

**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 THE GROUP 1 HEARING**

**1. INTRODUCTION**

- 1.1 My name is James Gregory Ryan. I hold a Master of Arts (First Class Honours) in Geography from the University of Canterbury which was conferred in 1996.
- 1.2 Since 2010, I have been employed by DairyNZ as the Regional Policy Manager. I am responsible for working with local government to help ensure that policies are developed that support the sustainability, profitability and competitiveness of dairy farming in New Zealand.
- 1.3 I represent DairyNZ on a range of industry groups including the Primary Sector Water Partnership which supports the sustainable use of freshwater resources in the primary sector.
- 1.4 In Canterbury I have been a member of the Policy Advisory Group established by Environment Canterbury to support the development and implementation of the Proposed Canterbury Land and Water Regional Plan (*the Proposed Plan*). I have been involved in the Land Use and Water Quality project that was used to inform development of the Proposed Plan.
- 1.5 I have extensive policy and planning experience obtained both overseas and in New Zealand including at Environment Canterbury, Christchurch City Council and the former Auckland Regional Council.
- 1.6 I am an affiliate of the New Zealand Institute of Primary Industry Management.

- 1.7 I am a Project Management Professional and a member of the Project Management Institute.
- 1.8 I am authorised by DairyNZ to provide this evidence on its behalf as a DairyNZ representative.
- 1.9 I am presenting this evidence on behalf of Fonterra and DairyNZ. Given the alignment of interests between Fonterra and DairyNZ in relation to the Proposed Plan the two organisations have elected to present a joint case before the Hearings Commissioners.
- 1.10 I am familiar with the aspects of the Proposed Canterbury Land and Water Regional Plan relevant to my evidence to which these proceedings relate.
- 1.11 I am not offering evidence as an expert witness. However, given my work for DairyNZ and previous employers, I have relevant experience in policy and planning matters.

## **2. SCOPE OF EVIDENCE**

- 2.1 My evidence will deal with:
- (a) DairyNZ's interest in the Proposed Plan;
  - (b) Characteristics of dairy farming in the Canterbury Region;
  - (c) Dairy sector sustainability initiatives.

## **3. DAIRYNZ'S INTEREST IN THE PROPOSED PLAN**

- 3.1 DairyNZ has an interest in the Proposed Plan as it will have a direct impact on dairy farmers in the Region.
- 3.2 DairyNZ is an industry organisation that represents New Zealand's dairy farmers. It is funded by a farmer levy on milk solids and through partnering with government investment. DairyNZ's purpose is to:

*“secure and enhance the profitability, sustainability and competitiveness of New Zealand dairy farming. We deliver value to farmers through leadership, influencing, investing and partnering with other organisations and through our own strategic capability. Our work includes research and development to create practical on-farm tools, leading on-farm*

*adoption of best practice farming, promoting careers in dairying and advocating for farmers with central and regional government<sup>1</sup>.*

- 3.3 A key focus for the organisation is to carry out research to support good management practices across a wide range of areas that affect dairy farming businesses including animal welfare, staff management, stockmanship, feed management and nutrient management. DairyNZ has approximately 250 staff, of which 25 are based in Canterbury.
- 3.4 It is my understanding that the Proposed Plan seeks to establish a region-wide interim holding position until 2017 that will eventually be superseded as each zone committee goes through limit setting processes at the catchment scale. The dairy sector recognises the need for freshwater limits. We support the development of freshwater limits at the catchment scale provided they are based on robust science and have been developed through a collaborative process that balances the community's social, economic, cultural and environmental objectives, as envisaged under the CWMS.

#### **4. CHARACTERISTICS OF DAIRY FARMING IN THE CANTERBURY REGION**

- 4.1 There has been significant growth of dairy farming in Canterbury over the last ten to twenty years. Drivers of this growth have included the development of irrigation to facilitate dairying on land previously too dry for dairying requirements, the adoption of new technologies and the increased profitability of dairying compared to some other traditional farming systems<sup>2</sup>.
- 4.2 There are approximately 970 dairy farms in Canterbury, which represents nearly 8% of dairy farms in New Zealand. The Region's dairy farmers produce approximately 18% of the milk solids produced in New Zealand and 45% of the milk solids produced in the South Island<sup>3</sup>.
- 4.3 The Canterbury Region accounts for a higher level of dairy production per hectare compared with the rest of New Zealand. An average dairy farm in Canterbury produces 1,359 kg milk solids per hectare compared to the national

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1. DairyNZ. 2012. DairyNZ Annual Report 2011/12.
  2. Pangborn, M. & Woodford, K. 2011. Canterbury dairying - a study in land use change and increasing production. Proceedings of the 18th International Farm Management Congress.
  3. Livestock Improvement Corporation and DairyNZ 2012. New Zealand Dairy Statistics 2011 – 12.

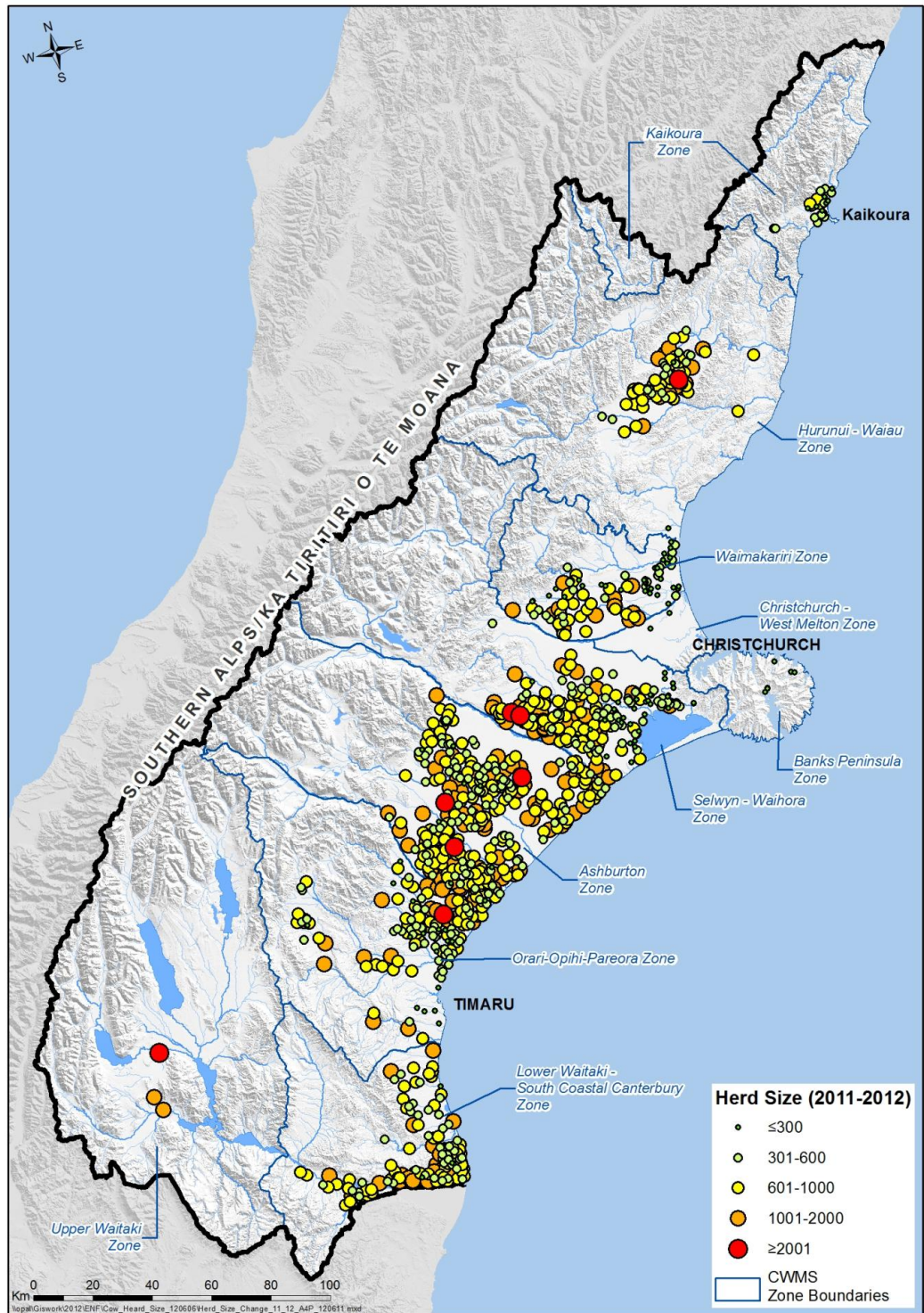
average of 1,028 kg milk solids. This equates to an annual average of 396 kg milk solids production per cow compared to the national average of 364 kg milk solids production per cow<sup>4</sup>.

- 4.4 Dairy farms in Canterbury tend to be larger than dairy farms in the North Island (in terms of both farm area and cow numbers). An average herd size in Canterbury is 774 compared to the national average of 393. Additionally the average dairy farm in Canterbury comprises approximately 226 hectares compared to the North Island average of 119 hectares.
- 4.5 These characteristics of dairy farming in Canterbury are partly a function of the Region's dependence on irrigation that provides a more reliable supply of pasture than that of many rain-fed blocks in other parts of the country. In this respect, irrigation enables farmers to grow and utilise pasture efficiently and support relatively high levels of production. The recent growth of dairy farming in the Region has been associated with relatively high levels of uptake of technological innovations compared to some smaller more traditional family-owned dairy farms in other parts of the country. Additionally, dairy farms in Canterbury tend to be larger because they have often been converted from dryland sheep and mixed cropping farms of that size.
- 4.6 Most of the dairy farms in the Region are situated on the lowland plains. A relatively small number of conversions have occurred in the higher rainfall foothill areas of mid and south Canterbury. The distribution of dairy farms in Canterbury is illustrated in Map 1.
- 4.7 Dairy farming comprises a significant number of small businesses that collectively make a significant contribution to the social and economic wellbeing of the Region. The economic importance of the dairy sector to the Region is discussed in more detail by Mr Butcher.

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4.       Ibid.

Map 1 Representation of dairy farms and herd size in Canterbury<sup>5</sup>



5. Environment Canterbury, 2012. Canterbury Region Dairy Report 2011-12.

## 5. DAIRY SECTOR ENVIRONMENTAL SUSTAINABILITY INITIATIVES

- 5.1 DairyNZ recognises that the dairy sector needs to continue to improve management of its environmental footprint. As a result, the dairy sector has substantially increased the level of investment it is making in a comprehensive range of programmes that will help achieve the social, economic, environmental and cultural outcomes anticipated by the Proposed Plan.
- 5.2 The dairy industry has recently been successful in obtaining significant government investment through the Primary Growth Partnership<sup>6</sup> to further drive efficiency and sustainability gains in farm systems. When combined with funding provided through the farmer levy, DairyNZ is in a position to invest in programmes that will lead to improvements in nutrient management on Canterbury's dairy farms. A number of these key sustainability initiatives are summarised below. In addition, Mr Cullen and Mrs Johnson respectively, discuss a range of Fonterra and Synlait sustainability initiatives in their evidence.

### Research

- 5.3 DairyNZ is involved in a range of research programmes including Pastoral 21 which is a collaborative venture between DairyNZ, Fonterra, Dairy Companies Association of New Zealand, Beef & Lamb and the Ministry of Science & Innovation. The aim of the Pastoral 21 is to:

*“By 2016, deliver profitable, low-risk, new, simple, adoption-ready dairy production systems that increase production by 20% while reducing nutrient loss to the environment by 30%.”*

- 5.4 Part of the Pastoral 21 research is being conducted on dairy farms in Canterbury. 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

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6. 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.

practices. Uptake of the results will require continued improvements in farming capability to make use of new practices including pasture management and grazing.

### **Sustainable Dairying: Water Accord**

- 5.5 In 2003 Fonterra led development of the Dairying and Clean Streams Accord (*the Accord*). The Accord has played an important role in increasing farmer understanding of the importance of environmental issues in farm decision making. Mr Cullen summarises some of the environmental improvements achieved under the Accord in his evidence.
- 5.6 DairyNZ is currently leading development of a new Sustainable Dairying: Water Accord (new Accord). The new Accord will set a range of targets to manage the effects of dairying on water quality including the establishment of good management practices expected of all dairy farmers in New Zealand, not just Fonterra suppliers. The new Accord will identify expectations and commitments across a range of areas including nutrient management, effluent management, water use management, stock exclusion from waterways, riparian management and good practice standards for new conversions. In order to take account of increased community expectations of the dairy sector's environmental performance, the new Accord has been developed in conjunction with a range of representatives from iwi, local government and the Fish and Game Council. The new Accord will be finalised in early 2013.
- 5.7 The new Accord will help to achieve the objectives of the Proposed Plan by increasing the uptake of good management practices such as improved nutrient management. Through monitoring, evaluation and independent audit, the new Accord will help to identify opportunities for farmers to continue to make improvements in farming practices.

### **Nutrient management programme**

- 5.8 Through the Primary Growth Partnership, the dairy sector (including DairyNZ, Synlait, Fonterra and other partners) has entered an agreement with Government to invest \$170M to lead transformation within the dairy value chain through new investment in people, capability and knowledge. A key component

of the programme involves reducing the environmental footprint of the industry whilst increasing efficiency and improving agricultural education. Part of this investment includes a comprehensive nutrient management programme that will help farmers to improve nutrient use efficiency and reduce nutrient losses including assisting them to meet the regulatory requirements expected of them as a result of the development of freshwater limits.

- 5.9 As part of the implementation of the Nutrient Management Programme in Canterbury, DairyNZ is working with Environment Canterbury staff to ensure that it supports implementation of the CWMS and the different zone implementation programmes.

### **Nutrient management indicators**

- 5.10 As part of the nutrient management programme, regional nutrient management indicators have been developed to help farmers identify opportunities to become more productive and profitable through improvements in nutrient use efficiency. The programme also seeks to raise awareness amongst farmers of their farm's nutrient footprint and to identify opportunities to reduce nitrogen and phosphorus losses from their system.
- 5.11 This programme recognises and addresses the different stages needed in behavioural change processes, from raising awareness to education and tool provision that enable positive actions and choices. This work is actively supported by fertiliser companies and milk supply companies.
- 5.12 The indicator of nutrient use efficiency is:
- (a) Nitrogen conversion efficiency: an indication of a farm's efficiency at converting external nitrogen inputs such as supplementary feed and fertiliser into nitrogen in products such as milk and meat.
- 5.13 The indicators of nutrient loss are:
- (a) Nitrogen leaching (kg N/per ha/year): an estimate of the nitrogen lost (leached) in drainage water below the plant's root system.
  - (b) Phosphorus run-off (kg P/per ha/year): an estimate of the amount of phosphorus lost from the farm system via surface runoff.



5.14 The development of nutrient management indicators will help to achieve the objectives of the Proposed Plan by supporting the uptake of good nutrient management practices.

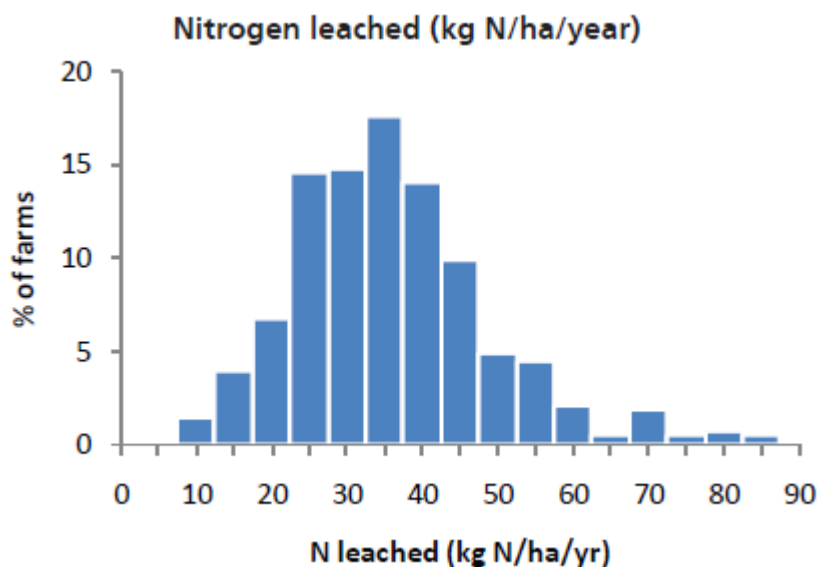
### **Audited Nutrient Management**

5.15 Another key element of the nutrient management programme is the Audited Nutrient Management project. This project aims to create a set of protocols for the collection, analysis and audit of farm data that will enable milk supply companies to measure and monitor the efficiency with which nitrogen is utilised on dairy farms. A key feature of the project is that it provides farmers with actual results at year end (based on OVERSEER), as opposed to predictive nutrient budgets that have been predominantly used in the past.

5.16 The Audited Nutrient Management project provides:

- (a) Information to the farmer about their nitrogen use efficiency and/or losses, and how they compare with other, similar farming systems.

Figure 1 shows nitrogen loss figures based on data from 426 dairy farms in Canterbury (derived using OVERSEER 5.4) for the 2010/11 season.



**Figure 1 Canterbury dairy farms - distribution for nitrogen leaching 2010/11**

This information is provided back to farmers, so that they can see how well they are handling each issue relative to their peers. Farmers are encouraged to seek information and professional advice on practices and actions that can influence how efficiently they are using nutrients and how they can reduce nutrient losses from their farm system.

The Audited Nutrient Management project also provides:

- (b) Improved input information to guide farmers in developing their nutrient management plans.
- (c) A tool to enable milk supply companies to apply a driver for change in behaviour around nitrogen management.
- (d) Ability for the industry to demonstrate increasing efficiency over time.

5.17 Milk supply companies may use the system to employ a range of tools to drive improved nutrient management practices, such as:

- (a) Support mechanisms to assist those with low nitrogen conversion efficiency and/or high leaching rates.
- (b) Incentives or rewards to those with high nitrogen conversion efficiency and/or low leaching rates.
- (c) Minimum standards that must be achieved as a condition of supply.

5.18 Fonterra has fully committed to supporting Audited Nutrient Management project and it is now being implemented with all of its suppliers nationwide. A range of other milk supply companies are now also considering implementing the project.

### **Building industry capability in nutrient management**

5.19 The other key element of the dairy sector's nutrient management programme is a joint dairy and fertiliser industry plan for building the capability of farmers and farm advisors to manage nutrients. The purpose of this initiative is to ensure that when dairy farmers are referred to nutrient management advisors, these

advisors have met defined standards of minimum knowledge, training and certification.

- 5.20 This initiative will increase the number of capable advisors that can work with farmers to improve their nutrient use efficiency and reduce nutrient losses.
- 5.21 A scheme is also being developed to certify nutrient management advisors and audit their performance over time. This scheme will be completed in early 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.
- 5.22 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.

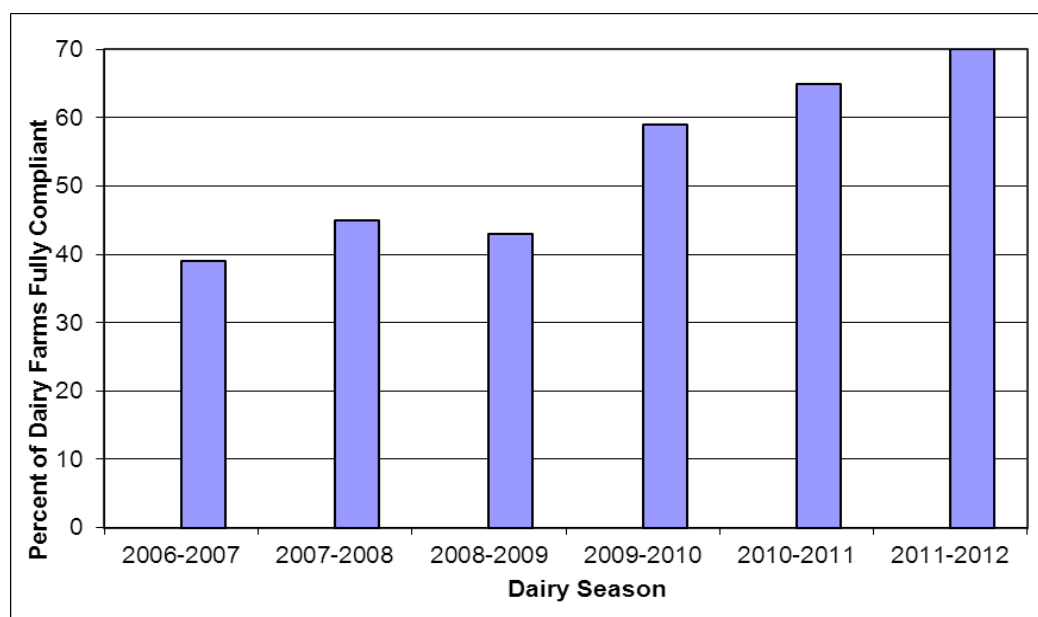
### **Effluent management**

- 5.23 The dairy industry is involved in a range of programmes to increase effluent compliance including through the development of the Farm Dairy Effluent Design Code of Practice and Design Standards. The first round of companies (including a range of companies that provide services to farmers in Canterbury) has now passed through the associated effluent system design accreditation programme. This programme will help continue to improve standards with respect to effluent system design and management.
- 5.24 Other effluent management initiatives that DairyNZ has recently fronted include the development of an Institution of Professional Engineers New Zealand (IPENZ) practice note for the design of effluent storage ponds released in October 2011. Associated with this programme is a training course on the design and construction of effluent storage ponds which DairyNZ has developed in partnership with Infratrain. DairyNZ has also partnered with Massey University to develop a course on the design of effluent systems.
- 5.25 Milk supply companies are involved in a number of initiatives to improve effluent management. In his evidence, Mr Cullen discusses an ongoing effluent management programme carried out by Fonterra.

5.26 DairyNZ convenes the Canterbury Dairy Effluent Group which was formed in 2009 to help improve effluent compliance in the Region. The group comprises representatives from Environment Canterbury, Synlait, Fonterra, AglITO, South Island Dairy Development Centre, Westland Milk, Federated Farmers and DairyNZ. The group has been involved in a range of successful initiatives including the development of resources for farmers and farmer events to support improved effluent management.

5.27 The investment that the dairy sector is making to improve effluent management has been matched by farmer investment in new infrastructure, training and technology. As a result, there continue to be significant improvements in effluent management and compliance across the Region which is reflected in Figure 2. This increase in investment and improved management has also helped ensure farmers optimise nutrient use<sup>7</sup>.

**Figure 2 Fully compliant dairy farms 2006-2011<sup>8</sup>**



### **Sustainable Milk Plans**

5.28 DairyNZ is developing a flagship environmental farm planning tool described as a Sustainable Milk Plan. These plans will help improve nutrient management and include targets and actions by creating a farm specific, practical plan that

7. Environment Canterbury 2012 Canterbury Region Dairy Report 2011/12

8. Ibid.

helps landowners to focus on the actions that are essential to minimise their environmental footprint in the short to medium term. A Sustainable Milk Plan will help farmers to achieve regulatory and/or milk company requirements but may also exceed them.

- 5.29 A key difference between the Sustainable Milk Plans and other environmental farm plans is that the Sustainable Milk Plans identifies specific “targets” that focus on key environmental outcomes and performance measures that take account of the sensitivity of the local environment. The plans can 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 that might be highlighted could be the need to improve planting or fencing around a waterway, an upgrade to effluent infrastructure and soil testing to help optimise Olsen P levels.
- 5.30 One of the advantages of the development of the Sustainable Milk Plans is that through the process of their development, farmers’ understanding of links between their farm business and environmental outcomes is increased. Additionally, through ongoing auditing and monitoring, valuable information is provided on environmental performance, rates of change and barriers to change. In this manner, improvements can be made to help the development and implementation of plans.
- 5.31 Sustainable Milk Plans will help meet the purpose of a Farm Environment Plan described in Schedule 7 of the Proposed Plan.

### **Supporting the uptake of good management practice**

- 5.32 Research confirms that the most effective forum for farmers to learn is through communicating with other farmers<sup>9</sup>. Much of DairyNZ’s focus centres on taking research and practical evidence out to groups of farmers through discussion groups. DairyNZ is involved in a wide variety of extension activities to support good environmental management including providing advice to farmers on effluent management, nutrient use efficiency and water management as well as programmes that enhance other aspects of successful farm management that

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9. Nuthall, P 2001. Managerial ability – a review of its basis and potential improvement using psychological concepts. *Agricultural Economics* 24, 247 – 262.

can indirectly impact on environmental performance, including production performance that increases resource use efficiency, staff management and training.

- 5.33 These extension initiatives complement some of the work carried out by milk supply companies as well as initiatives by other agencies including Environment Canterbury and the zone committees.

### **Milk supply company initiatives**

- 5.34 The milk supply companies are investing in a range of environmental and sustainability initiatives. The initiatives of Fonterra and Synlait are discussed in more detail by Mr Cullen and Mrs Johnson respectively.

### **Industry articulated good practice**

- 5.35 Policy 4.28 supports the use of industry articulated good practice to achieve water quality outcomes.
- 5.36 DairyNZ has formally committed to working with Environment Canterbury, Crown Research Institutes and other primary sectors to define good practice under different farming conditions, including an agreed set of numbers that will represent nutrient losses. As part of this process to define good practice, DairyNZ will be drawing links with other programmes that it is investing in to maximise their effectiveness.
- 5.37 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>10</sup>*

## **6. CONCLUSION**

- 6.1 The Proposed Plan will potentially have significant implications for dairy farming in the Region.
- 6.2 The dairy sector is implementing an ambitious range of programmes that will help achieve the objectives of the Proposed Plan.

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

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