

**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 IAN KEVIN GOLDSCHMIDT  
FOR THE GROUP 1 HEARING**

**1. INTRODUCTION**

1.1 My full name is Ian Kevin Goldschmidt. I hold a Bachelor of Resource Studies Degree from Lincoln University. I am the National Environmental Manager at Fonterra Co-operative Group Limited (Fonterra).

1.2 As the National Environmental Manager, my role is to:

- (a) Manage environmental strategy and resource consenting of nationally significant development projects;
- (b) Assist the New Zealand manufacturing sites with resource consent Compliance; and
- (c) Advise New Zealand manufacturing sites on environmental improvements to reduce Fonterra's environmental footprint.

1.3 I am familiar with the Proposed Canterbury Land and Water Regional Plan (the Plan) to which this hearing relates.

**2. SCOPE OF EVIDENCE**

2.1 In my evidence I discuss the importance of Fonterra's manufacturing and processing activities in the Canterbury Region, growth expectations for these

activities, and aspects of the Plan that are relevant to industrial water takes and discharges from Fonterra's manufacturing sites.

### **3. SUMMARY OF EVIDENCE**

- 3.1 Fonterra's processing and manufacturing operations are significant for New Zealand. Fonterra accounts for 26% of New Zealand's total export earnings and contributes significantly to the Canterbury regional economy. Across New Zealand, Fonterra employs over 16,800 people. The 17 sites in Canterbury employ more than 1,100 people.
- 3.2 The Darfield and Clandeboye sites in particular are regionally and nationally significant, given their contribution to regional employment and gross domestic product (GDP), as Mr Butcher will confirm.
- 3.3 The production sites in Canterbury produce a range of milk products including various cheeses, butter, milk powder, anhydrous milk fat and other protein products. These products provide a staple food source which is high in protein and other nutrients and vitamins, which are essential for human health.
- 3.4 Fonterra uses water in its processing plants for processing and cleaning. After cleaning, the water is discharged to the environment. Water is also recovered from milk after evaporation and drying operations, and is discharged to land.
- 3.5 Continued access to water for current and future growth of Fonterra's manufacturing operations is essential. Fonterra's processing and manufacturing operations would not be able to operate without a secure water supply and without discharge capability.
- 3.6 It is therefore very important for Fonterra that the Plan recognises the substantial investment in water related activities by Fonterra and the need to protect that investment into the future. Restrictions on water use and discharge at processing sites could lead to the need to divert milk to other sites which would reduce transport and existing infrastructure use efficiencies. At worst, if milk was not able to be processed at Fonterra's Canterbury sites, milk from suppliers would potentially need in the short term to be disposed of on farm, which is highly undesirable environmentally. In the longer term, if milk could not be processed in the Region then fundamental changes to the location of

processing to move it outside the Region would be necessary if milk were to continue to be produced in the Region.

- 3.7 Having said that, Fonterra recognises that water is a valuable and increasingly scarce resource. Fonterra supports the intent of the Plan to ensure water is used efficiently and that the range of values of waterways are provided for in the discharge and take regimes. It constantly strives to refine and improve its methods and practices to make better use of water. For example, improvements are made each time we develop a new production site or extension (Darfield is a good example of that – see paragraphs 5.5-5.8).
- 3.8 However, Fonterra does not see that substantial further efficiencies/quality improvements in terms of water use and discharge at its sites will be possible in all cases at consenting stage. Limitations apply in terms of existing infrastructure, design and cost. The environmental benefits from process improvements in relation to cost and other practicalities also need to be considered on a case by case basis. Some sites will have more scope for improvement than others. Darfield in particular, is designed to be the most water use efficient site operated by Fonterra and would currently have no opportunity for efficiency improvements. Clandeboye is also in the top 5 of Fonterra's sites nationally in terms of water use efficiency.
- 3.9 Fonterra specifically opposes the provisions of the Plan that will require surrender of water upon transfer of water take permits and at consenting stage. The Darfield site in particular holds water permits that authorise water takes for later stages of development. However, not all of that water is currently needed. Fonterra might transfer some of that water temporarily until it needs it for its own expansion. Fonterra considers it would be more efficient and in accordance with the intent of the Plan to maximise use and efficiency of available water by incentivising transfers of water.
- 3.10 In addition, if water is needed by Fonterra in the future for Darfield or in other areas where significant restrictions apply, the only method to obtain water would be to buy existing water permits. If a substantial part of the water authorised by those permits must be surrendered on transfer, it may not be possible to purchase sufficient water. Fonterra would then need to consider

operating in another location, which is less efficient given distance from supplier farms and available infrastructure.

- 3.11 Fonterra also opposes other aspects of the Plan that create practical issues, including provisions that address consent renewals and water use restrictions.

#### **4. IMPORTANCE OF DAIRY PROCESSING TO THE NATION AND REGION**

##### **Assets and Economic Statistics**

- 4.1 Fonterra is New Zealand's largest company, accounting for 26% of New Zealand's total export earnings and 89% of New Zealand's dairy production.
- 4.2 In the peak season Fonterra collects over 80 million litres per day off approximately 10,500 farms from 16 tanker depots and delivers it to 70 different locations. In doing so, the fleet travels approximately 200,000km per day (at peak) and 85 million kilometres per year. We operate 27 dairy processing plants in New Zealand, and employ over 16,800 people.
- 4.3 Fonterra is the world's largest exporter of dairy products, exporting 95% of its production (or more than 2.2 million metric tonnes of dairy products) to 140 countries around the world. Fonterra's revenue for the year ended 31 July 2012 was \$19.8 billion. Fonterra estimates that its annual trade in dairy products is about 8% of total global production, and was 11.5 million tonnes for the 2011 calendar year.

##### **Canterbury Statistics**

- 4.4 Canterbury Region in particular is a significant region for dairy processing. Approximately 19% of national milk production comes from here. Fonterra's four main production sites in the Region produce a full range of milk products including milk powder, cheese, anhydrous milk fat and butter.
- 4.5 Our Canterbury sites employ more than 1,100 people directly, but also support a significant number of supplier services. These include caterers, cleaners, maintenance providers, painting contractors, engineering services and farm support services (Fonterra owns more than 1600ha in Canterbury for waste treatment operations but also makes use of that land for farming and cropping).

4.6 Canterbury is also New Zealand’s fastest growing dairying region with a growth rate of approximately 5%, which is above the national average of 3%. This growth is as a result of new supply and improved performance from existing farms.

4.7 As will be discussed in the next section, Fonterra has invested heavily in ongoing growth of dairy processing in Canterbury.

## 5. FONTERRA SITES IN CANTERBURY

5.1 Fonterra owns, operates or has interests in the following Canterbury sites:

Location	Nature of operations
Kaikoura	Production site
Culverden, Hurunui	Production site (reverse osmosis)
Darfield, Selwyn	Production site
Clandeboye, Temuka	Production site
Studholme, Waimate	Production
South Street, Ashburton	Depot
Lyndon Street, Culverden, Hurunui	Depot
Old North Road, Washdyke, Timaru	Depot
Meadows Road, Timaru	Depot
Halswell Junction Road, Christchurch	Cool store and ambient storage site
Halwyn Drive, Christchurch	Depot
Portside Logistics Hayes Street, Timaru	Ambient (not chilled) storage
R & M Storage, Timaru	Ambient storage
PrimePort Dairy Store, Timaru	Ambient storage
Timaru Railhead	Ambient site – NZ Port
Lytelton Load port	Ambient site – NZ Port

5.2 Clandeboye and Darfield are particularly significant production sites, so I note some key aspects of those sites below:

### Clandeboye

5.3 The Clandeboye site is one of Fonterra’s largest manufacturing sites, processing more than 40 per cent of all the milk collected by Fonterra in the South Island. Clandeboye employs 765 people, and makes milk powder, butter, cheese and protein products primarily for export.

- 5.4 In 2012, Clondeboye produced a record 417,000 metric tonnes of product. The site is also the largest producer of unsalted butter in the world, capable of producing 260 tonnes daily.

### **Darfield**

- 5.5 The Darfield site, located 45 km southwest of Christchurch, started operating in August 2012. The site employs 60 staff and processes approximately 2.2 million litres of milk per day. A second dryer is currently under construction which will be able to process a further 4.4 million litres of milk per day. When construction is completed in August 2013, the site will have the capacity to process 6.6 million litres of milk per day and employ 120 people. The Darfield development has been designed to be the highest yielding (best conversion of raw milk to product) and most efficient (least water to milk ratio) milk powder site.
- 5.6 Our decision to build at Darfield also reduces transport movements by approximately 20,000km/day (compared to further developing the Clondeboye site). Construction of the second stage will further improve transport efficiencies by using rail to bring boiler fuel into the site and to take product to port.
- 5.7 The total investment in the Darfield site will be approximately \$500 million when the second dryer is complete. This is the single largest investment in the dairy industry in New Zealand's history. We have made this investment due to continuing strong growth in the milk supply in Canterbury.
- 5.8 One of the key reasons the Darfield site was selected as an appropriate site for development was because in its previous use as a dairy farm, the site held large groundwater take permits. Ongoing access to water is critical for Fonterra's long term growth plans at Darfield and so these permits made the Darfield site attractive. It would be detrimental to the viability of the Darfield operation if some of the water currently consented for use on the site were to be taken away at re-consenting stage. Reduced water for this site could affect current operations given that Darfield is already highly efficient in terms of water use. Reduced water would also definitely affect the anticipated future development of the site. Fonterra considers that the Plan should therefore

provide for ongoing access to water, even if currently not being used, if a future legitimate use can be demonstrated by the applicant.

### **Studholme**

- 5.9 Fonterra also recently purchased the New Zealand Dairies' Studholme site. The site has become the Co-operative's 27th processing factory in the country and accepts about 800,000 litres of milk a day.

### **Kaikoura**

- 5.10 The Kaikoura site is a small cheese processing site that collects and processes milk from the approximately 38 farmer suppliers in the Kaikoura region.

## **6. DAIRY PROCESSING NEEDS**

- 6.1 Fonterra is heavily reliant on water for its processing operations and discharges of wastewater. It is essential that Fonterra has continued access to good water for use in its processing plants.
- 6.2 Fonterra ensures that when its new plants are designed they are as water efficient as practicable at the time they are constructed. Over time, technological advances have meant that the water use to milk ratio improved with each development. This is a result of designing plants that are more stable in their operation, meaning they have greater production run lengths between washes. Technological advances in ways to reuse products such as condensate have also improved efficiencies. However, there is often little scope to make an existing plant more water efficient if they are already operating in accordance with their original design, without making substantial and expensive changes to the design and configuration of the processing equipment. Site and plant water takes are monitored and reported on daily to ensure design parameters are maintained. Two separate wastewater streams are common to most sites: condensate and wastewater:
- (a) Condensate is essentially a water source recovered from the milk during the evaporation process prior to the powder drying operation.

- (b) Wastewater is the residual water used during the cleaning operations to ensure high food safety standards. The resulting wastewater contains small traces of milk residues and some cleaning chemicals.
- 6.3 The on-going sustainability of Fonterra's processing may depend on the ability of sites to discharge some highly treated wastewater to waterways (for example, Fonterra holds a current condensate discharge to water consent for Studholme - see paragraph 6.9). This would allow some protection of land treatment systems during prolonged wet periods when storage and land based applications can be difficult to manage.
- 6.4 Current land-based wastewater application systems operated by the Fonterra manufacturing sites apply wastewater, treated by dissolved air flotation, to land used for a mixture of farming types including cut and carry, sheep and beef and dairy.
- 6.5 Fonterra holds discharge consents for its activities at each of its sites. These consents set out the management practices that avoid or minimise the discharge of nutrients (nitrogen and phosphorous), and microbiological contaminants, and the potential effects on surface and groundwater quality, and sources of drinking water.
- 6.6 I have set out below some further details regarding the current water takes and discharges for Fonterra's more significant sites in the Canterbury Region.

### **Studholme**

#### *Takes*

- 6.7 For the Studholme site Fonterra holds a consent to take 2500m<sup>3</sup> of water per day from 2 bores, located at Studholme. This consent has a condition which requires a water efficiency audit in accordance with Dairy Industry best practice or as detailed in Auckland Regional Council's technical publication number 82 Industrial Water Audit Guidelines.

#### *Discharges*

- 6.8 Fonterra holds one resource consent that authorises the application of up to 6000m<sup>3</sup>/day of wastewater to several privately owned properties comprising a



total of 624 ha of land. The wastewater that is discharged is of very high quality as it is treated in a biological treatment plant prior to being discharged to land. The site also has considerable storage so irrigation in wet weather can be avoided.

- 6.9 Fonterra holds one resource consent that authorises the discharge of up to 2600m<sup>3</sup>/day of condensate and stormwater to Waimate Creek at Hannaton Road, Studolme. The condensate and storm water is of very high quality as it is treated through a wetland first. This water is usually irrigated to land as the site has considerable storage and there is significant demand for irrigation water in the Region.

### **Clandeboye**

#### *Takes*

- 6.10 For the Clandeboye site Fonterra holds consent to take 25812m<sup>3</sup>/day of water from seven bores located adjacent to the Clandeboye site. The site water supply bores are 65-85 metres deep with peak water usage at the site of between 15,000 –16,000m<sup>3</sup>/day.

#### *Discharges*

- 6.11 Fonterra or related parties hold resource consents authorising the discharge of up to 25750m<sup>3</sup>/day of wastewater (including condensate) by irrigation. The total land area to which this is applied is approximately 1300ha. Fonterra also holds a resource consent authorising the discharge of 34,500m<sup>3</sup>/day of wastewater to sea via an ocean outfall.

### **Darfield**

#### *Takes*

- 6.12 For the Darfield site, Fonterra holds a consent to take 12,960m<sup>3</sup>/day of water from two bores. These bores abstract water from an aquifer depth of 200m.
- 6.13 When locations for a suitable site development were considered by Fonterra in Canterbury, water supply was identified as being one of the most significant issues because of known shortages and potential discharge limitations.

- 6.14 The Darfield site was attractive as it had an existing consented large groundwater irrigation permit which Fonterra was confident could be varied to an industrial take under the provisions of the NRRP. It was considered at the time that with careful planning and taking into account the volume of the existing water permit, the location could support a staged approach to development with a final site capable of processing 10-12ML of milk per day.
- 6.15 Development to date has been much faster than initially expected with the second dryer to be commissioned in August 2013. At this stage there is no commitment to a third dryer but further development in Canterbury will be required if milk supply continues to grow.
- 6.16 During the process of varying the existing site water take consents from irrigation to industrial water take a consent condition was added to ensure the site was developed in a water efficient manner during each stage of the development. The consent has a condition which requires a water efficiency audit in accordance with Dairy Industry best practice or as detailed in Auckland Regional Council's technical publication number 82 Industrial Water Audit Guidelines.
- 6.17 The Darfield site is a very efficient user of water. It uses approximately 1 litre of water per litre of milk processed. As future developments are designed, the most appropriate technology will be employed to ensure the new plant is as efficient as practicable. In addition, the site is a highly efficient user of water when compared to other consumptive uses, as it actually produces more water than it takes. The water taken from the bores is used to clean the plant, which is then treated and irrigated to land. Condensate produced during the evaporation process is also irrigated to land. For every litre of milk processed, the site produces 0.83 litres of condensate. This means for every litre of water extracted from ground 1.83 litres of water is irrigated back to ground. I am not aware of any other industry that is this efficient in terms of water extraction to irrigation.
- 6.18 As noted, Fonterra's water permit allows for staged development of the Darfield site. While not clear in the Plan, according to the Groundwater Allocation Summary Table (dated 26 September 2012) on Environment Canterbury's website, the Selwyn-Waimakariri Groundwater Allocation Zone is over-

allocated. Accordingly, if Fonterra wanted to make a temporary transfer of part of its water permit prior to full development of the Darfield Dairy Factory site, then under Rule 5.107, it could be required to surrender between 25% and 50% of the water permit which could jeopardise future expansion plans. This would not be a viable option for Fonterra.

- 6.19 Alternatively, if Fonterra wanted to further expand the Darfield or Clandeboye dairy factories in the future, which required quantities of water beyond that allocated in the existing water permits, the only alternative may be to seek a water permit transfer from a nearby landowner who has a surplus capacity. Given that Fonterra would be unable to secure resource consent for a new source of water (due to the over-allocation status), it seems overly restrictive and inefficient that between 25% and 50% of any surplus water under an existing water permit would be made unavailable (unless Fonterra went through the difficult process of seeking a non-complying activity water permit under Rule 5.108). Such a scenario could jeopardise any future expansion of the dairy factory.
- 6.20 The Plan surrender provisions appear arbitrary and are not supported by evidence that confirms “surrender” on transfer as the best means to overcome “over allocation”. Other means may be more efficient including the achievement of higher levels of technical efficiency. In Fonterra’s view, the provisions will act as a strong disincentive against transfer and therefore will constrain the social and economic opportunities which may arise from efficient water use. Future developments of sites such as Darfield and Clandeboye may create considerable efficiencies relating to transport and use of existing infrastructure. These developments may not be possible if water cannot be retained or readily transferred.
- 6.21 In addition, water permits are generally transferred on sale of land to the new owner, so it would not be appropriate for such transfers to be captured by the proposed surrender provisions in the Plan.
- 6.22 Fonterra recognises that there is a need to address over allocation; however, it does not consider that the surrender of water rights represents the sole appropriate response. Principally, over-allocation should be dealt with at a

catchment-specific level, and in many cases may include the creation of 'new water' through water use efficiency gains and infrastructure development.

### *Discharges*

- 6.23 Fonterra holds three resource consents which together authorise the application of over 9000m<sup>3</sup>/day of wastewater to three properties comprising a total of 634 ha of land. 422 ha of this land is owned by Fonterra and is run as a cut and carry operation. This is one of the most efficient ways of minimising the leaching of nutrients to groundwater as the cropping draws up the nutrients.
- 6.24 Expert evidence presented by Golder Associates at the two Darfield resource consent application hearings showed that the leaching from under the Fonterra cut and carry farms was cleaner than the receiving environment and would effectively dilute existing contaminants under the site. The clean condensate which is irrigated can be stored in a 75,000m<sup>3</sup> storage pond for up to 15 days to avoid irrigation in wet weather.
- 6.25 The Darfield site is also located in the Selwyn-Waihora Nutrient allocation zone (which is part of the "red zone"). Fonterra is particularly concerned about the policies in the Plan which apply to discharges in this area, for this regionally and nationally significant food processing facility. As I understand, future discharges containing nitrogen could be very difficult to consent in this zone, which could substantially affect future growth opportunities at this site.
- 6.26 This may be overly onerous for the Darfield site especially as it was recently recognised by Ecan staff (Alistair Pickering and Tami Woods) that the current consents and operational base for Darfield could be considered best practice in terms of nutrient management and leaching reductions. Further expansion under the same or similar criteria would be an improvement on some of the existing neighbouring land uses.
- 6.27 If restrictions did eventuate, Fonterra may need to consider locating new activities at other sites, which would significantly reduce infrastructure use and transport efficiencies and may result in greater overall impacts on the environment.

## **7. PROPOSED PRO RATA RESTRICTIONS AT TIMES OF LOW FLOW**

- 7.1 Fonterra understands the need for partial restrictions on water takes at times of low flow to protect waterway values.
- 7.2 However, restrictions on water abstractions at its production sites have some relatively severe implications which need to be accounted for. As noted earlier milk production relies on secure water for cleaning purposes. A plant cannot be left unclean for obvious food hygiene reasons. Our operations must maintain very high standards of cleanliness.
- 7.3 Cleaning takes place between production cycles (at Darfield this is around every 28 days). However, if the drying plant is stopped at any given time, cleaning must take place immediately. Therefore, the more frequently a plant is stopped, the more water is needed for cleaning. In essence if the water available to run the manufacturing plant is restricted and it has to reduce production as a result, it will shut down more often. This in effect will use more water for it to be restarted. As a result the plant becomes less water efficient. The units of water per unit of milk become higher.
- 7.4 It cannot be assumed that if water restrictions are applied to a region which may supply a milk processing plant that milk from farmers will reduce. If milk payouts are high the farmer will tend to purchase in feed to supplement the reduced pasture growth rather than reduce their output.
- 7.5 A further complicating factor arises due to the Dairy Industry Restructuring Act 2001. Under this Act, Fonterra must accept milk from farmer suppliers. As a result, Fonterra always needs to have a contingency for accepting unanticipated milk (for example, due to increased production or close down of third party processing sites), which means having reliable access to additional water for increased levels of processing is essential.
- 7.6 If that milk cannot be processed, it might need to be temporarily disposed of (probably by being put into the effluent pond at each producer farm and then irrigated to land), which has adverse environmental consequences. In addition, trucks would have to travel an additional 20,000 km per day to take the milk to Clandeboye, however, Clandeboye does not have sufficient capacity to process

Darfield's milk. Fonterra also does not have spare milk tanker capacity for transporting this quantity of milk.

- 7.7 The irrigation water permit that was purchased with the Darfield property had conditions which allowed for water restrictions under low groundwater conditions (adaptive management/environmental flow safeguard (EFS)). As a result of the variation to an industrial use, Fonterra was able to successfully demonstrate that these conditions were not suitable for a critical processing plant which produced and irrigated more water than it took from groundwater.
- 7.8 The varied consent has only a very small percentage of the annual consented volume able to be restricted and it is relative to the amount of milk being processed at the site. The result of this condition will ensure the plant is operated and water is used as efficiently as possible but does not cause the plant to be closed or have any of the undesirable environmental effects of additional milk transportation or dumping.
- 7.9 As previously noted, water restrictions at Fonterra's processing facilities would have significant implications. The Plan's pro rata restriction provisions are currently inadequate to address these site specific issues and to provide policy support for exceptions.
- 7.10 Dairy manufacturing sites also produce a very high economic benefit per unit of water consumed. A plant such as Darfield stage 1 that employs 60 people adds \$7m directly into the local economy through wages and salaries but uses the same amount of water per day as would be used to irrigate less than 45ha of high production land.

## **8. CONCLUSION**

- 8.1 Fonterra supports the intent of the Plan to drive better and more efficient use of water in order to protect community values. We consider that the provisions can be improved in some areas to achieve those objectives.
- 8.2 Fonterra has invested significantly in processing sites in the Canterbury Region. The sites now form a key function in sustaining rural and urban economies.

8.3 Continued and secure access to water for use and discharge at those sites in essential for food production. The Plan needs to adequately recognise and provide for these investments, which are regionally and nationally significant.