Before Hearing Commissioners at Palmerston North

under: the Resource Management Act 1991

in the matter of: Submissions on Chapters 6, 13 and 15 of the Proposed One Plan

between: **Fonterra Co-operative Group Limited**
Submitter

and: **Manawatu-Wanganui Regional Council**
Respondent

Statement of evidence of Dr John Michael Russell on behalf of Fonterra Co-operative Group Limited

Dated: 30 October 2009

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STATEMENT OF EVIDENCE OF DR JOHN MICHAEL RUSSELL

QUALIFICATIONS AND EXPERIENCE

1 My full name is John Michael Russell.

2 I hold a Doctor of Philosophy degree in Chemistry from the University of Canterbury.

3 For 16 years I was employed as a Research Chemist in the Environmental Management Section of the Meat Industry Research Institute of New Zealand (*MIRINZ*). At MIRINZ I was involved in the research and development of technologies to treat the high nitrogen containing wastewaters from the meat processing industry.

4 In 1993 I started work in the Environment Portfolio at the New Zealand Dairy Research Institute. In 2001 the New Zealand Dairy Research Institute became part of Fonterra Co-operative Group Ltd (*Fonterra*). My present position is Environmental Technical Manager in Fonterra's Environment Strategy and Development Group and my work is in the development of innovative wastewater treatment technologies for dairy processing wastewater. My particular areas of expertise are in the treatment of wastewater by land application, biological treatment of wastewater and methods of removing nutrients.

5 Part of my role in the Environment Strategy and Development Group is to prepare technical assessments of our operations for resource consent applications.

6 I am familiar with the Proposed One Plan (*POP)* to which these proceedings relate. I have attended meetings with Council Officers regarding the Air Chapters of the POP.

SCOPE OF EVIDENCE

7 In my evidence I will describe the manufacturing and research activities of Fonterra in the Manawatu-Wanganui Region and aspects of the POP which are relevant to Fonterra's industrial water takes, and the discharge of wastewater to water and land from manufacturing sites.

8 I also comment on the following documents prepared for the Manawatu-Wanganui Regional Council (*Horizons*):

8.1 The Planning Evidence and Recommendations Report by Clare Barton and Natasha James; and

8.2 The documents showing the tracked changes to the POP as a result of recommendations in the Officers' Reports, particularly to Chapters 6 and 13.

9 My evidence does not address Fonterra's concerns with the impact of the POP on its farmer suppliers. These concerns are described in the evidence of Sean Newland and others.

SUMMARY OF EVIDENCE

10 Fonterra's manufacturing and research operations are very important to the Region, employing more than 660 people at its three sites.

11 Fonterra uses water in its processing plants for cleaning purposes. After cleaning, the water is discharged to the environment – either to waterways or to land. Water is also recovered from milk after evaporation and drying operations, and is discharged to land or as a clean water stream to waterways.

12 Fonterra opposes the provisions of the POP which will apply to Fonterra's industrial water takes in times of low flow. Fonterra submitted that special reference should be made to the perishable nature of milk and that dairy manufacturing (and other manufacturing processes involving perishable foods) should be given priority in the allocation of water.

13 Fonterra does not oppose Policies 6-8 (Point source discharges to water), 6-10 (Options for discharges to surface water and land), and aspects of Policy 13-1 (Consent decision-making for discharges to water).

14 Fonterra considers that further clarification is required in relation to the Rules for discharges to land. With respect to industrial discharges to land, Fonterra agrees with the POP's application of the best practicable option. However, further clarification is required regarding the wording of Policy 13-2(d)(ii), and the application of Rule 13-1 and Rule 13-27 to industrial discharges on land used for dairy farming.

IMPORTANCE OF DAIRY PROCESSING TO THE REGION

15 Fonterra processed more than 13.6 billion litres of milk in New Zealand in the 2007-08 year, operates 23 dairy processing plants in New Zealand, and employs over 18,000 people. The company is the world's largest exporter of dairy products, exporting 95 percent of its production.

16 Fonterra operates three milk processing sites in the Manawatu-Wanganui Region: at Pahiatua – situated adjacent to the

Mangatainoka River, at Longburn adjacent to the lower Manawatu River, and in Palmerston North (the Kapiti manufacturing plant).

17 The Pahiatua site manufactures milk powders. The Longburn site processes local milk from the Region and also acts as a depot for the receipt of and despatch of milk from the 'milk train' which rails large volumes of milk to and from Fonterra's Whareroa site near Hawera. The Longburn site manufactures mainly cheese and casein.

18 Also located on the Longburn site is the Goodman Fielder processing plant which manufactures a variety of consumer products for the New Zealand market. The Goodman Fielder plant shares wastewater treatment facilities with the Fonterra plant.

19 The Kapiti plant manufactures local milk and ice cream and discharges its wastewater to the Palmerston North City Council wastewater treatment plant.

20 Fonterra employs 303 people at its manufacturing sites.

21 Fonterra's main research facility (The Fonterra Research Centre) is also located in Palmerston North. The Fonterra Research Centre was established in 2001 when the New Zealand Dairy Research Institute (*NZDRI*) became a subsidary of Fonterra. The NZDRI was formed in 1927. Today the Fonterra Research Centre is one of the world's largest dairy based innovation centres and is home to innovation teams from Fonterra's business units undertaking research for manufacturing, the supply chain and coporate research and development. The Centre employs over 350 staff and $60 million of research funding passes through the Institute each year. The capital assets of the Centre are over $50 million.

DAIRY PROCESSING INTEREST IN WATER AND LAND

22 Fonterra uses water in its processing operations and discharges wastewater to land and to surface waters.

23 Water is used during the processing of milk mainly for cleaning operations to ensure high food safety standards. It is therefore essential that Fonterra has adequate access to good water for use in its processing areas. After cleaning, the wastewater contains milk and dairy product residues, and contaminants from the cleaning materials used.

24 Two separate wastewater streams can be identified at the Pahiatua plant: condensate and wastewater:

24.1 Condensate is essentially a clean water source recovered from the milk after evaporation and drying operations. It is currently discharged via a small tributary to the Mangatainoka

River. An application for the renewal of the condensate discharge consent is currently being considered by Horizons. In the future Fonterra intends to discharge the condensate directly to the Mangatainoka River.

24.2 Wastewater from the cleaning operations at the Pahiatua site are applied to land near to the manufacturing site. Fonterra holds two resource consents which together authorise the application of up to 2500m^3/d of wastewater to 3 properties comprising a total of 190 ha of land.

25 At the Longburn site condensate and wastewater are discharged to both land and to the Manawatu River. The preference is to discharge wastewater to land but when soil conditions are unsuitable (i.e. too wet for application of wastewater) during winter (May-October) discharges also occur to the river.

26 Fonterra holds three resource consents in relation to wastewater from the Longburn site: one for the discharge to the Manawatu River and two for the wastewater irrigation operations. The consent to discharge to the Manawatu River allows the discharge of up to 6000 m^3/d of wastewater to the river between the months of May and October with the amount that is allowed to be discharged determined by wastewater quality standards and by river flow. The application of wastewater to land currently covers a total of 233 ha of land located near to the Longburn processing site.

27 As part of its consent to discharge to the Manawatu River, Fonterra is undertaking a staged upgrade of the treatment facilities at the Longburn site. This will start with the installation of a dissolved air flotation plant to be commissioned in 2010. This is consistent with Policy 6-8(a)(iii and iv) of the POP allowing adoption of best practice and a reasonable time to achieve improvements.

WATER TAKE

28 As discussed above, Fonterra uses water in its manufacturing operations to clean its processing plant. For the Pahiatua site Fonterra holds a consent to take 3240m^3 of water per day from a deep well situated near to an un-named tributary of the Mangatainoka River. At the Longburn site Fonterra holds a consent to take water from three bores. These bores abstract water from an aquifer depth of 170 m.

29 Consistent with Policies 6-12 and 6-13 in the POP, water at Fonterra sites is used according to best industry practices and all water takes are monitored daily. Fonterra also maximises, where possible, water reuse and has an active research programme to extend reuse options within manufacturing.

30 In its submission on the POP Fonterra submitted that in the context of reduced or ceased water takes at times of low flow special reference should be made to the perishable nature of milk and the essential nature of water within the dairy processing chain. Further, absence of such a reference significantly reduces the security of investment for dairy farmers as having to suspend milking part way through the season as a result of water restrictions would have a sgnificant impact on farm returns and may lead to animal welfare issues.

31 This submission was rejected on page 267 (Section 4.116.2) of the Officer's Report by Clare Barton and Natasha James.

32 In terms of the impacts on the milk processing and manufacturing operations, ceasing water supply will result in milk not being able to be processed. This will result in loss of economic return to the community, and potential environmental effects through having to dump milk either at the processing site or on farm. Dumped milk will lead to significant input of nitrogen, phosphorus and other nutrients to the environment that will eventually impact on surface and groundwaters.

33 In the process of reconsenting the water take for Fonterra's Pahiatua site, Horizons' officers advised that the groundwater take has been linked to surface water flow, and therefore should be restricted when surface water flows are low. Calculations undertaken by Horizons for this resource consent application to take water estimate that the flow in the Mangatainoka River is less than 1.305m^3/s (85% of the Mean Annual Low Flow (*MALF*)) for an average of 10 days per year. In the worst recorded year there were 70 days when the River was less than 85% of MALF, and when processing would therefore not have been able to occur at the Pahiatua plant.

34 Fonterra submits that processors of perishable foods should be considered a core water take, which should be given priority at times of low flow.

DISCHARGES OF CONTAMINANTS TO SURFACE WATERS

35 Fonterra does not oppose the provisions of Policies 6-8 (Point source discharges to water), 6-10 (Options for discharges to surface water and land) and aspects of Policy 13-1 (Consent decision-making for discharges to water).

36 The on-going sustainability of the Longburn site depends on the ability to discharge some wastewater to the Manawatu River. This allows protection of the land treatment system during wet periods. The procedures that Fonterra has in place for discharging wastewater to the Manawatu River are consistent with the POP

provisions. In particular, Policy 6-10(a) encourages discharges to land rather than water. Policy 6-10(b) discourages discharges at times of low flow and Policy 6-10(c) encourages different treatment options at different times. Fonterra's consent provides that it can only discharge between May and October, the discharge amount is dependant on the flow in the river, and no discharge can occur when the flow drops below 37.5m^3/s.

37 At the Pahiatua site the only direct discharge to the Mangatainoka River is the condensate discharge. This discharge does not have any significant effect on water quality.

38 Policy 13-1 covers the decision making process for discharges to water. In its submission on the POP, Fonterra opposed Policy 13-1 because it was based on Schedule D. Nonetheless, Fonterra does not oppose the Policy's requirement that particular regard be given to *"the appropriateness of adopting the best practicable option to prevent or minimise adverse effects"* in the particular listed circumstances.

DISCHARGES TO LAND

39 Policy 13-2 of the POP describes the decision making process for discharges to land. While Fonterra's submission opposed Policy 13-2 because of its reliance upon Schedule D, Fonterra does not oppose the aspect of this policy which requires particular regard be given to the best practicable option (Policy 13-2(d)).

40 In Policy 13-2(d)(ii), adoption of the best practicable option is considered when *"the likely adverse effects are minor and the costs associated with adopting the best practicable option are small in comparison to the costs of investigating the likely effects on land and water"*. Fonterra is unclear as to the meaning of the phrase "costs of investigating" in this clause. If it is assessed that "the likely adverse effects are minor" then the "costs of investigating the likely effects" carries little, if any meaning

41 In addition to the concerns which will be explained by Fonterra's other witnesses, the manufacturing division of Fonterra also has concerns about how the Rules in Chapter 13 will be interpreted, particularly Rules 13-1 to 13-27.

42 Current land application systems operated by the Fonterra manufacturing sites are based on application of the wastewater, either untreated or treated by dissolved air flotation, to dairy farm land. The treatment systems at Pahiatua and Longburn both apply wastewater to dairy farms.

43 It is unclear in the POP as to what rule would apply to these discharges to land from Fonterra's Pahiatua and Longburn plants.

In my view, this activity would be regulated by Rule 13-27: "Discharges of contaminants to land or water not covered by other rules in this plan". In this case the activity would be discretionary and conditions and standards would be determined during the consenting process. This is the preferred approach for Fonterra.

44 However, it is not clear whether Rule 13-1 would apply to such discharges, as one of the primary activities on the land is dairy farming. The Pahiatua wastewater irrigation properties are located within the Mana 8c Water Management Subzone which is listed in Table 13.1 of the POP. Since most dairy operations are likely to be near the Nitrogen leaching limits in Table 13.2, the addition of any further nitrogen to such a system (in the form of wastes and wastewater) is unlikely to ever comply. This would preclude the application of industrial wastes containing nitrogen to dairy farming, cropping, market gardening, intensive sheep or intensive beef farming land. In short, this would discourage the application of any waste to farmland and would be counter to Policy 6-10(a) (which encourages discharging contaminants onto land rather than discharging contaminants into water).

Dr John Russell
30 October 2009