IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Proposed Canterbury Land and Water Regional Plan

SUPPLEMENTARY EVIDENCE OF JAMES GREGORY RYAN
RESPONDING TO QUESTIONS FROM THE GROUP 2 HEARING

1. INTRODUCTION

1.1 My name is James Gregory Ryan and I hold the position and possess the qualifications and experience described in section 1 of my Evidence in Chief for the Group 1 Hearing.

1.2 I have prepared this supplementary evidence to answer a question asked by the Hearing Commissioner van Voorthuysen during the Group 2 hearings. Specifically the question related to the level of nutrient reductions that a farm environment plan might achieve.

2. LEVEL OF NUTRIENT REDUCTIONS THAT A FARM ENVIRONMENT PLAN MIGHT ACHIEVE

2.1 The development of farm environment plans in New Zealand is still a relatively new concept. The effectiveness of farm environment plans will be dependent on a number of factors including the degree of specificity of the plan on locally relevant environmental issues, the degree of support for farmers in the development and implementation of plans and the demonstrable effectiveness of mitigation strategies. However, there are a range of examples which demonstrate that nutrient reductions in the order of 10 – 20% are achievable for dairy farms through farm environment planning and the adoption of good management practices. In any given case, the level of nutrient reductions may
be higher or lower depending on individual farm circumstances and geographic factors.

2.2 I set out below some examples that I think are relevant to what could be expected from the Council’s Farm Environment Plan proposal.

**Hurunui**

2.3 Analysis carried out by DairyNZ in the Hurunui catchment demonstrated that if farmers operated at “technical efficiency” then nitrogen leaching in the order of 13% could be achieved. This analysis goes beyond what would be expected of a farm environment plan as specified within the Plan. However, it demonstrates the level of reductions that may be achieved on farm over time. Given the Hurunui analysis, it is not unreasonable to expect reductions of up to 10% as a result of the adoption of farm environment plans. Further reductions in nitrogen leaching in this catchment are achievable by the conversion of border dyke to spray irrigation.

2.4 Technical efficiency involves improving the efficiency of nitrogen input and other resource use to its economic optimum. This will reduce surplus nitrogen use and hence reduce nitrogen wastage and losses while retaining the viability and competitiveness of the businesses for the long term. Identifying the optimal point at which farms can achieve technical efficiency requires in depth analysis of farm systems that can be carried out alongside farm planning.

**Inchbonnie - Lake Brunner**

2.5 In response to concerns in the Lake Brunner catchment about the effects of farming on lake water quality, an initiative involving the development farm environmental plans with catchment farmers was undertaken in 2005. These plans were developed with a broad focus on water quality issues, and were implemented and reviewed over the following few years. Intensive monitoring of one of the Lake Brunner tributaries, Pigeon Creek (Inchbonnie), occurred concurrently with the implementation of farm environment plans.

Wilcock et al. (2013) recently reported an overall improvement in water quality of Pigeon Creek catchment, specifically reductions in total nitrogen, total phosphorus and suspended sediment concentrations and yields over the 6-year monitoring period (2004 -2010).

The 2005 farm environment plans addressed broad water quality issues and risks. More recently, analysis carried out in the Lake Brunner catchment focusing specifically on reducing phosphorus losses to the lake demonstrate that it is possible for dairy farmers to make further reductions in phosphorus loss in the order of 10 – 20%.

These nutrient loss potential reductions were modelled over five dairy farms in the Lake Brunner catchment and involved implementing a series of nutrient management improvements identified during a series of farmer workshops. It should be noted that the potential for achieving P loss reductions is likely to be different in Canterbury compared to the West Coast due to climatic and landscape differences.

Rotorua

2.4.1 Through the adoption of a range of good management practices and farm system changes, analysis carried out in the Lake Rotorua catchment demonstrate that it is possible for dairy farmers there to make nitrogen loss reductions in the order of 10 – 20%. As with the Hurunui example, these nitrogen loss reductions and farm system changes go beyond what would be expected to be achieved through the preparation of a farm environment plan. However, it further demonstrates the level of nutrient reductions that may be achieved on farm over time. Again, it is my view that this confirms that it is not unreasonable to expect reductions of up to 10% as a result of the adoption of farm environment plans.


2.5 **Looking ahead**

2.5.1 As discussed in my evidence in chief for the Group 1 hearings, the dairy sector is implementing a range of programmes such as Supply Fonterra, the Sustainable Dairying: Water Accord and Sustainable Milk Plans that will involve more rigorous environmental monitoring and review. For example, one of the features of the Sustainable Dairying: Water Accord is that it requires dairy companies to monitor and report the average nitrogen loss per hectare using Overseer. In this manner, catchment scale programmes will be able to be developed and evaluated over time with farmers to ensure that their actions are focussed upon interventions that more effectively manage the environmental risks to water quality.