IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Proposed Waikato Regional Plan Change 1: Waikato and Waipā River Catchments

STATEMENT OF EVIDENCE OF MARK DAVID WILKINSON GASQUOINE

For the Waikato Regional Council

DATED 05 July 2019

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Introduction

1. My name is Mark David Wilkinson Gasquoine. I am the Team Leader- Land Management Advisory Services and a work stream lead for the Healthy Rivers Implementation Project focussing on Farm Planning and Sub-catchment planning. I have been in this role since August 2018.

2. I have a Bachelor of Applied Science in Environmental Management from Otago University. I have also completed the Massey University, Intermediate and Advanced Sustainable Nutrient Management courses and the Massey University Farm Dairy Effluent System Design and Management course.

3. I grew up on dairy farm near Matamata, and have worked in the agriculture/environment space since leaving University in 2012. My major focus has been on improving farmers' and rural communities' understanding of how they can improve environmental performance on-farms.

4. I am responsible for the team who undertakes engagement and the extension/sharing of information for farmers and communities. Our major role in the implementation of PC1 is to raise awareness and get farmers moving forward in building their FEPs and putting actions in place to reduce their contaminant losses.

5. I confirm that I am familiar with the Code of Conduct for Expert Witnesses as set out in the Environment Court Practice Note 2014. I have read and agree to comply with the Code. Except where I state that I am relying upon the specified evidence or advice of another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Scope of Evidence

6. The purpose of my evidence is to give some examples of the types of actions that we would expect to see on-farm once a farmer has completed a Farm Environment Plan (FEP) using the revised Schedule 1 that applies a Good Farming Principles (GFP) approach to managing contaminant losses.

7. The evidence will also highlight the importance of having FEPs which can be utilised to engage and galvanize whole communities by providing context for the types of tangible

improvements farmers can make individually to improve their local environment. This in turn helps communities to collectively ensure that other farmers in the community firstly have or are in the process of completing their FEPs, and secondly that the practices in the FEPs are able to be put in place by a farmer.

8. The attached appendix lists of the types of practices that we would expect to see farmers implementing under each of the five objectives. This list is not exhaustive and other practices could be included.

9. When I present my evidence I will refer the Panel to a range of photos which highlight some of the practices we would expect to get farms closer to working at GFP as well as some of the practices we would expect to see when a farm is at or near GFP. While these can be described in words and in evidence, photographs are a far easier and more comprehensible way to describe on-farm practices.

Statement of support for the content of the Waikato Regional Plan Change 1 section 42A report

10. I have read the content regarding Schedule 1 within the Council's s42A report pertaining to Proposed Plan Change 1. I agree with and support the content of the report as it relates to Schedule 1 and FEPs. The following comments, based on my experience in engaging farmers and supporting them to create, build and implement GFP on-farm, explain and provide further background to my support.

11. A key element of building momentum in rural communities is getting a better understanding of who the rural communities are, what they do in these places and where or how they obtain and use information. A key aspect of this is having a good understanding of how things can or could be implemented on-farm. The role that FEPs play in this is providing farmers with an understanding of what they practically need to do, and a line-of-sight around what they should be aiming to achieve. Having GFP as a target allows for this line of sight.

12. To assist in this regard, my team created and designed the FEP template and guide using Schedule 1 in Proposed Plan Change 1. We sought to test this in the field and found a number of implementation issues when undertaking these trials which included:

a. Schedule 1 in the proposed plan change seemingly had a focus on infrastructural improvements at points across a property. This might include actions like fixing tracks/races, installation of detainment bunds, planting 'x' number of poplar poles etc. This focus de-emphasised the importance of system or 'practice' tweaks which farmers were more likely to make and collectively it was felt these changes could be more beneficial to reducing contaminant losses from individual properties;

b. The feeling that any change to the FEP, or inability to meet or achieve actions for any reason including financial difficulties, climatic conditions or a lack of resources would require a formal review and potential costly consent change;

c. Inability to acknowledge the work farmers have already done on their properties would disengage those farmers who were already a long way into their journey;

d. Necessity to provide actions consistently in a SMART format which is abnormal for the conversations usually had between a farmer and their consultant. This could be alleviated by good training, but the format of these actions also supported the feeling they were concrete and immoveable therefore must be achieved; and

e. Felt overly prescriptive for the 1st step in a 80yr journey and because of this the perception was it would be hard to get farmers to engage with it now and therefore going forward.

13. My team has revised the current template, using the recommended changes to Schedule 1 in the s42A report, and knowledge from our trials. In my opinion the revision largely addresses the implementation issues outlined above.

14. My team also spends a large portion of their time working alongside and supporting farmers and agricultural industry including the milk supply companies, dry stock industry, horticulture industry, arable sector and community groups to align our thinking and provide support or advice into research or on the ground implementation of specific tools or actions.

15. I was responsible for designing and inviting participants to the two FEP workshops that took place with industry in May and can confirm I took part in both workshops. I also helped to revise Schedule 1 alongside members of the Implementation Team to form the recommended version in the section 42A report.

Good Farming Practice

16. In my opinion, using GFP for building, analysing and reviewing FEPs is a good place to start to get farmers 'in-the-door' and understanding how to assess risks on farm. After this it is hugely important that ongoing support is available to help farmers to adjust current practices or implement new practices to achieve a reduction in contaminant losses.

17. GFP allows farmers to identify, select and learn from implementing or adjusting practices to reduce contaminant losses. It provides a framework for them to assess their property and farm systems in a different way to how they currently interpret land forms, which should enable them to more effectively and appropriately address the associated risks of contaminant loss. The photographs that will be shown at the hearing identify what kind of approaches and on-farm actions are anticipated through GFP and FEPs.

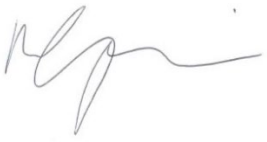
18. The GFP approach in Schedule 1 allows farmers to make changes to their farm, farm system and associated FEP in order to meet market demands, changes in farm management or a raft of other potential scenarios, without going through a heavily bureaucratic process for each change. There will need to be restrictions on the scale at which these changes can occur, so that the overall purpose of the FEP cannot be completely re-thought after it is approved. In this case, it would be necessary to undertake another FEP/consent application process

19. It enables a farmer to learn from skilled rural professionals who are certified by WRC to continually support farmers. The skill of these CFEP's to help a farmer tailor specific mitigation actions to their property is critical to ensuring the GFP approach is effective and the community can have confidence that appropriate on-farm actions are actually being undertaken.

20. It should be acknowledged that the GFP approach is not going to be a concept that all farmers accept or feel they can achieve due to the lack of clarity/certainty or what others

have called ‘prescriptiveness’, or at times some farmers may have an unwillingness to achieve or work towards any level of improvement.

21. The approach will require WRC informing farmers when and how WRC will step-in if farmers are not meeting or moving their farms towards GFP. In my opinion a structured review process will do this, as well as providing farmers the flexibility for ongoing and continual learning. Knowing that WRC could imposes prescriptive consent conditions if a farmer does not or is unwilling to meet GFP should be an incentive to adhere to expectations outlined in the revised Schedule 1.



Mark Gasquoine

05 July 2019

APPENDIX – Good Farming Practices

Whole Farm	
Objective 1: To manage farming activities according to good farming practice, and in a way that minimises the loss of contaminants from the farm	
Principle 1: Identify the characteristics of the farm system, the risks that the farm system poses to water quality, and the good farming practices that minimise the losses of sediment, microbial pathogens, phosphorus and nitrogen.	
Practices	Describe the physical and bio physical characteristics for the property these may include: • Soil types • Topography • Overland flow paths • Climate and rainfall • Erosion prone and actively eroding areas • Retired areas • Cultivation on slopes
Principle 2: Maintain accurate and auditable records of annual farm inputs, outputs and management practices	
Practices	• Number and types of stock and monthly stock averages • Annual production details • Whole farm nutrient budget • Quantities, timing and type of fertiliser applied • Feed supplements made, brought, or sold
Principle 3: Manage farming operations to minimise losses of sediment, microbial pathogens, phosphorus and nitrogen to water, and maintain or enhance soil structure.	
Practices	Provide description of actions that are being undertaken to achieve industry Good Farming Principles which may include; • Cultivation requirements (setbacks etc) • Cultivate along contours on slopes • Maintain vegetative cover on slopes over 15^0 within cultivated paddocks • Soil testing to assess agronomic nutrient requirement of pasture or crops
Nutrient Management	
Objective 2: To minimise nutrient losses to water while maximising nutrient use efficiency.	
Principle 4: Monitor soil phosphorus levels and maintain them at or below the agronomic optimum for the farm system	
Practices	Indicate how the farming system is going to achieve industry recommended agronomic optimums these may include • Use a Fertiliser Association NZ certified nutrient management advisor to interpret your soil test results and provide fertiliser recommendations. • Undertake regular soil testing to monitor nutrient levels • Apply fertiliser in accordance with the Fertiliser Association Nutrient Management Code of Practice

<table>
<tr><td colspan="2">Principle 5: Manage the amount and timing of fertiliser inputs, taking account of all sources of nitrogen and phosphorus, to match plant requirements and minimise risk of losses.</td></tr>
<tr><td>Practices</td><td>When applying nutrients the following key principles may include;
Choice: The choice of nutrient or fertiliser product is best matched to the crop or pasture for the time of the year (follow Fertmark Code of Practice)
Rate: Apply recommended rate to meet crop/pasture demand
Application: Follow Spreadmark Code of Practice)
Frequency: Nutrient availability is matched to plant demand.
Timing: Fertiliser is applied to meet crop/pasture demands and seasonal conditions
Nutrient application
Conduct soil testing to assess soil nutrient status
Complete a whole farm nutrient budget in accordance with soil test results and PC1 requirements
Apply nitrogen (nutrients) fertiliser in accordance with good management practice
Use precision fertiliser applications such as variable rate application
Use split fertiliser applications
Use appropriate forms of fertilser to match crop requirements (forms of P and N)
Use a certified (SpreadMark) fertiliser spreader
Ensure all equipment is suitably calibrated
Keep records of timing and placement of fertiliser applications
Undesirable Activities
Fertiliser application when soils are at or near moisture field capacity
Fertiliser application when there is risk of heavy rain events
Fertiliser application when pasture covers are low
Fertiliser application with incorrectly calibrated equipment
Applying fertiliser when soil temperatures are 7 degrees and dropping
Applying fertiliser at rates that exceed potential pasture/crop growth rates
Fertiliser application within 10 metres of a waterbody on slopes less than 15 degrees
Fertiliser application within 20m of a waterbody on slopes greater than 25 degrees
Total nitrogen application should not exceed 200 kg/ha /annum</td></tr>
<tr><td colspan="2">Principle 6: Store and load fertiliser to minimise risk of spillage, leaching and loss into waterbodies.</td></tr>
<tr><td>Practices</td><td>Demonstrate when applying fertiliser that storage, handling and application is considered to minimise the risk of losses to waterways. This may include;
Covering and diverting stormwater away from fertiliser storage facilities
Disposal of fertiliser in a way that reduces the risk of contamination to groundwater and surface water
Fertiliser spills should be attended to immediately so as to prevent any contamination of land or waterways
Fertiliser storage facilities are appropriately lined to prevent contamination to surface water and groundwater</td></tr>
<tr><td colspan="2">Principle 7: Ensure equipment for spreading fertilisers is well maintained and calibrated</td></tr>
<tr><td>Practices</td><td>Fertiliser spreading equipment is calibrated at a frequency and to an accuracy specified by protocols set by the Fertiliser Quality Council</td></tr>
</table>

Principle 8: Store, transport and distribute feed to minimise wastage, leachate and soil damage	
Practices	• Locate silage stacks away from floodplains, wetlands and waterways • Cover and divert stormwater from silage pits and any compost storage areas • Ensure moisture content of feed when harvested is at recommended levels to reduce leaching • Locate feedout areas away from floodplains, wetlands and waterways
Objective 3	
Principle 22: Farm in a manner that does not result in farm nitrogen losses exceeding the farm's NRP; **Or, where the property's NRP is > than the 75th percentile:** Farm in a manner that does not result in farm nitrogen losses exceeding the 75th%ile for the FMU.	
Waterways	
Objective 4: To minimise losses of sediment, microbial pathogens, phosphorus and nitrogen to waterways.	
Principle 9: Identify risk of overland flow of phosphorus, sediment and microbial pathogens on the property and implement measures to minimise losses of these to waterbodies	
Practices	• Ensure a suitable grass buffer to provide a filtering mechanism for contaminants from overland flow. • Install sediment traps, paddock contouring, detention bunds, or constructed wetlands • Increase cultivation setback from waterway • Install reticulated water away from water body • Maintain good pasture cover throughout winter and spring
Principle 10: Locate and manage farm tracks, gateways, water troughs, self-feeding areas, stock camps, wallows and other sources of run-off to minimise risks to water quality.	
Practices	**Tracks and Races** • Install cut-off drains into paddocks • Where appropriate, locate and site tracks away from waterways • Contour and camber tracks and raceways to divert contaminants away from waterways • Install sediment traps, soak pits, and water diversions, especially near low points and entrances to stock crossings **Troughs** • Locate troughs on a raised mound • Locate troughs away from waterbodies and overland flow paths **Gateways** • Ensure gateways are sited correctly for stock flow and width • Avoid feeding out near gates **Stock Camps** • Provide shade away from waterbodies • Feed out away from waterbodies **Yards / self-feeding areas** • Store effluent for later dispersal to land where appropriate • Where appropriate, cover animal shelters and stock holding areas • Locate away from floodplains, wetlands and waterways

Objective 5: To exclude stock from waterbodies and minimise stock damage to the beds and margins of wetlands and riparian areas.	
Principle 11: Exclude stock from waterbodies to the extent that it is compatible with land form, stock class and stock intensity. Where exclusion is not possible, mitigate impacts on waterways. **Principle 23:** Exclude stock in a manner consistent with the requirements of Schedule C.	
Practices	• Exclude cattle, horses, deer and pigs from waterbodies that continually contain surface water as defined in Schedule C • In addition, where a water body flows only intermittently; cattle, horses, deer and pigs should be excluded from that water while it is flowing or contains water • Ensure setback from waterways is appropriate for the slope • Locate and manage stock crossing points to minimise overland flow of contaminants into waterways • Provide alternative stock water away from waterways • During high risk periods i.e winter grazing, fawn weaning; actively manage stock to prevent slumping, pugging, or erosion within the margins of waterbodies
Land and Soil	
Objective 6: To maintain or improve the physical and biological condition of soils in order to minimise the loss of sediment, phosphorus, nitrogen and pathogens to waterways	
Principle 12: Manage periods of exposed soil between crops / pasture to reduce risk of erosion, overland flow and leaching.	
Practices	When establishing crops and pastures, possible actions to reduce the risk of contaminant losses may include; • Utilise appropriate vegetated cultivation setbacks for the slope • Establish autumn pastures/crops early • Reduce soil cultivation by appropriate establishment methods minimum/zero tillage • Use cover crops to minimise periods of bare soil • Avoid cultivation of overland flow paths • If cultivation is required, cultivate along the contour
Principle 13: Manage or retire erosion-prone land to minimise soil losses through appropriate measures and practices.	
Practices	Identify actions needed to reduce the risk of contaminant losses in erosion prone areas such as; • Graze heavy stock off farm during winter • Avoid grazing heavy stock on steeper or more erosion prone soils • Establish poplar poles on erosion prone soils • Consider retirement of unproductive and actively eroding soils • Consider the use of sediment traps, detention bunds, flumes, and other structures to minimise soil losses and divert overland flows • Utilise stand-off pads, feed pads and animal shelters during the wetter months • Consider grazing lighter stock over summer months on erosion prone soils • Replace summer and winter sacrifice paddocks with sealed loafing pads • Use controlled traffic techniques and lighter machinery on erosion prone soils

Principle 14: Select appropriate paddocks for growing crops and intensive grazing, recognising and mitigating possible nitrogen and phosphorus, faecal, and sediment loss from critical source areas.	
Practices	• Select appropriate paddocks based on soil type, aspect and proximity to waterbodies • Maintain appropriate nutrient levels to maintain pasture covers • Graze crops and pastures from top to bottom of catchment • Avoid growing and grazing of crops in critical source areas • Plant deep rooted species of crops or pasture • Practice no tillage or minimum tillage • Cultivate along the paddock contour • Consider sediment traps and detention bunds where appropriate
Principle 15: Manage grazing and crops to minimise losses from critical source areas	
Practices	• Graze crops and pastures from top to bottom of catchment • Avoid grazing pasture/crops when the soil is saturated or heavy rain forecast • Replace summer and winter sacrifice paddocks with sealed loafing pads • Select paddocks to ensure heavy stock are grazed in the most appropriate areas during wet conditions • Use grass filter strips at the bottom of sloping paddocks
Effluent	
Objective 7: To manage the contaminant loss risks associated with the operation of collected farm animal effluent systems	
Principle 16: Ensure the effluent system meets industry-specific Code of Practice or equivalent standard	
Practices	• Ensure the effluent system is designed and installed in accordance with the FDE Code of Practice • Ensure the permeability of sealing layer shall not exceed $1x10^{-9}$ metres per second. • Manage effluent storage levels and water use levels • Regularly monitor and maintain the effluent system • Engage an accredited effluent designer to prepare and effluent system plan appropriate for your farming activity
Principle 17: Have sufficient storage available for farm effluent and wastewater and actively manage effluent storage levels	
Practices	• Storage and associated facilities are sized by an accredited professional to ensure compliance and deferred irrigation • All effluent treatment or storage facilities shall be sealed so as to restrict seepage of effluent. • Actively manage storage to ensure it is available when required
Principle 18: Ensure equipment for spreading effluent and other organic manures is well maintained and calibrated.	
Practices	• Ensure effluent irrigation equipment is regularly serviced and properly calibrated • Ensure staff are trained to properly manage effluent irrigation system • Ensure irrigators and pumps have no leaks • Undertake a bucket test and calibrate spreading equipment where necessary to maintain appropriate application depths

Principle 19: Apply effluent to pasture and crops at depths, rates and times to match plant requirements and soil water holding capacity	
Practices	• Effluent shall not enter surface water by way of overland flow, or cause ponding on the land surface following the application • Apply effluent to pasture and crops at suitable application depths, rates and times • Total effluent loading shall not exceed the limit specified in the Waikato Regional Plan • Store all sand trap cleanings on sealed pads prior to spreading
Water and Irrigation	
Objective 8: To operate irrigation systems efficiently and ensuring that the actual use of water is monitored and is efficient	
Principle 20: Manage the amount and timing of irrigation inputs to meet plant demands and minimise risk of leaching and runoff	
Practices	• Scheduling of irrigation is based on sound decision making tools i.e soil moisture monitoring, crop demand, and soil-water budgets to avoid over irrigating • Annual irrigation use is evaluated for consistency
Principle 21: Design, check and operate irrigation systems to minimise the amount of water needed to meet production objectives	
Practices	• Freshwater irrigation systems meet the irrigation design and installation COP • Freshwater irrigation systems have had a commissioning test done • Undertake an annual calibration check and undertake maintenance as required • Scheduling of irrigation is based on sound decision making tools i.e soil moisture monitoring, crop demand, and soil-water budgets to avoid over irrigating • Ensure all farm staff involved in irrigation are properly trained • Auditable records of water use are kept