IN THE MATTER of the Resource Management Act 1991

AND

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

SECOND STATEMENT OF REBUTTAL EVIDENCE OF MATHEW JOHN CULLEN (RESPONDING TO MR PERCY) FOR GROUP 2 HEARING

1. INTRODUCTION

1.1 My name is Mathew John Cullen and I have the qualifications and experience described in my Evidence in Chief for the Group 1 Hearing.

2. SCOPE OF EVIDENCE

2.1 In this statement of evidence, I address:

(a) Issues raised by Mr Percy with regard to control of effluent discharges to land both directly from intensive livestock and that collected on the farm dairy; and

(b) Issues raised by Mr Percy with regards to control of the discharge of water from land drainage.

3. CONTROL OF EFFLUENT DISCHARGES

3.1 Mr Percy (para 50) proposes that the discharge to land of animal effluent collected in the farm dairy shed/yard requires consent, therefore the direct discharge of 'animal applied' effluent should be subject to the same control (as a land use consent for farming).

3.2 Whilst there is a case for the discharge of effluent to be considered as permitted (provided that rules are appropriately set and monitored); in my experience the

majority of dairy farmers in the Canterbury Region accept that the practice of discharging farm dairy effluent onto land will require consent. However this is very distinguishable from the discharge of dairy cow (or any other animal) effluent directly onto pasture (whilst grazing). There are some differences between these discharges.

3.3 Firstly there is a matter of scope to control or manage the discharge onto land. Clearly a farmer has much greater control of the risk posed by the discharge of effluent from the farm dairy onto land as opposed to that directly applied by the animal. As discussed in my Group II evidence (paras 5.5-5.7 & 5.18) farmers can invest in infrastructure and utilise effective management to control the periods when farm dairy effluent is discharged onto land, ensure effluent application rates/depths are appropriate and with appropriate separation distances from waterways and bores. These measures significantly limit the scope of direct losses of effluent contaminants from the soil profile via runoff and leaching.

3.4 Whilst there is adequate scope to control or manage the discharge of farm dairy effluent onto land, the risk to water quality as a result of poor management is significant. Poor management may range from catastrophic failure (such as effluent storage ponds overflowing) where effluent may be discharged directly to water via overland flow to instances where effluent is applied at excessive rates/depths, during periods where there is no soil moisture deficit, or over inadequately sized discharge areas that may result in direct losses of effluent to surface and ground water. Research shows that losses of N & P from poor farm practice (one 25mm application of farm dairy effluent when soil moisture content was close to field capacity) were approximately 30 times greater than direct losses reported under deferred irrigation practice for a one year period (on a Manawatu Pallic soil). These losses of N & P were the equivalent of 40% and 290% of reported whole farm losses of the adjacent area that did not receive farm dairy effluent inputs.[1]

3.5 Whilst it is acknowledged that farm dairy effluent makes approximately 10% of the daily nutrient load from cattle excretia; the discharge onto land of animal

1. Houlbrooke, D J & Monaghan, R M; The influence of soil drainage characteristics on containment leakage risk associated with the land application of farm dairy effluent. Prepared for Environment Southland (2009).

applied dairy cow effluent is not subject to the same scope of control mechanisms or potential variance in the nature of its application to land.

3.6 I am aware of technologies that are available to treat farm dairy effluent which may remove nutrients and contaminants to the extent that the end product may be considered suitable to be discharged to water[2]. However at this time I am not aware of this being adopted by farmers in the Canterbury region due to cost and practicality barriers.

4. DISCHARGE OF LAND DRAINAGE WATER

4.1 Mr Percy proposes that Rule 5.57 be changed so that all discharges of drainage water from subsurface drains be treated as discretionary activities, as opposed to permitted (as is the case in the notified version of the plan).

4.2 Further to my Group 1 evidence (para 4.2) those well established, traditional dairying areas such as Kaikoura, Rangiora, Christchurch/Ellesmere and Clandeboye/Timaru are typically situated on soil types which are considered to be 'heavy' i.e. have significantly greater water holding capacities and drainage limitations, and often are subject to significantly high water tables. Dairying was established on these soil types prior to the advent of large scale irrigation.

4.3 In my experience these areas are also characterised by the presence of farm drains. A large proportion of these farms utilise artificial waterways or farm drains to drain excess water to facilitate use for intensive agriculture. Some of these farms utilise drains to the extent of having a drain on the boundary of every paddock.

4.4 As part of the Supply Fonterra Waterway Management Module (discussed at paras 7.16-7.20 of my Group I evidence) I have been involved in the process of mapping surface waterbodies, which include farm drains and note that these farm drainage networks are often extensive, cross multiple properties and (in the Selwyn Waihora catcment) often discharge drainage water collected on farms to Council administered drainage networks. For example there are ten

2. Couper, S, Tan M & Lei R. New Zealand Land Treatment Collective: Proceedings for the 2010 Annual Conference. Farm dairy effluent treatment.

classified drainage districts within the Selwyn Waihora catchment, which manage almost 500km of drains.[3]

4.5 The approach proposed by Mr Percy raises a number of issues which are covered in detail by Mr Willis.

3. Selwyn Waihora Zone Implementation Programme.