22 July 2016

STATEMENT OF EMMA COOTE IN RELATION TO PROPOSED PLAN CHANGE 5 TO THE CANTERBURY LAND AND WATER REGIONAL PLAN

Introduction

My name is Emma Coote, I am the National Environmental Advisor and EHS Manager Northern for Tegel Foods Ltd ('Tegel'). In this role I am responsible for environmental compliance requirements for Tegel.

Tegel is a member of the Poultry Industry Association New Zealand ('PIANZ') and the Egg Producers Federation New Zealand ('EPFNZ'). I am presenting this statement in support of submissions made by PIANZ and the EPFNZ to Proposed Plan Change 5 ('PC5') to the Canterbury Land and Water Plan ('LWRP').

Background information: comparison of poultry washwater and other farm discharges discussed during Plan Change 4

As part of PIANZ's original submission on Plan Change 4 ('PC4') to the LWRP, Tegel provided analysis results of washwater from two of Canterbury broiler sheds. The washwater typically comprises small quantities of residual litter (wood shavings and faecal matter) given that best efforts are made to scrape out as much of the solids as possible prior to wash down. The samples taken were collected at the beginning of the washdown process as it discharged from the end pad and therefore represent the highest likely concentrations of contaminants; total nitrogen levels were shown at 220g/m3 and Potassium at approximately 300 g/m3. In terms of the nitrogen loading this generates, the following calculation can be applied:

Concentration X water volume (per shed) = g/shed / 1000 = kg/shed.

Total Nitrogen -220	x	10m3	= 2200g/shed /1000 = **2.2kg/shed**.
Potassium - 300	x	10m3	= 3000g/shed/1000 = **3kg/shed**

A typical medium sized commercial broiler farm would have 4-6 sheds holding 40,000 birds in each shed for a run of 8 weeks. There are approximately 6 runs per year. Therefore a 6 shed farm would generate a maximum of 60m^3 of water. This is 360m^3 per year and 79.2kg of total nitrogen or 1080kg potassium. The per hectare loading is dependent on land availability and discharge mechanisms as these can vary from soak away facilities to pumped irrigation and planted irrigation bunds.

Dr Lisa Scott provided Environment Canterbury with advice in response to washwater analysis data provided as part of EPFNZ/ PIANZ submission on the LWRP PC4 to exclude poultry washdown water from the definition of 'animal effluent'. Dr Scott advice included a table ('Table 1') that compares dairy and piggery shed effluents to poultry washdown water. The figures set out in Table 1 of Dr Scott evidence have since been used by Environment Canterbury to define poultry washwater in the same category of 'effluent' as dairy and piggery farming discharges, a decision Tegel strongly disagrees with. Consequently, we would like to take this opportunity to firstly comment on matters raised by Dr Scott that Tegel supports, and secondly to point out a number of limitations in Dr Scott's evidence.

Firstly, Tegel agrees with Dr Scott's evidence that the data set provided by Tegel was limited. Tegel is working on how to collect further representative samples. We also agree that the list of contaminates analysed could be expanded. However, the focus of PC4 and Plan Change 5 ('PC5') is nutrient loading. Dr Scott's evidence also correctly concluded that the main difference between poultry washdown water and other animal effluent is the lower volumes and rates of effluent application. This is a key point in this discussion.

Secondly, we believe that how the presentation of the data in Dr Scott's advice is misleading. The dairy data provided in Table 1 is extracted from Wallace and Johnston (2010) as published on the former Ministry of Agriculture and Forestry website. In the original publication, the table was titled 'Concentration of nutrients in a **range of different** dairy effluents,' not 'Nutrient concentrations (g/m3) reported for other animal effluents in New Zealand….' The original title reflects the emphasised point that dairy effluent varies greatly depending on a number of factors. The following table provided in the same report is perhaps a better reference to the nature of dairy discharges:

Table 1 Stratification of nutrients by effluent type within an anaerobic dairy pond, as measured by Longhurst et al. (2000).

		Nutrient content (mg/L)		
Effluent type	Dry matter (%DM)	N	P	K
DSE	0.9	16	6	48
Slurry	5	830	135	700
Sludge	21	2400	250	500

DSE stands for Dairy Shed Effluent, the sludge is the settled solids component in the base of the pond and the slurry is the mix of them both. We would suggest that the slurry analysis provides good guidance as to typical concentrations.

Further to the above points we have no information on the table provided by Dr Scott on the nature of the effluent, the points of sampling (source, pond or point of application) or sampling methods, making it very difficult to draw any conclusions on their validity in this discussion.

Notwithstanding the concerns we have over this data, if we apply the same loading calculation to the data provided by Dr Scott we can generate an indicative comparison. We have therefore used an average Total Nitrogen concentration of 212g/m3 and an average potassium concentration of 186g/m3. The Wallace and Johnsone (2010) publication did not provide any volume information and it seems that this also varies enormously. To fill that gap in information we asked for some information from our members, Brinks Chickens Ltd, who also run a number of dairy operations. They indicated that a 300 cow dairy operation generates approximately 20m^3 effluent per day usually into a pond settlement system prior to irrigation to pasture or crops. The farm generates effluent every day for approximately 10 months. This equates to approximately 56,000m^3 effluent per year, 11,872kg/yr of Nitrogen and 10,416 kg/yr of Potassium.

Table 2 Total Nutrient Loadings

Operation	**Total Nitrogen loading per year (kg)**	**Potassium loading per year (kg)**
Small/med dairy farm	11,872	10,416
Medium poultry farm	80	1080
Percentage poultry:dairy	6%	10%

Whilst a number of assumptions have had to be made in order to generate these figures we think they speak for themselves in terms of the relative potential environmental effect of these very different discharges. We have not repeated the loading calculation for the piggery effluent as we do not have the relevant information or knowledge to do so. If the figures provided by Dr Scott can be taken as representative there would appear to be no need since they are far higher in concentration than either dairy or poultry.

Tegel has recently had OVERSEER modelling, which uses conservative assumptions, undertaken on an existing dairy farm that Tegel is looking to purchase and obtain resource consents to convert to a poultry broiler farm. The OVERSEER modelling showed that net nitrogen losses to groundwater from the property will reduce from an average of 1024 kg/N/y in the baseline period from 2009 – 2013 when the farm was used for dairy support to an estimated 732 kg/N/y with the chicken farm and ancillary services in place and the balance of the property remaining in dairy support. To put this another way, nitrogen losses to groundwater will reduce from 28 kg/N/ha/y to 20 kg/N/ha/y. This further emphasises the fact that poultry farming effluent has a lower environmental effect compared to other agricultural discharges, even low density grazing.

Plan Change 5

Further to the matters raised above, Tegel also believes there are limitations to Canterbury's proposed policy and regulatory approach to manage the effects of washwater discharge and nitrogen loading. We make the following points in relation to this matter:

1) Poultry litter is the solid bedding material that is removed from the sheds after a run. Under rule 5.65 of the LWRP land application of litter is a permitted activity because it is recognised as a stable, slow release fertilizer for pasture. The poultry washwater contains a small quantity of this litter but depending on interpretation of the rules, discharge of the washwater is categorised either a Restricted Discretionary through to Non-complying Activity and either a Permitted through to possibly a Prohibited Activity for nutrient loading;

2) PIANZ represents poultry operations across New Zealand and is familiar with various Regional Plans regulatory methods for controlling farm discharges and nitrogen loading. Attached to my evidence at **Attachment A** is summary of four Regional Council rules regulating agricultural discharges and nitrogen loading. In my opinion, the approach adopted by these other Regional Councils to regulate the discharge of effluent onto land and nutrient loading is more straightforward, user friendly, and based on a robust effects based approach in comparison to the LWRP and PC5. These Regional Plans manage nutrient loading as part of the discharge rules through conditions and/or assessment criteria. If the washwater discharge results in higher nitrogen concentration limits than specified in the discharge rules conditions and/or assessment criteria a resource consent is required.

3) Further, some of these Regional Plans, have appropriately identified that different farming activities result in different forms of discharge with varying levels of effects. They have different discharge rules specifying different standards depending on the farming activity. Hence, they have not grouped all farm types together.

4) Components of PC5, including the implementation methods, do not support or acknowledge the poultry industry. In particular, the reliance on the OVERSEER model and the inputs required for Schedule 7a and the 'Industry-agreed Good Management Practices relating to water quality'. While we have used OVERSEER from time to time out of necessity, the model

is not set up to accommodate the poultry industry. PIANZ seeks that use of OVERSEER not be a requirement for the poultry industry in respect of the PC5 changes. PIANZ would welcome the opportunity to work with Environment Canterbury to amend Schedule 7a and the Industry-agreed Good Management Practices relating to water quality to ensure both parties can agree on a practical approach to this issue.

ATTACHMENT A: SUMMARY OF REGIONAL COUNCIL RULES

Summary of Reginal Council Rules

We have reviewed Auckland, Waikato, New Plymouth and Taranaki Regional Plan rules regulating the discharges of contaminates to land associated with agricultural discharges. Based on this review, the approach other Regional Councils have adopted to successfully manage the effects of discharges of contaminants onto land from the application of animal effluent is through rules regulating the discharge of effluent onto land. The discharge rules, through conditions, then specify nitrogen concentrations limits associated with the discharge that cannot be exceeded unless a consent (or higher level of consent) is obtained. This bundled approach is a logical approach to managing the effects of nitrogen loading rates to land as an effect of agricultural discharges to land.

The Taranaki Fresh Water Plan and New Plymouth, One Plan, goes one step further than the other Regional Plans by stipulating specific rules regulating the discharge of poultry, piggery and dairy effluent to land (not one rule regulating all types of agricultural discharges). By not bundling these three different types of agricultural discharges into the same rule / activity, has resulted in more efficient and effected based rules that specify discharge rates and nitrogen concentration limits that are realistic depending on the nature of the agricultural activity.

Regional rules regulating washwater discharge and nitrogen loading in Waikato, Auckland, Taranaki and Palmerston North Regions

<u>Auckland Council – ALW Plan</u>

Permitted Activity:

Rule 5.5.34 – Discharges from Production Land Activities

(f) Discharges to land of liquid contaminants from production land activities that is less than 10m3 per discharge system per day.

Permitted activities are subject to the following conditions:

(c) The application rate of nitrogen from any combination of contaminants and nitrogenous fertiliser

(i) onto grazed pasture shall be:

1. at a rate not exceeding the equivalent of 150kgN/ha/year and 30kgN/ha in any 31 day period in those areas underlain by aeolian sands and volcanic basalt;

2. at a rate not exceeding the equivalent of 200kgN/ha/year and 50kgN/ha in any 31 day period on soils other than those stated above.

(ii) onto ground other than grazed pasture, shall be in a manner and at a rate that does not exceed the reasonable nitrogen requirements of the crop being grown.

Exceedance of these limits requires either a Controlled or Discretionary Activity consent.

<u>Waikato Regional Council – Waikato Regional Plan</u>

Permitted Activity:

Rule 3.5.5.1 Farm Effluent Discharges

The discharge of contaminants onto land outside the Lake Taupo Catchment from the application of farm animal effluent, (excluding pig farm effluent), and the subsequent discharge of contaminants into air or water, is a permitted activity subject to the following conditions:

(d) The total effluent loading shall not exceed the limit as specified in Table 38, including any loading made under Rules 3.5.5.2 and 3.5.5.3, 3.5.6.2, 3.5.6.3 or 3.5.6.4 (none of the listed rules are relevant to Poultry Farms).

(e) The maximum loading rate of effluent onto any part of the irrigated land shall not exceed 25 millimetres depth per application.

Note, various other conditions apply including technical nutrient loading calculations. There is advice notes on how to calculate nitrogen loading rates.

Table 38 Nitrogen Loading Rates for Various Land Users

Land Use Type	**Max. N Loading Rate (kg N/ha of spayed land/year)**
Grazed pasture	150
Cut and carry grass (hay, silage)	600
Pinus radiate	150
Eucalyptus (coppice)	250
Maize silage	20

Taranaki Regional Council – Fresh Water Plan

Controlled Activity (no Permitted Activities)

Rule 37 Agricultural discharges

Discharge of washdown water or poultry effluent onto or into land is a controlled activity subject to several of conditions, including:

- The effluent application rate shall not exceed 200 kg N/ha/yr

Note, there is **no m3 limit**. Council has listed as part of its control the ability to impose conditions relating to minimum effluent quality and to volume and application rates amongst other things.

Rule 38 - Agricultural discharges to surface water

Discharge of treated poultry washdown water to surface water (excluding wetlands) is a controlled activity subject to several of conditions, including:

At or beyond the boundary of a downstream mixing zone, the discharge shall not cause the concentration of unionised ammonia to exceed 0.025 gm-3 NH3 expressed as nitrogen, nor the concentration of filtered carbonaceous biochemical oxygen demand to exceed 2.0 gm-3.

Again there is no m3 limit.

Horizons Regional Council – One Plan

Regional Plan, Discharges to Land and Water, Chapter 14

Controlled Activity (no Permitted Activities)

Rule 14.3 Agricultural Activities

Discharge of poultry farm litter onto or into production land is a controlled activity subject to:

(a) A nutrient management plan* must be prepared for the land^, and provided annually to the Regional Council.

(b) The activity must be undertaken in accordance with the nutrient management plan* prepared under (a).

(c) The nutrient management plan* prepared under (a) must demonstrate that the nitrogen leaching loss from the activity will not exceed the cumulative nitrogen leaching maximum* specified in Table 14.2.

(i) The discharge^ of poultry farm litter* onto or into production land^ and any ancillary discharge^ of contaminants^ into air must comply with the conditions^ of Rule 14-

(iv) poultry farm effluent and any ancillary discharge^ of contaminants^ into air must comply with the conditions^, standards and terms of Rule 14-11.