

IN THE MATTER OF

the Resource Management Act
1991

AND

IN THE MATTER OF

applications by Central Plains Water
Trust to:

Canterbury Regional Council for
resource consents to take and use
water from the Waimakariri and
Rakaia Rivers and for all associated
consents required for the
construction and operation of the
Central Plains Water Enhancement
Scheme

Selwyn District Council for resource
consents to construct and operate
the Central Plains Water
Enhancement Scheme

AND

IN THE MATTER OF

a notice of requirement by Central
Plains Water Limited to:

Selwyn District Council for the
designation of land for works
associated with the construction and
operation of the Central Plains
Water Enhancement Scheme

**EVIDENCE IN REPLY OF CLIFF TIPLER
HEARING ON CONDITIONS**

March 2010

BUDDLE FINDLAY
Barristers and Solicitors
Christchurch

Solicitor Acting: **Rachel Dunningham**
Counsel: **M C Casey Q C**
Tel 64-3-379 1747 Fax 64-3-379 5659 PO Box 322 DX WP20307 Christchurch

Qualifications and experience

1. My full name is Clifford John Maxwell Tipler, and the basis on which I am preparing this brief was set out in my previous evidence for this hearing.

Scope of Evidence

2. I have prepared this evidence to address matters relating to conditions for the following:
 - 2.1 The “Holiday Rule”
 - 2.2 Rakaia River take

The Holiday Rule

3. I have undertaken an analysis of the effect of the “Holiday Rule” as detailed in Minute 12. I have worked closely with Mr Duncan to ensure that as far as practicable our modelling assumptions and methods are the same. As noted in Mr Duncan’s memorandum of 3 February 2010, we have resolved all the large differences, but there remain small differences of a day or three for some scenarios.
4. Mr Duncan has presented his results in his Table 1. I have attached in Appendix A, as my Tables 1 and 2, Mr Duncan’s data, my data and a comparison between the two. This shows exactly where the small differences occur. I agree with Mr Duncan that the time and effort to establish why these differences exist is not warranted.
5. Mr Duncan’s assessment of the effect of the holiday rules is almost identical to mine. The only difference is in the “Wet Year” where we differ by 1 day between the flow bands 40 – 50 and 50 – 60. Mr Duncan predicts three days fewer in the 40-50 band, whereas I predict two days fewer.
6. As noted in Ms Dean’s s42A report at paragraph 32, Mr Duncan concludes that there are few days when the holiday rule would cause significant flow shifts. I agree with this. This is particularly demonstrated in both Mr Duncan’s data and mine, where for the typical year there is a shift of 1 day from the flow band 40 – 50 into the band 50 – 60 as a consequence of the rule.
7. I also agree that the restriction would reduce the reliability of supply for CPWL, in addition to increasing the complexity of operating the scheme. For example balancing the hydraulics throughout the scheme area is

complex enough without adding a requirement to vary the rate of take on a 12 hourly basis.

8. Mr Duncan and Whitewater New Zealand, both highlight a further difficulty with the holiday rule. This relates to the timing of the 12 hour restriction to provide the benefit of the increased flow at different reaches of the river. As noted by Mr Duncan, the benefit may take 12 – 24 hours to reach the SH1 bridge. However this does not mean there is no benefit during this time. Someone entering the river to recreate at the Gorge Bridge would see the benefit of increased flow immediately where as there would be no benefit at SH1 at that time. Similarly when the take recommenced, those immediately downstream of the gorge would lose any benefit, whereas those at SH1 would continue to see the benefit. This in my opinion demonstrates the uncertainty associated with there being any benefit to anyone through this rule, while there is some detriment to the reliability and operability for CPW.
9. The value of the lost water can be assessed in terms of its impact on the storage requirements for any irrigation scheme. In previous evidence, I demonstrated the impact allocation regimes would have on the storage requirements for CPW and then I assigned a cost to these. Similarly, the holiday rule would have an impact on any future storage requirements, such as proposed in the Canterbury Water Management Strategy, by increasing the storage requirement for CPW alone by 10 MCM for a 12 hour restriction, or by 20 MCM for a 24 hour restriction. These would have cost implications of between \$7.5M - \$20M.
10. The impact on the run of river scheme concept only, would be to lower the reliability by approximately 0.5%. This may be critical given the poor level of reliability already on the run-of-river half of the scheme area. As limited on-farm storage is provided for in the proposed conditions, there would be an impact on the effectiveness of this storage, not the cost, as the maximum volume of storage has been fixed by consent conditions. I have not attempted to quantify these effects.
11. Whitewater New Zealand has requested that the holiday rule be extended to specific week days in November and March. This further complicates the application of the rule, which I believe will have little benefit to river users and further detriment to CPW.
12. It is my recommendation that there be no holiday rule.

Rakaia Takes

13. Consent CRC021091 would permit the take of water from the Rakaia River at a maximum rate of 40 m³/s, subject to conditions. I have worked closely with ECan officers to draft conditions that allow CPW to take water up to its maximum consentable limit, conjointly with ACWT and the lower band water users, such that at no time the NWCO conditions are breached. Part of this take, would be for the unallocated water in Bands 2 and 3, as well as any unused water from the lower bands. Condition 5 as below addresses this aspect:

5.

(a) In the event that any water allocated to another water user is not being taken, the consent holder may take that water provided that the consent holder complies with the minimum flow requirements of that consent and water allocation rules in the National Water Conservation Order and provided written approval has been obtained from the existing consent holder, prior to the take being exercised, that allows the consent holder to take its unused allocated water. The consent holder shall provide the Canterbury Regional Council, Attention: Compliance and Enforcement Manager, written agreement with the water permit holders giving permission for the consent holder to take their unused but allocated water.

NOTE: For the purpose of this consent, written agreement may be in the form of an email, fax or signed written document

(b)

(i) Water may also be taken at times when water is not being taken in accordance with one or more of the consents listed in Table 1.

(ii) The rate at which water may be taken shall not exceed the sum of the individual rates of take for the consents listed in Table 1 not being exercised at that time.

(iii) The consent holder shall meet the minimum flow requirements of each consent listed in Table 1, and shall comply with the National Water Conservation Order (Rakaia River) at all times.

(iv) This consent shall not derogate from the rights of water of consent holders listed in Table 1

Table 1:

Consent	Maximum rate (litres per second)
<i>CRC940052</i>	340
<i>CRC940163</i>	450
<i>CRC990621.2</i>	850
<i>CRC990660</i>	1800
<i>CRC990983.1</i>	2000
<i>CRC940169.1</i>	450
<i>CRC930958B.1</i>	320
<i>CRC990851.1</i>	550
<i>CRC991102.1</i>	450
<i>CRC940486.1</i>	450
<i>CRC941177.5</i>	450
<i>CRC941161.2</i>	450
<i>CRC072619</i>	450
<i>CRC941219</i>	450
<i>CRC952433.2</i>	450

14. A critical aspect in meeting this condition, is ensuring that CPW is not taking water at the same time as one of the consent holders in Table 1. Ms Dean in her paragraph 49 has recommended on the advice of Dr Abbott, conditions relating to the measurement of the individual takes listed in Table 1, with each connected to a telemetry system. The proposed conditions are outlined below:

- (a)** *"If the consent holder takes water under any other consent in accordance with conditions (2), (3) and (4) of this consent, then the consent holder shall ensure that the rate of abstraction for each consent is measured and recorded in the manner specified in conditions (9) and (10) of this consent.*
- (b)** *The recording devices shall be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder.*
- (c)** *By 31 July each year, the consent holder shall submit a report outlining compliance with conditions (2), (3) and (4) of this consent for the previous 12 months, to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager."*

- 15. I see a number of difficulties with the proposed conditions.
- 16. Condition (a) requires that the rate of abstraction "for each consent" is measured and recorded. It is not clear as to what consents are referred to. I assume the intention is to refer to the consents in Table 1, however this could be interpreted as the consents held by CPW.
- 17. Assuming the above difficulty is resolved, then conditions (a) and (b) place a requirement on CPW to install measuring and recording equipment on someone else's take. CPW has no legal rights to undertake this. Should one of those consent holders not allow CPW to install that equipment, then that consent holder would through its actions, prevent CPW from taking water that has rightfully been allocated to it.
- 18. I accept that CPW must demonstrate compliance with its conditions and thereby the NWCO. The method proposed by way of these conditions is one way this could be achieved, but not the only way. For example, by arrangement, any of these consent holders could maintain either manual or electronic records of their take (as they should) that shows when they take and at what rate they take. CPW could maintain parallel records that demonstrate that there is no simultaneous taking of that same parcel of allocated water or unallocated. These records could be made available to ECan on request or as part of the reporting requirements of the consent. I therefore do not think the additional conditions proposed should be included in this consent.
- 19. If it is ECan's intention to have telemetered flow recording on other takes, then it should review those consents to require those consent holders to

install such equipment. It should not in my opinion be a requirement of CPW to install monitor equipment to demonstrate that other consent holders are meeting the conditions of their consents.

20. Finally I consider it is not necessary to use an independent network provider, as requested in clause (b) above and in conditions 10(c) and 9(c) of the main Waimakariri and Rakaia takes respectively. Independent providers are commonly used on small schemes where that is cost effective. However there are advantages in having in-house data processing and management facilities that enable immediate access by the consent holder to information, and CPW will have economies of scale such that it would be practical to provide its own facilities. These would be able to be audited by ECan to ensure their reliability. I recommend that in all instances where this clause is used, it be rephrased as follows:

The consent holder shall connect the recording device(s) to a telemetry system which collects and stores all of the data continuously and makes those data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder.

Appendix A

Table 1: Effect of Holiday Rule

Duncan Data in Tipler Format																			
Scenario	Flow Band		Before CPW				After CPW (No Restrictions)				After CPW (24 hour Restriction)				Effect of Holiday Rule				
			1/06/1967	1/07/1970	1/07/1989	1/07/1995	1/06/1967	1/07/1970	1/07/1989	1/07/1995	1/06/1967	1/07/1970	1/07/1989	1/07/1995	1/06/1967	1/07/1970	1/07/1989	1/07/1995	
	31/05/2001	30/06/1971	30/06/1990	30/06/1996	31/05/2001	30/06/1971	30/06/1990	30/06/1996	31/05/2001	30/06/1971	30/06/1990	30/06/1996	31/05/2001	30/06/1971	30/06/1990	30/06/1996			
	Min	Max	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	
m ³ /s		Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	
Days Total		12419	365	365	366	12419	365	365	366	12419	365	365	366						
1 : 1 Sharing Max 25- Available	0	39.9999																	
	40	49.9999	70	49	102	33	84	57	114	43			53	113	40	3	4	1	3
	50	59.9999	34	35	47	12	46	39	62	19			43	63	22	-3	-4	-1	-3
	60	69.9999	35	19	33	7	36	28	34	18			28	34	18	0	0	0	0
	70	79.9999	30	16	23	38	25	16	17	40			16	17	40	0	0	0	0
	80	100000																	
1 : 1 Sharing Max 25- Predicted	0	39.9999																	
	40	49.9999	70	49	102	33	82	57	113	40			53	112	37	2	4	1	3
	50	59.9999	34	35	47	12	42	39	54	18			43	55	21	-1	-4	-1	-3
	60	69.9999	35	19	33	7	33	18	32	11			18	32	11	0	0	0	0
	70	79.9999	30	16	23	38	26	17	18	37			17	18	37	0	0	0	0
	80	100000																	

Corresponding Data from Tipler:																			
Scenario	Flow Band		Before CPW				After CPW (No Restrictions)				After CPW (24 hour Restriction)				Effect of Holiday Rule				
			1/06/1967	1/07/1970	1/07/1989	1/07/1995	1/06/1967	1/07/1970	1/07/1989	1/07/1995	1/06/1967	1/07/1970	1/07/1989	1/07/1995	1/06/1967	1/07/1970	1/07/1989	1/07/1995	
	31/05/2001	30/06/1971	30/06/1990	30/06/1996	31/05/2001	30/06/1971	30/06/1990	30/06/1996	31/05/2001	30/06/1971	30/06/1990	30/06/1996	31/05/2001	30/06/1971	30/06/1990	30/06/1996			
	Min	Max	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	
m ³ /s		Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	Period	
Days Total		12419	365	365	366	12419	365	365	366	12419	365	365	366	12419	365	365	366		
1 : 1 Sharing Max 25- Available	0	39.9999	19	117	32	0	19	117	32	0	19	117	32	0	0	0	0	0	
	40	49.9999	69	48	99	33	87	56	117	43	84	52	116	41	3	4	1	2	
	50	59.9999	34	35	46	12	50	39	59	22	53	43	60	24	-3	-4	-1	-2	
	60	69.9999	35	18	33	7	36	26	32	19	36	26	32	19	0	0	0	0	
	70	79.9999	30	17	23	38	24	18	17	41	24	18	17	41	0	0	0	0	
	80	100000	178	130	132	276	148	109	108	241	148	109	108	241	0	0	0	0	
1 : 1 Sharing Max 25- Predicted	0	39.9999	19	117	32	0	19	117	33	0	19	117	33	0	0	0	0	0	
	40	49.9999	69	48	99	33	84	58	112	41	82	54	111	39	2	4	1	2	
	50	59.9999	34	35	46	12	41	37	51	18	42	41	52	20	-1	-4	-1	-2	
	60	69.9999	35	18	33	7	32	18	31	10	32	18	31	10	0	0	0	0	
	70	79.9999	30	17	23	38	26	17	17	36	26	17	17	36	0	0	0	0	
	80	100000	178	130	132	276	164	118	121	261	164	118	121	261	0	0	0	0	

Table 2: Differences between Tipler and Duncan

Data Comparisons (Tipler - Duncan):													
Max Available													
Difference between Duncan and Tipler Analysis for Available Scenario													
<i>Direct Comparisons:</i>	Flow Band	Before CPW				After CPW (No Restrictions)				After CPW (24 hour Restriction)			
		Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet
	40 - 50 m ³ /s	-1	-1	-3	0	3	-1	3	0		-1	3	1
	50 - 60 m ³ /s	0	0	-1	0	4	0	-3	3		0	-3	2
	60 - 70 m ³ /s	0	-1	0	0	0	-2	-2	1		-2	-2	1
	70 - 80 m ³ /s	0	1	0	0	-1	2	0	1		2	0	1
Difference between Duncan and Tipler Analysis for Available Scenario for Before of After CPW and without holiday rule of with holiday rule													
<i>Differences Comparison</i>	Flow Band	Before CPW of After CPW				No Restrictions of 24 Hour Restriction							
		Average	Dry	Typical	Wet	Average	Dry	Typical	Wet				
	40 - 50 m ³ /s	4	0	6	0		0	0	1				
	50 - 60 m ³ /s	4	0	-2	3		0	0	-1				
	60 - 70 m ³ /s	0	-1	-2	1		0	0	0				
	70 - 80 m ³ /s	-1	1	0	1		0	0	0				
Predicted													
Difference between Duncan and Tipler Analysis for Predicted Scenario													
<i>Direct Comparisons:</i>	Flow Band	Before CPW				After CPW (No Restrictions)				After CPW (24 hour Restriction)			
		Average	Dry	Typical	Wet	Average	Dry	Typical	Wet	Average	Dry	Typical	Wet
	40 - 50 m ³ /s	-1	-1	-3	0	2	1	-1	1		1	-1	2
	50 - 60 m ³ /s	0	0	-1	0	-1	-2	-3	0		-2	-3	-1
	60 - 70 m ³ /s	0	-1	0	0	-1	0	-1	-1		0	-1	-1
	70 - 80 m ³ /s	0	1	0	0	0	0	-1	-1		0	-1	-1
Difference between Duncan and Tipler Analysis for Predicted Scenario for Before of After CPW and without holiday rule of with holiday rule													
<i>Differences Comparison</i>	Flow Band	Before CPW of After CPW				No Restrictions of 24 Hour Restriction							
		Average	Dry	Typical	Wet	Average	Dry	Typical	Wet				
	40 - 50 m ³ /s	3	2	2	1		0	0	1				
	50 - 60 m ³ /s	-1	-2	-2	0		0	0	-1				
	60 - 70 m ³ /s	-1	1	-1	-1		0	0	0				
	70 - 80 m ³ /s	0	-1	-1	-1		0	0	0				