

**BEFORE INDEPENDENT HEARING COMMISSIONERS  
APPOINTED BY THE CANTERBURY REGIONAL COUNCIL**

**UNDER** the Resource Management Act 1991

**IN THE MATTER** of Proposed Plan Change 7 to the Canterbury Land and  
Water Regional Plan and Proposed Plan Change 2 to the  
Waimakariri River Regional Plan

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**MEMORANDUM OF COUNSEL ON BEHALF OF THE CANTERBURY  
REGIONAL COUNCIL  
16 July 2020**

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**MAY IT PLEASE THE HEARING COMMISSIONERS**

- 1 This Memorandum of Counsel is filed on behalf of the Canterbury Regional Council (**Council**).
- 2 Enclosed as Appendix 1 to this Memorandum is an Explanatory Note regarding the Orari Freshwater Management Unit (**FMU**) Land Use Attributes.
- 3 Two anomalies have been identified in respect of the shapefiles for the Orari FMU land use attributes and the Council has an ongoing duty to bring any such errors or anomalies to the Hearing Commissioners' attention.
- 4 As set out in the Explanatory Note, these anomalies are considered to be minor and do not impact any proposed provisions in PC7 or the subsequent recommendations of the Reporting Officers.
- 5 The Council is conscious that the existing evidence exchange timetable requires Submitters' Statements of Evidence-in-Chief to be lodged by 17 July 2020.
- 6 If submitters wish to address these anomalies in evidence but have insufficient time to do so before lodging Evidence-in-Chief on 17 July 2020, submitters could seek leave from the Hearing Commissioners to file supplementary evidence regarding the anomalies.
- 7 In the Council's view, the anomalies identified are immaterial.

Dated this 16 day of July 2020



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P A C Maw / I F Edwards  
Counsel for Canterbury Regional Council

**Appendix 1 – Explanatory Note: Orari Freshwater Management Unit Land  
Use Attributes**

16 July 2020

## **Explanatory Note – Orari FMU Land Use Attributes**

The Council has received a request to provide the shapefiles for the Orari FMU land use attributes behind Figures 2-1, 2-2, 2-3 Tables 2-2, 2-4 and 2-5 in the technical report '*Land use and root zone nitrogen loss modelling - Orari-Temuka-Opihi-Pareora Limit Setting Process*'. This report (R19/69) was published in May 2019 and forms part of the technical basis for Part B of Plan Change 7 to the Canterbury Land and Water Regional Plan (CLWRP). The requested shapefiles have been made available, excluding the farm identifiers.

While collating the files two anomalies were noted, summaries of these are provided below. The author<sup>1</sup> of the report and the Reporting Officers<sup>2</sup> believe these are minor issues and do not impact any proposed provisions in PC7 or subsequent recommendations of the Reporting Officers. Section 3 of the report, 'Uncertainty' considers and accounts for errors of this nature and we believe the mitigations outlined appropriately offset the errors identified below.

### **Error in Table 2-4**

There is an error in the irrigated land totals for the FMUs in Table 2-4. This was caused by an error aggregating the GIS data into tables. The table in the report is provided to contextualise the land use distribution, but the model uses the GIS data, so it is not affected by this error. A revised copy of Table 2-4 is included at the end of this report.

### **Land use assignment along south branch of Rangitata**

The agricultural land along 554 ha of the south branch of the Rangitata has been erroneously modelled as sheep and beef. This was caused by land parcel data identifying the area as riverbed and overriding the farm enterprise information in the model. The 'south branch of the Rangitata' is a dry branch of the river which is farmed. It diverts from the main branch above the Arundel Rakaia Gorge Rd bridge and re-joins the main branch just over 1 km before the river mouth. The error is visible in Figure 2-2 as a slither of yellow (predominantly irrigated sheep and beef, deer) running through predominantly purple (dairy) land parcels. Land along the branch should show the same land use as the parcels either side of it.

The nitrogen reductions in PC7<sup>3</sup> were calculated using a combination of modelling and measured data (Rosardo, 2019). The Rangitata-Orton High Nitrogen Concentration (HNCA) area covers 21,046 ha in total, with approximately 554 ha of land mislabelled in Figure 2-2. The model is likely to have marginally underestimated nitrogen losses overall for this area, which comprises approximately 2.5% of the Rangitata-Orton HNCA.

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<sup>1</sup> Ognjen Mojsilovic

<sup>2</sup> Matthew McCallum-Clark and Lochiel McKellar

<sup>3</sup> proposed Policies 14.4.18, 14.4.19, 14.4.20, 14.4.28, 14.4.41, Table 14(zc)

**Table 2-2. Area (ha) breakdown of simple land cover classes used in nutrient loss modelling for a subset of farm types in the derived base land use layer by the Freshwater Management Units (FMUs) proposed in the Orari-Temuka-Opihi-Pareora Limit zone.**

Dominant Land use	Simplified land cover	Opihi	Orari	Pareora	Temuka	Timaru
arable	irrigated land	1,200	2,300	300	1,300	1,400
	dryland crop and pasture	5,000	1,700	5,200	3,100	2,500
	other land	200	100	100	100	100
dairy	irrigated land	5,900	18,400	2,000	5,200	1,200
	dryland crop and pasture	10,200	3,200	1,800	3,600	1,100
	other land	9,300	800	100	700	200
sheep & beef	irrigated land	2,600	2,500	800	1,000	800
	dryland crop and pasture	83,500	26,300	33,700	16,200	9,000
	other land	25,700	29,700	9,000	6,900	600
dairy support & beef	irrigated land	200	1,300	0	100	100
	dryland crop and pasture	1,000	400	1,100	700	200
	other land	200	100	100	100	0
deer	irrigated land	1,100	700	200	200	100
	dryland crop and pasture	7,200	1,500	1,500	3,800	1,600
	other land	1,600	1,200	200	700	100

Dominant Land use	Simplified land cover	Opihi	Orari	Pareora	Temuka	Timaru
arable	irrigated land	900	2,200	300	900	1,200
	dryland crop and pasture	5,200	1,800	5,200	3,500	2,700
	other land	200	100	100	100	100
dairy	irrigated land	5,600	17,000	1,900	3,400	1,100
	dryland crop and pasture	10,400	4,600	1,900	5,300	1,300
	other land	9,200	600	100	700	100
sheep & beef	irrigated land	2,100	2,500	700	800	800
	dryland crop and pasture	83,900	26,300	33,800	16,400	9,100
	other land	25,400	29,700	8,900	6,900	600
dairy support & beef	irrigated land	100	1,100	0	100	100
	dryland crop and pasture	1,000	600	1,100	700	200
	other land	200	100	100	100	0
deer	irrigated land	900	700	200	200	100
	dryland crop and pasture	7,300	1,500	1,500	3,800	1,600
	other land	1,400	1,200	200	700	100