BEFORE AN INDEPENDENT HEARINGS PANEL

UNDER	of the Resource Management Act 1991 ("**the Act**")
IN THE MATTER	of the hearing of submissions and further submissions on The Proposed Waikato District Plan (Stage 1) Hearing 2: Plan Structure and All of Plan

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STATEMENT OF EVIDENCE BY ANDREW BARBER FOR HORTICULTURE NEW ZEALAND

23 SEPTEMBER 2019

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SUMMARY STATEMENT

1. The implementation of a farm environment plan (FEP) achieves considerably better environmental outcomes than single one size fits all mitigation measures. A minimum 5m setback distance from any waterbody or overland flow path will result in considerable loss of productive land, and a poorer environmental outcome than from taking a FEP approach using the full suite of mitigation measures tailored to each paddocks risk assessment.

2. Fallow periods are a genuine important tool in a vegetable growers crop rotation. While cover crops are used extensively to reduce the fallow period, just like the 5m buffer, a compulsory maximum 2-month fallow period is not appropriate in all situations.

QUALIFICATIONS AND EXPERIENCE

3. My name is Andrew John Barber. I am a Director of Agrilink NZ and work as an Agricultural Engineering Consultant based in Auckland. I have a Bachelor of Horticulture (Tech) with first class honours from Massey University.

4. I have spent 25 years as a consultant in the agricultural industry, specialising in resource use optimisation. This includes resource use benchmarking in the form of national and individualised reporting to growers comparing their performance to regional and national benchmarks.

5. In my years as a consultant I have helped develop vegetable industry soil and erosion management guidelines, and individual cultivated property erosion and sediment control plans.

6. I was Project Manager on the Franklin Sustainability Project ("**FSP"**) and provided technical advice on managing soil erosion on cultivated land. This was a multi-stakeholder project that ran between 1996 and 2004 which, while having a broad goal of improving the overall sustainability of outdoor vegetable production in the Franklin region, had a clear focus on keeping soil on the paddock and mitigating any effects of off-site discharges. The project directly involved the growers, Horticulture New Zealand, MfE, MPI, Auckland Council, Waikato Regional Council, and the Franklin District Council.

7. I managed and conducted research for the current MPI SFF Don't Muddy the Water Project ("**DMTW Project**"). This project has quantified the efficiency of Sediment Retention Ponds ("**SRP**") and vegetated buffers on vegetable properties. It has also developed an erosion and sediment control app, Erosion & Sediment Control Plans,

and is currently linking this through to NZ GAP (Good Agricultural Practice) FEP audits (https://www.newzealandgap.co.nz/).

8. I have also worked on stormwater projects for the Franklin District Council where I designed the stormwater system for Pukekohe Hill and the Bombay Hills that ensured an integrated system between the council and grower drains that were sized to cope with high intensity storm events.

9. In 2014 I updated the Erosion and Sediment Control Guidelines for Vegetable Production. The DMTW Project was based largely on quantifying the efficiency of the SRP design in these guidelines.

FARM ENVIRONMENT PLANS VERSUS A COMPULSORY 5 METER BUFFER

10. A compulsory 5 metre buffer from water bodies straight-jackets the ability to develop a farm-specific risk-based Farm Environment Plans (FEP). Consequently, the best environmental outcomes may not be achieved.

11. The E&S Control Plans of FEPs are paddock specific, and tailor the best erosion and sediment control measures for that specific situation. Perversely a 5-metre buffer will often have a considerably worse environmental outcome than if other erosion and sediment tools had been used, such as cover crops, wheel track ripping, bunds and Sediment Retention Ponds ("**SRP**").

12. In the right situation a 5-metre buffer may be the best solution. This was proven to be the case in the Don't Muddy The Water (DMTW) Project where, in Levin, vegetated buffers were the best solution on flatter land, where other tools like bunds caused significant flooding across a paddock.

13. However, in cultivated situations buffers may become ineffective due to channelised flow. The widest possible buffer still has no impact on sediment control if overland flow does not pass across it.

14. Overland flow does not pass across a buffer where it is alongside a water body that runs up and down the slope. A 1 metre setback from a water body will help bank stability and reduce frittering, however a 5-metre setback that water will not flow across provides absolutely no benefits whatsoever and wastes considerable valuable land area.

15. DMTW developed an app that calculates the rate of erosion on cultivated land where the user can select a range of mitigation measures, of which vegetated buffers are one of these measures. Their trapping efficiency was recently calculated on a case study property.

16. On the case study commercial vegetable property, I compared the use of 5 metre buffers with a FEP that utilised a range of erosion and sediment control tools, with predominantly SRPs as their method of sediment control. The unmitigated sediment loss was 45 t/ha. The use of 5 metre vegetated buffers reduced sediment loss to between 9 to 39 t/ha, depending on the channelising factor (no channelising to

significant 80% channelising). On the 24 ha property 1.8 ha would be lost to production due to the 5 meter buffer.

17. In contrast an E&S Control Plan was developed which dropped sediment loss to 0.2 t/ha, with the SRPs and 1 metre buffers either side of the open drains occupying just 0.3 ha. The outcome of the E&S Control Plan is between 45 to 200 times better than the 5-meter buffers, using just a sixth of the land.

18. I contend that the justification for 5 metre buffers from water bodies is not supported by the environmental outcome. As has been demonstrated above, 5 metre buffers from water can be significantly less effective than other erosion and sediment control tools that can be tailored for each paddock's situation and documented in an E&S Control Plan.

FALLOW PERIOD FOR MORE THAN 2 MONTHS

19. If cultivation, Ancillary Farming Earthworks, was captured under the earthworks standards, then the Waikato Regional Council ("WRC") seeking to reduce the length of time to 2 months for earthworks to be revegetated after commencement to achieve 80% groundcover, is unworkable in most cultivated situations.

20. There is extensive use of cover crops (e.g. mustard, oats, wheat) in vegetable production. These cover crops are grown during short windows when the ground would otherwise have been fallow and are used to increase organic matter and reduce erosion.

21. However just like was demonstrated with the 5m buffer, a single compulsory practice does not work in all situations. A maximum fallow period of 2 months would make some land unavailable for many vegetable crops. A winter / spring cover crop keeps the ground saturated for longer, preventing the ground from being cultivated and made ready for planting. Early season planting often requires the ground to be left fallow over winter. Consequently, the soil is in a better condition to be worked in spring.

22. Similarly, as there is a movement towards lower intensity production systems, fallow periods become an increasingly important part of a crop rotation. They are an important period, where ground is left to rest. Perversely the compulsory sowing of a cover crop between cash crops will increase earthworks. More tractor passes are required to prepare the cover crop ground, sow, spray off, and then reincorporate the cover crop, prior to ground preparation and sowing of the following cash crop.

23. Fallow periods are accounted for in a commercial vegetable operations paddock risk assessment. Erosion and sediment control mitigation measures during fallow periods can include interception drains, correctly sized culverts, contour cultivation, vegetated buffers, and sediment retention ponds.

Andrew Barber

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