EVIDENCE OF ROBERT JOHN WILCOCK ON BEHALF OF NGĀ RŪNANGA OF CANTERBURY, TE RŪNANGA O NGĀI TAHU AND NGĀI TAHU PROPERTY LIMITED

Proposed Canterbury Land and Water Regional Plan

Key points

- Catchments-based management best for linking land-use to water quality
- Water sensitivity and land management within catchments
- Need to manage intensification effectively
- Nutrient allocation zones not consistent
- Basis for zones not transparent
- Adoption of good management practices needed

Water management zones

- Need for integrated management that targets all affected waterbodies
- Management of Waimakariri River should include lower catchments on right bank
- Examples of sites with poor bathing water quality:

Site	LWRP outcome (Table 1a)	Current stet
Waimakariri River mouth	Good-fair	Very poor
Kaiapoi River at Boat Ramp	Fair	Very poor
Otukaikino Creek at Groynes	Fair	Very poor

- There is a potential conflict between the nutrient zones for the Waimakariri River (outcomes met) and the lower subcatchments (outcomes not met) – s.32 report, p12

Paragraphs 2.4 & 2.5 my evidence http://maps.ecan.govt.nz/WaterQuality/

High-level guidelines

Concentration standards (e.g. One Plan)

Water Management Zone	*E. coli* /100 ml		Periphyton filamentous cover	Diatom or cyanobacteria cover	QMCI change
	<50th%ile	<20th%ile			
All water management zones and sub-zones	260	550	30%	60%	£20%

- One Plan example (not cited in evidence) shows high-level standards for all rivers in region
- Not clear how pLWRP Table 1a outcomes apply. E.g. are they average conditions, or higher percentiles?

Paragraph 2.8 my evidence

- Values of waterbodies affected by many variables that need to be specified
- National Objectives Framework values and related attributes (river example – not in my evidence)

Value	Attributes to be managed	For each attribute
Fisheries - for specific species, e.g. trout or inanga	• Flows • Sediment • Periphyton (slime) • Temperature • Dissolved oxygen • Nitrate (toxicity) • Ammonia (toxicity) • Invertebrates	
√ Ecosystem health and general protection for indigenous species	• Temperature • Periphyton (slime) • Sediment • Flows • Connectivity • Nitrate (toxicity) • Ammonia (toxicity) • Fish • Invertebrates • Riparian margin	√ = These two objectives apply to all water bodies

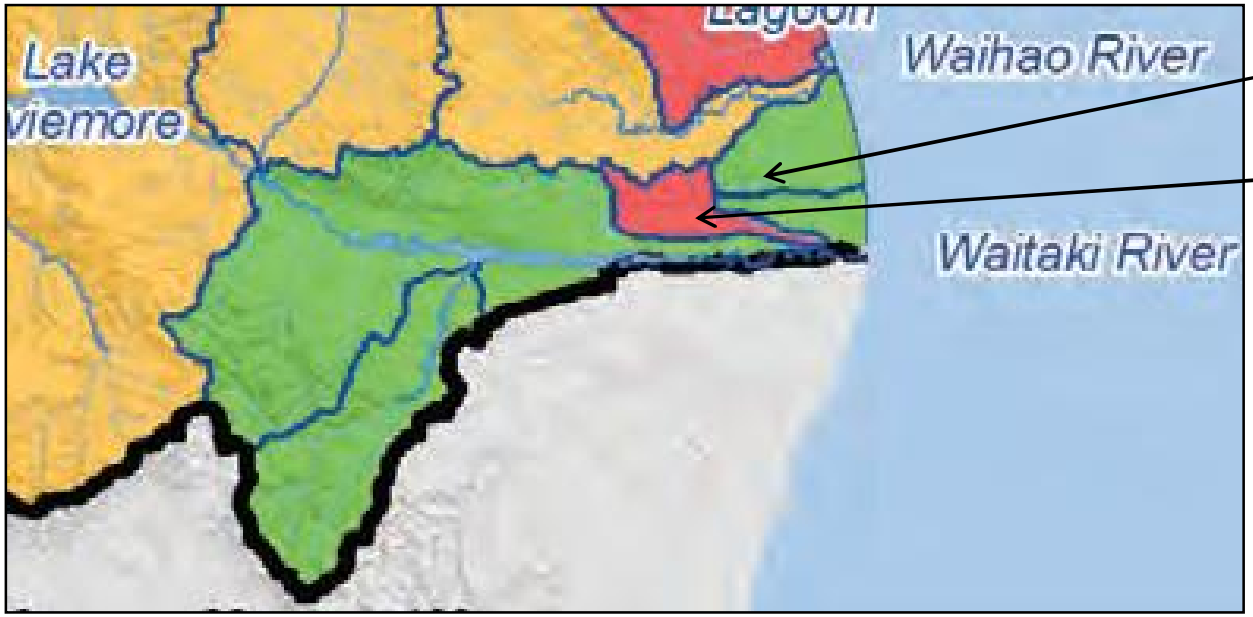
Assignment of nutrient status zones

- How was this done? Was it externally reviewed?
- This has a major bearing on future land-uses
- Were seasonal variations taken into account?
- Is there adequate data to assess nutrient status zones (i.e. can the monitoring data be used to do this)?
- Expert opinion process not easily understood

Paragraphs 2.9-2.11 my evidence

Example – Waikakahi Stream and Whitneys Creek catchments

- Both are within the Morven-Glenavy-Ikawai irrigation scheme
- Both are irrigated catchments with dairy farming
- Waikakahi (zoned red) has been monitored since 1995 and has high N, P and faecal concentrations
- Whitney Creek (zoned green) has not been studied as extensively but likely to have very similar water quality – both are spring-fed streams
- Why are they given different allocation classifications?



Whitney

Waikakahi

Paragraph 2.15 my evidence

NB: this picture is not in my evidence

Water quality outcomes and Standards

- Reactive rather than proactive – e.g. nutrient concentration limit would prevent periphyton blooms
- Max. permissible DIN (1.5 mg/L)* is close to 95% protection guideline for trout (2.4 mg/L)**
- Is this a median or a higher percentile concentration?
- Is there an upper limit for DIN concentration?

Section 3 of my evidence

*Schedule 5 standards; **2013 Guidelines

Nutrient management & good practice

- Groundwater modelling caucus workshop - models good for regional and large catchments but not for farm-scale
- Differences between soil drainage types has a huge bearing on leaching rates (Table 1 of my evidence)
- Good Management Practices – need for greater consideration of options in Schedule 7 of the Plan

Section 4 of my evidence