
in the matter of: the Resource Management Act 1991

and: submissions and further submissions in relation to proposed variation 1 to the proposed Canterbury Land and Water Regional Plan

and: **Dairy Holdings Limited**
Submitter

Statement of evidence of Peter Francis Callander

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STATEMENT OF EVIDENCE OF PETER FRANCIS CALLANDER

INTRODUCTION

- 1 My name is Peter Francis Callander.
- 2 I have been a Director of Pattle Delamore Partners Limited (PDP) since 1997. I hold the qualifications of BSc (Geology) from the University of Auckland and MSc (Earth Sciences) from the University of Waterloo (Canada). I am a member of the New Zealand Hydrological Society and the USA based National Ground Water Association.
- 3 I have over 25 years of experience as an environmental scientist specialising in groundwater and surface water resources. Prior to my employment at PDP, I had been employed for seven years by the Canterbury Regional Council and its predecessor the North Canterbury Catchment Board.
- 4 Within the above I have particular experience in the management of water resources. This has included work on numerous projects where I have modelled and advised on the management of water quality impacts associated with irrigation including work for the Waimakariri Irrigation Scheme, Rangitata South Irrigation, Barrhill-Chertsey Irrigation, the Southern Valleys Irrigation Scheme and Wairau Valley Water Enhancement Scheme. I have also reviewed work completed by other parties for the proposed Central Plains irrigation scheme (on behalf of the Christchurch City Council and others) and applications for irrigated land use change in the MacKenzie basin (on behalf of Meridian Energy).
- 5 I provide the following statement of evidence regarding the submission lodged by Dairy Holdings Limited (*DHL*) for proposed Variation 1 (*Variation 1*) of the proposed Canterbury Land and Water Regional Plan (*pLWRP*).

SUMMARY

- 6 DHL hold consent CRC143288 which allows the use of land for farming and the associated use of water and nitrogen leaching across a group of farms, referred to as a Nutrient Management Group (*NM Group*). Water allocations within the NM Group members are also managed collectively as a water user group.
- 7 Land use activities within the group are changing, and being managed, across this group as DHL seek to optimise the productivity their land whilst still fitting within the collective nitrogen load limit for the group of properties, which is specified in condition 4 of their consent. This collective approach to land management

means that the NM Group operates in a similar manner to an irrigation scheme.

- 8 Variation 1 of the LWRP specifies future reductions in nitrogen leaching based on specific land uses, or more general nitrogen loss numbers for irrigation schemes. In order for the benefits of the NMG approach to be realised their nitrogen loss numbers need to be managed over the group as a whole or defined in a similar manner to the approach used for irrigation schemes and not on the specific land use schedule that is applied to individual properties. The current version of the plan does not allow for this to occur. It is considered that the plan should explicitly address the future nitrogen loss requirements for NMGs in a way that allows for, and encourages, the type of collective nutrient management that is authorised by consent CRC143288.

SCOPE OF EVIDENCE

- 9 In my evidence I provide the following:
 - 9.1 a discussion of how the Variation 1 manages nutrient discharges from irrigation schemes as against individual farm properties;
 - 9.2 a description of consent CRC143288 and the DHL Nutrient Management Group; and
 - 9.3 discussion of possible changes to Variation 1 of the LWRP to allow for management of nutrient losses in a manner that is consistent with the nutrient management group authorised by consent CRC143288.
- 10 Although this is a Council hearing, I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2011. I have complied with the Code of Conduct in preparing this evidence and I agree to comply with it while giving oral evidence before the hearing committee. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

LWRP AND VARIATION 1 MANAGEMENT OF NUTRIENT LOSSES

An overview

11 Prior to turning to the specific provisions of Variation 1 it is useful to refer back to the provisions around nutrient management on individual farms or through farming enterprises under the pLWRP.

12 In short:

12.1 the use of land in a red zone (such as the Selwyn-Waihora Zone) is subject to Rules 5.43 to 5.48. Those rules prevent a property increasing its nutrient load above its nitrogen baseline with certain consent requirements depending on the actual amount of nitrogen loss. This includes Rule 5.46 which relates to Farming Enterprises which relevantly provides:

5.46 The use of land for a farming activity as part of a farming enterprise is a discretionary activity, provided the following conditions are met:

1. A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A; and
2. The nitrogen loss calculation for the farming enterprise does not increase above the nitrogen baseline; and
3. The properties comprising the farming enterprise are in the same surface water catchment and Nutrient Allocation Zone, as shown on the Planning Maps.

12.2 for properties within an irrigation scheme the use of land for farming is a Permitted Activity (Rule 5.60) provided that the irrigation scheme holds a discharge consent that specifies a maximum amount of nitrate leaching (Rule 5.62).

13 In Variation 1 various further restrictions on future nitrogen loss rates are imposed on individual farming properties. The relevant rules in the case of individual farming properties and farming enterprises (being Rules 11.5.6 to 11.5.12) are informed by two core policies:

13.1 Policy 11.4.13: which requires farmers and farming enterprises to, by 1 January 2017, implement a good management practice standard (which has yet to be

determined) for the baseline land use on the property – i.e. the land use during the July 2009 - June 2013 period; and

- 13.2 Policy 11.4.14: which requires farmers and farming enterprises to, by 1 January implement various percentage reductions for differing types of land use.
- 14 In contrast, irrigation scheme nutrient losses are managed through a schedule that applies to the total scheme nitrogen loss, as set out in Policy 11.4.17 and Table 11(j). At the present time Table 11(j) only contains numbers that apply to the Central Plains Water Limited (CPW) irrigation scheme (the *Scheme*) that specify:
 - 14.1 a cap on nitrogen loss of 1944 tonnes/year from 1 January 2017; and a
 - 14.2 requirement to reduce nitrogen loss to 1742 tonnes/year from 1 January 2022.
- 15 Accordingly, how the cap under Table 11(j) is actually met appears to be at the discretion of the irrigation scheme – appreciating that Table 11(j) does expressly contemplate reductions in nitrogen loss over time. Under the notified version of Variation 1, CPW will need to manage reductions across both existing and converted (dry land) irrigation in the Scheme.
- 16 However, Variation 1 appears to assume that a property is either irrigated on an individual basis **or** from an irrigation scheme. In this regard, it is uncertain how reductions are to be applied where, for example, a property is:
 - 16.1 only be partially irrigated from the Scheme and also irrigated from other groundwater and surface water sources; or
 - 16.2 which is only partially irrigated (with parts of the relevant property being run on a dryland basis).
- 17 In this regard, it appears that the type of limits in Table 11(j) that apply to CPW are most sensibly applied to 'CPW water'. It would not seem appropriate for:
 - 17.1 CPW to facilitate nitrogen loss compliance across a much wider area than that actually supplied water by the Scheme
 - 17.2 for the limits in Table 11(j) to include areas not actually supplied water by the Scheme (potentially in circumstances where existing farming outside of the physical area supplied water by the Scheme to some extent 'avoid' the requirements of policies 11.4.13 and 11.4.14).

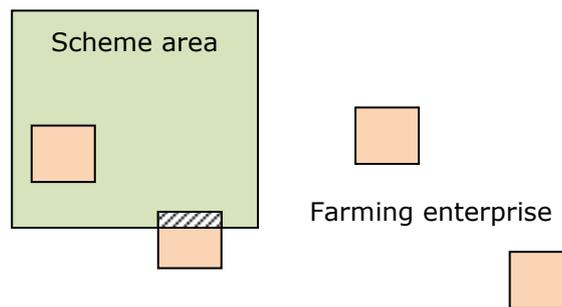
18 As set out in the evidence of **Mr Glass** in the particular case of Dairy Holdings (which has properties within the CPW Scheme area that have existing irrigation and which are likely to be supplied water from the Scheme), the company seeks to have flexibility for its existing irrigated properties as to whether the “use” of water on each property is authorised under the CPW consents or its own use consents.

19 This is consistent with a commercial agreement between CPW and DHL.

Farming Enterprises

20 There are also likely to be circumstances where a farmer wishes to have a property form part of a farming enterprise. This could include properties that also fall completely within an irrigation scheme outline area and also properties that are only partially irrigated from the scheme (refer **Figure 1**).

Figure 1: Diagrammatic representation of a farming enterprise interfacing with a Scheme



21 In such circumstances I accept it would be impossible for the full farming enterprise to be ‘managed’ or ‘overseen’ by the irrigation scheme given, for example, the fact that it does not have water user agreements with the properties that are located outside of the scheme.

22 The alternative would be for Variation 1 to ‘prevent’ a property from forming part of a farming enterprise in circumstances where it also forms part of an irrigation scheme. As I discuss later in my evidence in respect of DHL’s operations farming enterprises (or nutrient management groups as in the case of DHL) can provide significant value to farming and ultimately the attainment of the wider outcomes envisaged by Variation 1.

23 Accordingly I consider further provision needs to be included within Variation 1 to:

- 23.1 ensuring the 'cap' in Table 11(j) only applies to that land actually irrigated by the relevant scheme;
- 23.2 address the issue of partially irrigated or 'multi-water source' properties by:
- (a) ensuring the relevant scheme is not responsible for compliance for activities that occur outside of the scheme;
 - (b) providing that the extent of any nitrogen 'allocation' against any cap in Table 11(j) is connected to the proportion of the property actually irrigated by the Scheme; and
 - (c) clarifying the reduction regime that applies (noting that given the position around the cap in Table 11(j) it would appear the reduction would have to be a combination of whatever might be required by the Scheme and that expressly required under Policies 11.4.13 and 11.4.14.
- 23.3 accommodate farming enterprises more generally across the zone.
- 24 Inevitably this would present some complexities in terms of the effective implementation of Variation 1 but they appear unavoidable if the cap allocated to any scheme is to be protected and farming enterprises and partially irrigated or 'multi-water source' properties are to be properly accounted for.
- 25 However, I consider there is a further alternative – this is to specifically identify 'existing irrigation' as it might apply to a scheme and require such irrigation (even where the take of water is substituted from the Scheme) to manage reduction regime on an individual basis under Policies 11.4.13 and 11.4.14.
- 26 There appears to be no reason why existing irrigation could not be managed under Policies 11.4.13 and 11.4.14 (at least until such time as the required reductions had occurred and existing irrigation effectively exhibited the same practices as applied to 'new' under the relevant scheme).
- 27 A greater reliance on an individual reduction regime under policies 11.4.13 and 11.4.14 would give farmers more flexibility to enter into farming enterprise arrangements. It would also, at least to some extent, address the concerns set out around partially irrigated or 'multi-water source' properties.

DHL CONSENT CRC143288

- 28 DHL holds resource consent CRC143288. This consent commenced on 11 June 2014 and authorises:
- 28.1 the use of land for farming; and
- 28.2 the use of water for irrigation of that land.
- along with the associated nitrogen leaching within a group of properties referred to in the consent as a Nutrient Management Group (*NM Group*).
- 29 A copy of the consent is **attached**.
- 30 At the time of granting the consent the group was made up of 22 farms comprising 6,186 ha, as shown in **Figure 2** (including three properties that will eventually be supplied water by the CPW Scheme). The consent conditions also allow for further properties to be added or removed from the NM Group during the term of the consent.
- 31 Accordingly, potential membership of the NM Group is wider than a farming enterprise in that it allows properties owned by unrelated entities or persons to join the NM Group. To date only DHL subsidiary properties have formally joined although this could change in the future.
- 32 The consent specifies a combined nitrogen leaching total for the group determined from OVERSEER simulations averaged over the period 01 July 2009 - 30 June 2013 (i.e. consistent with the definition of nitrogen baseline in the pLWRP).
- 33 The consent requires a high standard of farming practice with the implementation of audited Farm Environment Plans and annual reporting of water use and nitrogen leaching.
- 34 In order for the consent application to be processed as a non-notified application, the ECan officer's determined that consent would only be granted for a 5 year period (until 11 June 2014) due to the potentially changing status of the nutrient management as plan changes, such as this current Variation 1, occur and Good Management Practices are determined by ECan.
- 35 The take and use of water between members of the NM Group is also managed on a collective basis through the implementation of a separate Water User Group as specified in the conditions of the individual water take consents. An example of the water take consent (CRC961549.4) with a water user group condition is also

attached to this evidence (see condition 7). This allows the users to pool their water take allocations and distribute them between properties provided that the combined effect of the abstraction does not exceed the combined consented allocation of the group.

- 36 In effect, what consent CRC143288 does (in combination with the water user group conditions) is it allows DHL to collectively manage its use of water and its nitrogen losses in the same way as an irrigation scheme with the 'unders' and 'overs' being shared between the properties that form part of the NM Group.
- 37 In this regard I also note that DHL's primary focus is to optimise the productivity of all their properties whilst not increasing the overall nitrogen leaching and, over time, to reduce nitrogen loss through the implementation of improved management practices. That is a good RMA outcome that is consistent with the general intent of the pLWRP.

CHANGES TO VARIATION 1 OF THE LWRP TO ALLOW FOR NUTRIENT MANAGEMENT GROUPS

- 38 Understanding DHL's existing properties and wider nutrient management regime is very useful when considering the provisions of Variation 1.
- 39 In particular:
- 39.1 on the basis of consent CRC143288, DHL is already implementing land use changes that cause increased nitrogen leaching on some properties within the group, which are offset by reductions in other properties within the group.
- 39.2 Given the above, it is anticipated that any reduction regime under Policy 11.4.14 (and to a lesser extent 11.4.13) will need to be applied on the basis of the NM Group. If, in the alternative, Policy 11.4.14 reductions were imposed on a farm by farm basis it would undermine the consented intention of the group activity for both:
- (a) those farms which have increased their nitrogen loss rate (potentially following significant investment and the development of irrigation infrastructure); and
 - (b) those farms that have decreased their nitrogen loss rate (which would mean that reductions are potentially applied to a nitrogen loss 'number' that now has no relevance to the individual property in circumstances where reductions in nitrogen loss have already occurred)

- 40 Further, it is noted that the NM Group (as would likely be the case with any farming enterprise) includes a range of farming activities, potentially requiring the implementation of the different percentage reductions for different land uses (if Policy 11.4.14 is to be applied) which becomes very difficult to implement given the land use changes that will be occurring within the group.
- 41 As I noted earlier in my evidence, because:
- 41.1 consent CRC143288 allows collective water use and nitrogen leaching; and
- 41.2 the members of the NM Group are also part of a Water User Group who pool and redistribute their water allocation
- DHL is, in effect, operating in a similar manner to an irrigation scheme. Accordingly, it is important that the management of nutrient losses and the requirement for future reductions applies to the group as a whole, rather than individual properties – again, as if it were an irrigation scheme.
- 42 This could be achieved in a couple of ways:
- 42.1 by allowing NM Groups to specify their collective nitrogen leaching values to apply from 2017 and 2022 in a similar manner as is being done for the CPW consent specified in Table 11(j) (with a supporting rules regime). However, in the case of CPW they have a specified command area and the nitrogen loss numbers apply to the total land use within that area. For the DHL the NM Group membership can change so it is not possible to specify a single fixed number but it might be possible to simply refer to the combined existing nitrogen load (at the relevant point in time) of the properties that form part of the NM Group and apply a percentage reduction for the group as a whole (*Option 1*); or
- 42.2 to allow the NM Group (possibly as an extension of the farming enterprise Rule 11.5.10) to apply for resource consent as a discretionary activity within which the applicant would specify a total leaching number to apply from 1 January 2017, which reflects their current consented uses (i.e. combined nitrogen baseline) with an appropriate reduction regime to be applied post 1 January 2022. The reduction regime should then be informed by the percentage reductions set out in Policy 11.4.14, appreciating that there are likely to be a range of land uses across the NM Group - most likely by simply altering Policy 11.4.14 by adding the words, "...*farming activities or farming enterprises to...*" to line 1 and "*Where a property or farming enterprise's nitrogen loss...*" to part (b) (*Option 2*).

- 43 Option 1 is complicated by the fact that it would also be necessary to address the overlap with the CPW Scheme (in a manner that did not reduce the entitlement of that scheme). That is likely to be informed by the Commissioners final position on the relationship between existing irrigators and the cap in Table 11(j) discussed earlier in my evidence. For further important context it is also noted that a number of the DHL properties are already members of the various north bank irrigation schemes not formally recognised in Variation 1, so the recognition of these properties (at least on a collective basis) within the wider framework is perhaps not inconsistent with the generally intended approach of Variation 1.
- 44 Option 2 might be best done as a specific rules/policy regime which allows for the 'pooling' of nutrients under a NM Group (or farming enterprise) and for any reductions to apply at the wider group level. Appropriate matters of discretion would need to be provided to ensure that the relevant restriction regime was considered and ultimately implemented at the time any such application was determined.
- 45 In terms of the reduction regime for both Options 1 and 2, I consider that a reduction equivalent to the reduction required for irrigation schemes should be applied. The numbers in Table 11(j) indicate a reduction of 11% to apply from 1 January 2022.

Conclusion

- 46 DHL has established a NM Group and is implementing land use changes within the group as authorised by consent CRC143288.
- 47 These changes seek to optimise productive farming activities whilst not increasing the overall nitrogen loss from the group. Within the group the nitrogen loss of some properties has increased, but this is offset by a reduction in nitrogen loss from other properties. I consider improved productivity without increasing nitrogen loss to be a good RMA outcome.
- 48 The current wording of Variation 1 imposes future reductions on nitrogen leaching based on a particular type of land use. This form of rigid reduction is difficult to implement on an individual arm basis with a NM Group situation of changing land use and optimised productivity. A preferable approach is to determine total leaching numbers for the group, to apply to 2017 and 2022, in a manner consistent with the existing framework for Variation 1.

Dated 29 August 2014

Peter Francis Callander