet market demand, where it can be proven that contaminant discharges are the same, or less, than the current activity.

86. Waikato commercial vegetable production has national and regional significance to domestic food supply, as is recognised in the PC1 framework and the s42A report. Accordingly, HortNZ believes it is paramount that a workable pathway is provided for commercial vegetable production. Given the relatively small footprint of the industry within the Waikato River catchment, HortNZ believes that commercial vegetable production can be provided for, while still achieving the overall Vision and Strategy of PC1, if managed as proposed in submissions.

A multi-contaminant approach

87. Paragraph 132 of the s42A report acknowledges "*that the PC1 regime with respect to N is costly, inflexible and potentially has a range of unintended consequences*". This is followed by a list of adjustments that will be recommended to manage the issue. HortNZ agrees with this statement but notes it is difficult to comment further given details around those recommendations are not being dealt with in this hearing block.

88. A multi-contaminant approach is a key submission point for HortNZ. The nitrogen reference point and management of the four contaminants is not addressed in this hearing block. However, below are some key observations made in HortNZ's submission:

    (a) Horticulture has a relatively small environmental (and physical) footprint in the Waikato and Waipa River Catchments. The Jacobs 2017 report identifies that horticultural activities contribute:

        - 2.5% of the Total Nitrogen load
        - 0.9% of the Total Phosphorous load
        - Low contribution of Sediment load
        - Minimal impact on E.coli loads.

    (b) As detailed in the evidence of Mr Ford and Ms Holmes, there are inconsistencies in the data and modelling that influenced policy development. In particular:

        - a key assumption behind scientific modelling was that all activities have similar leaching rates
        - The data selections provided to Council from different farming sectors are across different time periods and therefore in some instances are not representative of long-term average nitrogen leaching rates

- The data provided for the horticulture industry was populated using OVERSEER as was requested by Waikato Regional Council. The complicated relationship between OVERSEER and horticulture is discussed briefly by Mr Ford and will be discussed in more detail further in the hearings process. However, at a high-level OVERSEER is founded on pastoral-based research and therefore is not truly representative of horticultural activities. It applies a monthly accounting framework which does not relate to horticultural operations where application of nutrients is dependent on the stage of plant growth and the climate and may change daily or weekly.

(c) The impact on water quality from the four contaminants varies across the different sub-catchments. Because of the small, localised footprint of commercial vegetable production (being largely in the Lower Waikato Catchment), it is unlikely that this activity contributes significantly to the guideline exceedances for Total Nitrogen and Total Phosphorus in the Upper and Central Waikato Catchments (Jacobs, 2018).

(d) Due to a variation between sub-catchments in water quality, sensitivity of environment and contributing land uses, applying greater scrutiny to nitrogen will not assist in meeting proposed water quality targets in many sub-catchments (Jacobs, 2018).

Sub-catchment load limits and the catchment collective approach

89. HortNZ's submission on Objective 3 of PC1 is partially rejected and partially dismissed as it is considered not relevant to Block 1 hearings. The part rejected relates to sub-catchment loads. The part dismissed relates to catchment collectives. However, the two parts of the submission point are inextricably linked and are part of the 'package' solution for commercial vegetable production.

90. As noted, the s42A report deems the proposed sub-catchment loads to be "more achievable" than those proposed in PC1. The report indicates that more achievable targets are rejected as they will not achieve the targets proposed in Table 3.11-1 and therefore will not achieve the Vision and Strategy.

91. HortNZ does not agree with the interpretation that the proposed sub-catchment loads are "more achievable" in the sense that they are lesser targets than proposed in Table 3.11-1. The sub-catchment loads are equivalent to the short-term concentration targets. HortNZ's submission presents the concentration targets from Table

3.11-1 broken down into sub-catchment loads. This then makes the concentration targets able to be measured at a sub-catchment scale.

92. The management of the sub-catchment loads through the catchment collective, is how the sub-catchment loads will achieve the short-term targets in Table 3.11-1 and ensure alignment with the Vision and Strategy of PC1.

93. HortNZ considers that for many rural operators, this approach is more likely to achieve the proposed PC 1 water quality targets, due to the variation across the catchments in water quality, sensitivity of environments and land use activities. This is discussed further in the Jacobs reports 2017 and 2018 and in the evidence of Ms Holmes.

94. As mentioned, the catchment collective approach is not an easier pathway for participants. The submission to Variation 1 of PC1 includes a memo outlining how a catchment collective would work and an overview of costs and benefits for both Council and parties involved. In particular, mitigations are more likely to be efficient and effective in achieving water quality targets as farm plans can be tailored to individual properties and the sensitivities of the sub-catchment.

95. As can be seen from the memo, establishing a catchment collective requires significant commitment and investment from interested parties. It is bound by civil law and applies integrated planning and scientific modelling to monitor and assess the effectiveness of identified actions or mitigations to achieve the sub-catchment load targets.

96. The sub-catchment load targets and catchment collective approach do not absolve parties from making improvements or reductions across all contaminants.

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