

**IN THE MATTER** of the Resource Management Act  
1991

**AND**

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

**STATEMENT OF EVIDENCE OF JAMES GREGORY RYAN  
FOR GROUP 2 HEARING**

**1. INTRODUCTION**

1.1 My full name is James Gregory Ryan. I hold the qualifications and have the experience set out in my statement of evidence for the Group 1 hearing.

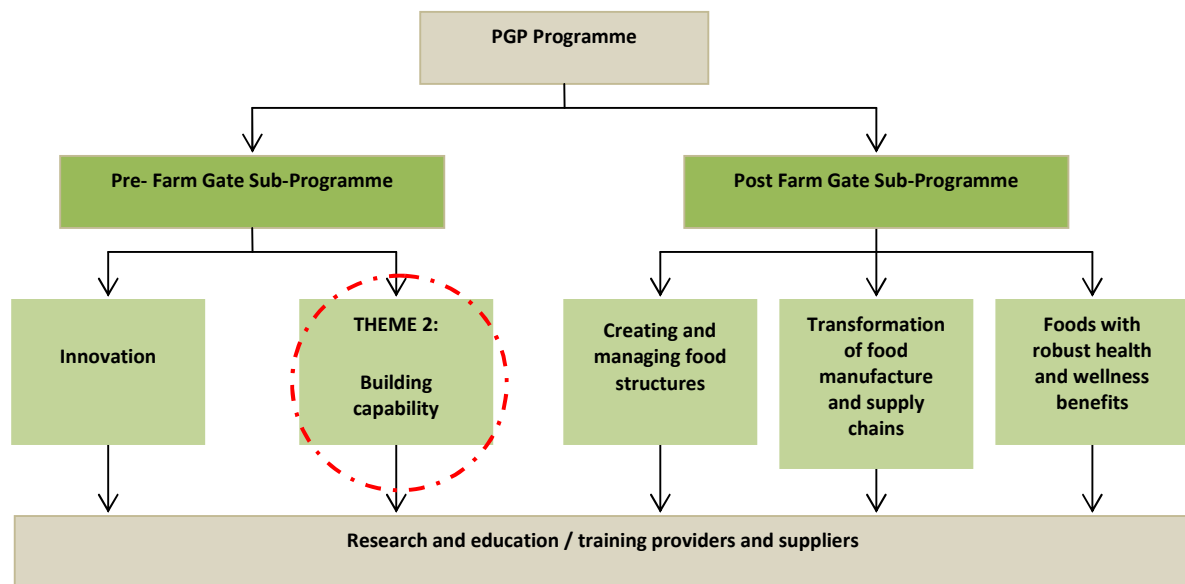
**2. BUILDING INDUSTRY CAPABILITY IN NUTRIENT MANAGEMENT**

2.1 The Proposed Plan sets an expectation that, under certain circumstances, farmers will be required to prepare and implement a farm environment plan that satisfies the requirements of Schedule 7. Furthermore, the S.42A report makes a series of recommendations that would substantially increase the number of farm environment plans required by land users.

2.2 DairyNZ and Fonterra strongly support the uptake of farm environment plans as a tool to help improve profitability and environmental management. Accordingly, the dairy sector is investing in the development of initiatives such as Sustainable Milk Plans (see section 4 below) and Supply Fonterra (note the Group 1 and Group 2 evidence of Mr Cullen). However, the reality is that there are currently insufficient capable nutrient management advisors in New Zealand to work with land users in the region to develop, implement and audit farm environment plans. This lack of capable advisors is widely recognised within the primary sector and it was our understanding that this was also well understood by Environment Canterbury.

2.3 The need to increase the number of capable nutrient management advisors in New Zealand is being taken seriously by the dairy industry. As detailed in my Group 1 evidence, the dairy sector is investing in a multi-million dollar programme to improve nutrient management. As a result, a number of organisations including DairyNZ, Fonterra, Synlait, Ravensdown, Ballance and the Fertiliser Association, as well as the Government, have committed to funding a programme to build industry capability in nutrient management through the Primary Growth Partnership<sup>1</sup>. This programme will lead to an increase in the number of capable nutrient management advisors who can work with farmers to improve their nutrient use efficiency and reduce nutrient losses.

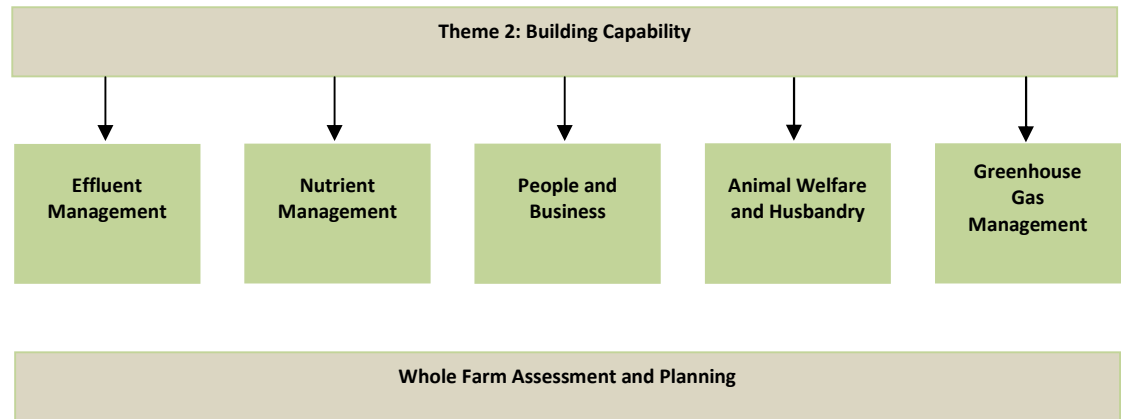
**Primary Growth Partnership Nutrient Management Programme**



**Figure 1: Structure of the PGP programme**

The Nutrient Management Programme falls under 'Theme 2: - Building capability' along with effluent, animal husbandry and welfare, human resources and productivity programmes.

1 The Primary Growth Partnership is a government-industry initiative to invest in research and innovation to boost the economic growth and sustainability of New Zealand's primary, forestry and food sectors.



**Figure 2: Structure of programmes under PGP Theme 2 – Building Capability and how they link into whole farm assessment and planning**

### **Nutrient Management Advisors – Training & Certification**

- 2.4 One of the components of the Primary Growth Partnership nutrient management programme is a project to ensure that when farmers are referred to nutrient management advisors, these advisors have met defined standards of minimum knowledge, training and certification. As part of this project, nutrient management advisors will be certified and have their performance audited over time. This scheme will be completed mid-2013 and it will become the principal measure for nutrient management advisors with the certification requirement built into industry good practice through the Code of Practice for Nutrient Management. This programme, that is being implemented nationwide, will help to satisfy some of the requirements for a “Farm Environment Plan Auditor” as defined in the Proposed Plan.
- 2.5 The certification framework will be extended to all primary sectors that provide nutrient management advice to farmers, or who are involved in the broader field of farm management. While DairyNZ is heavily involved in supporting these initiatives, it is important to note that it will benefit a range of farming enterprises and help ensure that the expectations of regulatory agencies are fulfilled over time.
- 2.6 To become a Certified Nutrient Management Advisor, individuals will have to:
- (a) Hold an agricultural degree or diploma; and

- (b) Complete the Massey University Intermediate and Advanced Sustainable Nutrient Management Courses; and
- (c) Complete a series of internal training courses on nutrient budgets, nutrient management plans, the Code of Practice for Nutrient Management, fertiliser management, and papers relevant to their speciality (e.g. arable, grazed pastures or horticulture); and
- (d) Submit nutrient management plans for review; and
- (e) Complete an on-line competency assessment.

2.7 By building industry capability in nutrient management, the programme will help to achieve the objectives of the Proposed Plan by increasing the number of capable nutrient management advisors that will be expected to support development of farm environment plans proposed under Schedule 7.

#### **Sufficient Capability in Nutrient Management Expertise**

- 2.8 As the National Policy Statement for Freshwater Management 2011 is being implemented, there are increasing demands for capable farm advisors across New Zealand. While the nutrient management programme is a significant commitment by industry, it will take several years before there are sufficient numbers of capable advisors that could work with land users in the region to develop, implement and audit farm environment plans. In this respect we believe that the S.42A report creates an expectation that cannot immediately be delivered.
- 2.9 As part of the Primary Growth Partnership, it is expected that approximately 20 nutrient management advisors within the member companies of the Fertiliser Association of New Zealand will be certified in 2013.
- 2.10 Although Environment Canterbury has not been able to provide DairyNZ with an estimate of the number of farms that would be required to have a farm

environment plan in accordance with the recommendations in the S.42A report, it appears that it could be as many as 7,000 farms<sup>2</sup>.

- 2.11 There is a limited number of people that have completed the Certificate of Completion in Intermediate Sustainable Nutrient Management in New Zealand Agriculture (there were 137 course completions in 2012<sup>3</sup>) and a Certificate of Completion in Advanced Sustainable Nutrient Management in New Zealand Agriculture (there were 46 course completions in 2012<sup>4</sup>) as required for a “Farm Environment Plan Auditor” in the Proposed Plan.
- 2.12 It is worth noting that the vast majority of those that have received nutrient management training, including completion of the Certificate of Completion in Advanced Sustainable Nutrient Management in New Zealand Agriculture, work for the fertiliser industry (70%)<sup>5</sup>. This is significant because the definition of a Farm Environment Plan Auditor in the S42A report (p137) recommends that:

*“The Farm Environment Plan must be audited by a Farm Environment Plan Auditor who is independent of the farm being audited (is not a professional adviser for the property) and has not been involved in the preparation of the Farm Environment Plan, either personally or as an employee or contractor of the industry group, supplier or consultancy that has prepared the Farm Environment Plan”.*

- 2.13 DairyNZ is concerned that this means that fertiliser companies, who are one of the few industry groups that hold much of the expertise necessary to prepare a farm environment plan, would be prohibited from auditing farm environment plans. Therefore the lack of capability to audit farm environment plans would be even more severe.
- 2.14 Fonterra and DairyNZ support the concept of farm environment plans. However, as there is currently not the capacity or capability to develop a farm environment plan for all farms in the region, further time is required to enable existing industry programmes to be delivered that will help improve nutrient management and increase the number of capable farm advisors.

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2. This estimate is based on information provided on page 76 of the S42A report which suggests that 7,000 farms would be subject to a rule regime.

3. Hedley, M.J., 2013. Sustainable land management: What skills are required for nutrient management planning? In: *Accurate and efficient use of nutrients on farms*. (Eds L.D. Currie and C L. Christensen). <http://flrc.massey.ac.nz/publications.html>. Occasional Report No. 26. Fertilizer and Lime Research Centre, Massey University, Palmerston North, New Zealand.

4. Ibid.

5. Ibid.

### 3. COST OF DEVELOPING FARM ENVIRONMENT PLANS

3.1 It is worthwhile noting that the costs of preparing farm environment plans are substantial, particularly when implemented at a regional scale.

3.2 IrrigationNZ is currently developing a template that can be used to develop a farm environment plan for a range of farm types. IrrigationNZ estimate that it would take a minimum of four hours to prepare a farm environment plan using the template<sup>6</sup>. However, where a farmer also needed to prepare a nutrient budget and undertake financial analysis to assess the potential implications of changes to the farm system it could add as much as four to 12 hours' additional work.

3.3 Estimates of the times required to prepare a farm environment plan:

Preparation of farm environment plan	4 hours
Preparation of nutrient budget (if required)	4 – 8 hours
Financial analysis (if required)	2 – 8 hours
Total time	4 – 20 hours

3.4 The time involved in the preparation of a farm environment plan could vary significantly depending upon the complexity of the farm type and whether the farmer has previous experience with nutrient budgeting and financial analysis against farm plans.

3.5 Based on a recent survey, the average rate for farm consultants is \$600 per half day or \$1205 per day<sup>7</sup>. Therefore a conservative estimate of the cost of preparing a farm environment plan would be in the order of \$600 - \$3,000 (assuming it took anywhere between half a day and two and a half days). Therefore, the costs of preparing a farm environment plan across the region's 7,000 farms would be in the order of \$4.2 million to \$21 million.

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6. Andrew Curtis, CEO IrrigationNZ pers comm March 2013

7. New Zealand Institute of Primary Industry Management. Consultancy Survey Results. March 2013.

#### **4. SUSTAINABLE MILK PLANS**

- 4.1 As highlighted in my Group 1 evidence, DairyNZ is developing a flagship environmental farm planning tool described as a Sustainable Milk Plan.
- 4.2 A Sustainable Milk Plan involves the milk company conditions of supply as well as the compliance requirements set by the regional council. An important aim of the development of Sustainable Milk Plans is to help accelerate the implementation of actions beyond minimum expectations that are set by milk company and regulatory requirements
- 4.3 Sustainable Milk Plans include targets and actions by creating a farm-specific plan that helps landowners to focus on the actions that are essential to improve environmental management over the short to medium term ie three to five years.
- 4.4 A key difference between Sustainable Milk Plans and other environmental farm plans is that Sustainable Milk Plans identify specific “targets” that focus on key environmental outcomes and performance measures that take account of the sensitivity of the local environment. These plans help farmers focus on practical actions that they can take to improve issues such as effluent management, nutrient management, soil health and waterway protection. Examples of actions may include the need to improve planting or fencing around a waterway, an upgrade to effluent infrastructure, or soil testing to help optimise Olsen P levels. An example of a Sustainable Milk Plan is included in **Appendix 1**.
- 4.5 One of the advantages of Sustainable Milk Plans is that through the process of development, farmers’ understanding of the links between their farm business and environmental outcomes is increased. Additionally, through on-going auditing and monitoring, valuable information is provided on environmental performance, rates of change and barriers to change. In this manner, improvements can be identified that assist with the development and implementation of plans.
- 4.6 Together with milk companies, DairyNZ is developing a number of initiatives to support the rollout of Sustainable Milk Plans across the country. In order to

ensure that the implementation of Sustainable Milk Plans is effective, it is important that there is a level of consistency across requirements so that DairyNZ can ensure that the extension and support programmes it is implementing are effective.

- 4.7 Given the level of resourcing and industry support that is being invested in the development of Sustainable Milk Plans for potential rollout across New Zealand, DairyNZ is eager to ensure that a Sustainable Milk Plan satisfies the requirements of Schedule 7 of the Proposed Plan.
- 4.8 One of the strengths of a Sustainable Milk Plan is that it ensures farmers focus on the most important environmental risks that can be managed at a farm scale. DairyNZ is concerned that, in some regions, farm environment plans are being required by regional councils that are overly bureaucratic, expensive and unlikely to be effective at achieving environmental outcomes. In one region in the North Island for example, a farmer has recently been required to produce an 80 page farm environment plan to satisfy their resource consent conditions. It is our view that such plans are too cumbersome to be effective.

## **5. INSIGHTS FROM THE WAIKATO REGARDING THE DEVELOPMENT OF SUSTAINABLE MILK PLANS**

- 5.1 DairyNZ has entered a partnership agreement with the Waikato River Authority to implement a Sustainable Milk Plan for every dairy farmer in the Upper Waikato catchment. This is the largest environmental good-practice project ever undertaken by the dairy sector involving 700 farms. While the project is led by DairyNZ, it has strong support by the milk companies that operate in the Waikato Region including Fonterra.
- 5.2 One of the aims of the project is to ensure that Sustainable Milk Plans are produced to a high standard and to provide insights into the development of Sustainable Milk Plans in other regions.
- 5.3 Commencing in 2012, the project has three years funding (\$2.4M) which is evenly split between DairyNZ, the Waikato River Authority and Government through the Primary Growth Partnership.



- 5.4 One of the important drivers for the Upper Waikato Sustainable Milk Project is to support the Vision and Strategy for the Waikato River which involves:

*“...a future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn are all responsible for restoring and protecting the health and wellbeing of the Waikato River...”*

- 5.5 The objective of the Upper Waikato Sustainable Milk Project is to:

*By December 2014, all dairy farms in Upper Waikato catchment have, and are implementing, an auditable Environmental Management Plan that sets targets and time-bound individual actions that, once achieved, will result in demonstrable reductions in the nitrogen, phosphorus, sediment and faecal loads in the Waikato River and improvements in water use efficiency on farm.*

- 5.6 The project is supported by a multi-stakeholder steering group including the Waikato Regional Council, local iwi, Federated Farmers, fertiliser industry representatives and the New Zealand Institute of Primary Industry Management.

- 5.7 40 farm consultants have been engaged to work with farmers in the development of the project. The farm consultants are all trained by DairyNZ who then work with farmers to prepare a Sustainable Milk Plan.

- 5.8 After six months, individual Sustainable Milk Plans are evaluated by the farm consultant to assess what actions have been undertaken and to identify any barriers to change.

- 5.9 After 12 months, Sustainable Milk Plans are independently audited by a third party, at an individual and catchment scale, to determine the effectiveness of the process.

#### **Key features of the Upper Waikato Sustainable Milk Plan Project**

- 5.10 The key features of a Sustainable Milk Plan involve:
- (a) Development of a practical plan which outlines the steps to be taken on-farm, to contribute towards catchment-scale environmental targets;
  - (b) Prioritisation of farm and environmental improvements into one simple document;

- (c) Plans are tailored to individual farms;
- (d) Every farmer receives the opportunity for one to one support from rural professionals;
- (e) Development of key performance indicators for the farm system and environment;
- (f) Environmental improvements are quantified and reported back to the community.

5.11 Sustainable Milk Plans set a series of core targets for:

- (a) Nutrient Management
  - (i) Including nitrogen use efficiency<sup>8</sup>;
  - (ii) Nitrogen loss; and
  - (iii) P-loss risk.
- (b) Waterway management
  - (i) Land management; and
  - (ii) Water use.

5.12 In addition, Sustainable Milk Plans set targets in accordance with industry expectations regarding:

- (a) Stock exclusion from waterways;
- (b) Nutrient management;
- (c) Effluent compliance; and
- (d) Water use efficiency.

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8. Nitrogen conversion efficiency is a measure of the percentage of nitrogen input to a farm that is captured in product (either meat or milk, eg 30%). The greater the conversion efficiency the greater the percentage of nitrogen that is exported as product.

- 5.13 Sustainable Milk Plans compliment other on-farm planning tools including nutrient management plans and milk company requirements such as Supply Fonterra by drawing on actions already highlighted to meet compliance expectations. Additional farmer agreed actions are included that exceed milk company and regulatory requirements.
- 5.14 Initial results in the Waikato have demonstrated that the process of developing a Sustainable Milk Plan helps to improve the environmental awareness of farmers. Therefore they support the process of on-farm change and the implementation of on-farm actions that result in environmental improvements such as improved nutrient management and water use efficiency.

### **Lessons Learnt**

- 5.15 As the project is being implemented it is identifying a number of issues that can be learnt from and applied before Sustainable Milk Plans are implemented in other regions. In particular:
- (a) The amount of time required to finalise a Sustainable Milk Plan following initial consultation.
  - (b) The importance of allowing time to fit in the development of Sustainable Milk Plans alongside other important farm commitments such as calving, mating and pasture renewal.
  - (c) The high level of farmer buy-in and commitment to taking action once they have been through the process of developing a Sustainable Milk Plan;
  - (d) The advantages of taking a co-ordinated dairy industry approach at a regional scale including by working with different milk supply companies; and
  - (e) Ensuring a robust process for capturing and reporting data requirements.

### **Costs of Preparing Sustainable Milk Plans**

- 5.16 Based on our experience in the Waikato we estimate that it costs approximately \$2,500 to develop, implement and review a Sustainable Milk Plan.
- 5.17 These costs include:
- (a) Initial visit and plan development;
  - (b) Follow up support to aid implementation of farmer agreed actions;
  - (c) Scenario testing (including the use of Overseer) and Farm System modelling where required and where funding is available; and
  - (d) Six month follow-up meeting.
- 5.18 Therefore, if every dairy farmer in Canterbury developed a Sustainable Milk Plan it would cost approximately \$2.5 million.
- 5.19 The cost for implementing for a Sustainable Milk Plan will vary significantly across different farms. In some cases there may be the need for significant expenditure such as a farm dairy effluent system upgrade which could be in the order of \$200,000. In other cases, the on-farm costs may be more moderate and include upgrades to fences to ensure stock exclusion, increased planting to enhance the riparian buffer zone, or staff training programmes to improve understanding of nutrient management.

## **6. INDUSTRY ARTICULATED GOOD MANAGEMENT PRACTICE**

- 6.1 As discussed in my Group 1 evidence, Fonterra and DairyNZ support the concept of a project to define good management practice as required by Schedule 8.
- 6.2 DairyNZ has formally committed to working with Environment Canterbury, Crown Research Institutes and other primary sectors to define good management practice under different farming conditions, including an agreed set of numbers that will represent nutrient losses.

- 6.3 DairyNZ supports the Land and Water Forum definition of good practice:

*Good management practice refers to the evolving suite of tools or practical measures that could be put in place at a land user, sector and industry level to assist in achieving community agreed outcomes (in this case for water quality).<sup>9</sup>*

- 6.4 DairyNZ supports broadening the focus of good management practice in the S.42A report to include “nutrient management” rather than just a narrow focus upon nitrogen loss as is implied in Schedule 8 of the Proposed Plan. While nitrogen loss may be an important factor, there are a wide variety of environmental risks and farming practices that need to be accounted for as part of a definition of good management practice.

## **7. ADVANCED MITIGATION**

- 7.1 On page 86 of the S42A report, the term “advanced mitigation” is used to “reinforce the concept that advanced mitigation techniques are at the forefront of good farming practice”. I agree that many of the practices listed under the definition of advanced mitigation might be considered to be part of good farming practice. However, it is worth noting that advanced mitigation is not a term widely used by the dairy industry or farmers. I note that some of the mitigations mentioned (for example including a winter shelter) hold the potential for adverse environmental effects if the farming system is not managed effectively.
- 7.2 It is worth noting that DairyNZ is placing increasing emphasis upon the need for farmers to improve nutrient use efficiency as a means of improving profitability and reducing nutrient losses. Such outcomes can be achieved through the industry-led initiatives described in the evidence of Mr Cullen and myself that was presented at Group 1 hearings.
- 7.3 DairyNZ's position is that the best overall environmental and economic outcomes are likely to be achieved where dairy farmers manage systems that operate at moderate intensity and maximise profit by optimising the efficiency of use of nutrients and other inputs rather than operating overly intensive systems and applying expensive mitigations, such as winter shelters, to reduce the resulting nitrogen losses.

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9. Land and Water Forum. 2012. Managing Water Quality and Allocating Water. p 106

7.4 This position is confirmed by research being carried out throughout New Zealand, including in Canterbury, as part of the Pastoral 21 programme. The Pastoral 21 programme was summarised in my evidence during Group 1 hearings. Initial results confirm that alternative farm management options support the programme's objectives of increased productivity and a lower environmental footprint including reduced nitrogen losses for both the milking platform and support land used for wintering. Although the research is part of a five year programme, the results are being used as a pilot for the development of extension and learning resources to support improvements in farming practices. Uptake of the results will require continued improvements in farming capability to make use of new practices including pasture management and grazing.

## **8. CONCLUSION**

- 8.1 The dairy sector is implementing an ambitious range of programmes that will help achieve the objectives of the Proposed Plan.
- 8.2 DairyNZ support the concept of farm environment plans. However, as there is not the immediate capacity or capability to develop a farm environment plan for all farms in the region, further time is required to enable existing industry programmes to be delivered that will help improve nutrient management and increase the number of capable farm advisors.

## **APPENDIX 1**

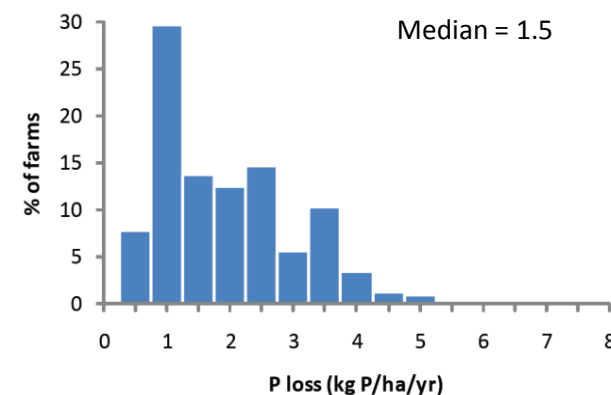
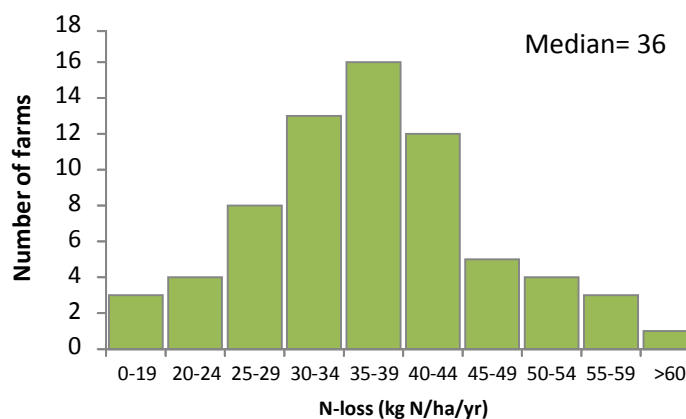
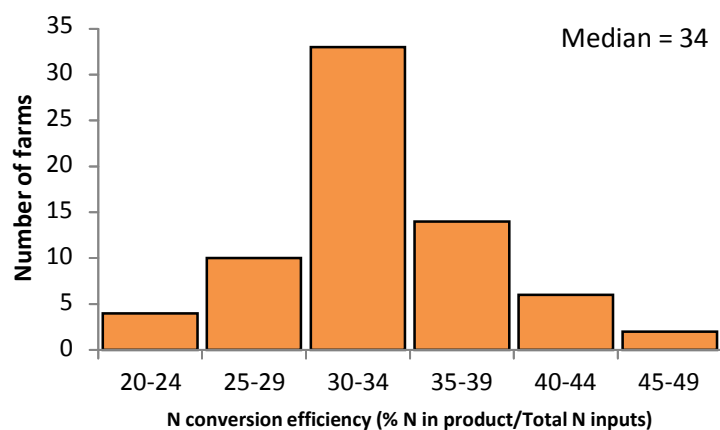
### **Example of a Sustainable Milk Plan**

# DairyNZ Sustainable Milk Plan

<b>Farm details</b>		<b>Name:</b>		<b>Date:</b>		<b>Assessor:</b>	
<b>Farm &amp; Supply Number</b>		<b>Physical Address</b>					
<b>Catchment</b>	Upper Waikato	<b>Business Type</b>	Other	<b>Email address</b>			
<b>Farm area</b>	<b>Total ha</b>	<b>Peak cow numbers milked</b>			<b>Stocking rate (cows/ha)</b>		#DIV/0!
	<b>Effective ha</b>	<b>Production 11/ 12 in MS total</b>		<b>in kg MS/ha</b>	#DIV/0!	<b>in kgMS / cow</b>	#DIV/0!
<b>Effluent Application area (ha)</b>		<b>Production 10 / 11 in MS total</b>		<b>in kg MS/ha</b>	#DIV/0!	<b>in kgMS / cow</b>	#DIV/0!
<b>Support / Runoff block (s) ha</b>		<b>Operating Profit (\$/ha)</b>			<b>Pasture eaten (t DM/ha)</b>		
<b>What's run on support block:</b>		<b>DairyNZ Farm System: 1- 5</b>			<b>Cow Live weight</b>		
<b>KgN/ha/yr applied (whole farm ave)</b>		<b>Farm Working expenses (\$/kg MS)</b>			<b>Cow Live weight (kgLWT/ha)</b>		
<b>Farm contour (% Flat /Rolling / Steep)</b>		<b>Cow efficiency (kg MS/kg LWT)</b>		#DIV/0!	<b>Cows/Full Time Equivalent</b>		
<b>Milking platform soils</b>		<b>Effluent storage volume (cubic metres)</b>			<b>6 week in calf rate (%)</b>		
<b>Support block/runoff soils</b>		<b>Water use around shed (L/cow/day)</b>			<b>Empty rate (%)</b>		
<b>Wintering (Cows on or off farm; numbers and duration)</b>							
<b>Imported supplement Type and amount: (t DM)</b>							

## Nutrient management indicators: Upper Waikato

(N data from 69 farms; 2011/12; Overseer v.6)



<b>N Conversion efficiency (%)</b>		<b>N Leached (kg N/ha/yr)</b>		<b>P loss (kg P/ha/yr)</b>	
<b>Date of Nutrient Budget</b>		<b>Version of Overseer used</b>		<b>P loss risk</b>	



**Date:** **Planning Period: 2013 - 2014**

**Farmer goals:**

**Agreed action(s):** **Who** **By when?**

**Nutrient Management:**  
**(Industry expectation: Compliance with nutrient management rules)**  
i) Improve understanding of Overseer nutrient budget and implement appropriate actions to improve nitrogen use efficiency within the current system.  
ii) Understand current N-loss, identify potential options for reducing losses in future (if needed) & implement appropriate actions  
iii) Understand current P loss risk, identify appropriate actions to minimise the risk for their farm  
(Are the actions suited to being adopted by the farm business?)

**Effluent Management**  
**(Industry expectation: Compliance with effluent management rules)**

**Waterway Management :**  
**(Industry expectation: Cattle exclusion from waterways)**  
Identify stream, lake and wetland areas and implement appropriate actions to improve water quality and biodiversity

**Land Management:**  
Identify areas of soil loss risk and implement appropriate actions to reduce erosion and sediment run-off to waterways

**Water Use: (Industry expectation: Compliance with water take and use rules)**  
i) Understand obligations under WRC's Variation 6 rules and apply for consent before Dec 2014.  
ii) Identify opportunities for improving water use efficiency and implement appropriate actions

<i>Achievements to date</i>		<i>Date completed:</i>
<b>Nutrient Management:</b>		
<b>Farm Dairy Effluent:</b>		
<b>Waterway Management:</b>		
<b>Land Management:</b>		
<b>Water Takes and consents:</b>		
<b>Environmental Hotspots:</b>		

*Achievements will include meeting any Regional Council or industry expectations*

