

Memo

Date	29 June 2018
To	OTOP Zone Committee
CC	
From	Craig Davison and Dan Clark

Temuka Catchment Revision

INTRODUCTION:

The purpose of this paper is to:

- a. Inform the Orari, Temuka, Opihi, Pareora (OTOP) Zone Committee (ZC) on the current environmental flow and allocation regime that manages surface and stream depleting groundwater resources in the Temuka catchment;
- b. Draw the ZC's attention to existing issues with the partial restriction regime given the size of the A Allocation Block that will need to be addressed in the Zone Implementation Programme Addendum (ZIPA) for the OTO Zone.

BACKGROUND:

The Opihi River Regional Plan (ORRP) regulates the taking of surface water and stream depleting groundwater in the Temuka Catchment (Figure 1), and its tributaries¹. The ORRP classifies abstractions through A and B Permits. B Permits are designed to be less reliable than A Permits, and are subject to a more restrictive minimum flow regime.

In the Temuka Catchment, the ORRP restricts abstractions for irrigation, domestic and stockwater supply, and community drinking water supply depending on when water permits were granted. Water permits are grouped into two categories:

- a. A Permits: Granted prior to 1 January 1999.
- b. B Permits: Granted post 1 January 1999.

CURRENT ENVIRONMENTAL FLOW REGIME IN THE TEMUKA CATCHMENT:

A Permits

Flows for the restriction regime in the Temuka Catchment are measured in the Temuka River at Manse Bridge. Table 1 provides an overview of the current A Permit restriction regime for irrigation, domestic and stockwater and community drinking water supply takes. In summary:

¹ Including but not limited to the Hae Hae Te Moana, Kakahu, and Waihi rivers

- a. From October to March, restrictions on irrigation abstractions do not apply while the flow in the Temuka River at Manse Bridge is above 1 m³/s. At or below this flow, 50% partial restrictions apply until the flow reduces to 0.7 m³/s. At this flow, abstractions must cease.
- b. From April to September, restrictions on irrigation abstractions do not apply while the flow is above 1.3 m³/s. 50% partial restrictions apply when the flow is between 1.3 and 1 m³/s. At a flow of 1 m³/s or less, abstractions must cease.
- c. From October to March, restrictions on domestic and stockwater and community drinking water abstractions do not apply while the flow is above 1 m³/s. Between 1 m³/s and 0.7 m³/s, 25% partial restrictions apply and below 0.7 m³/s, 50% partial restrictions apply.
- d. From April to September, restrictions on domestic and stockwater and community drinking water supply do not apply while the flow is above 1.3 m³/s. Between 1.3 and 1 m³/s, 25% partial restrictions apply and below 1 m³/s, 50% partial restrictions apply.

Table 1: Environmental Flow Regime for A Permit Holders in the Temuka Catchment

Permit Type	Season	Irrigation		Domestic and stockwater supply consents	
		Flow(m ³ /s)	Restriction	Flow(m ³ /s)	Restriction
A	1 Oct – 31 March	@ or below 1m ³ /s	50% (if no water sharing regime)	Above 0.7m ³ /s	25%
		@ or below 0.7m ³ /s	100%	@ or below 0.7m ³ /s	50%
	1 April – 30 Sept	@ or below 1.3m ³ /s	50% (if no water sharing regime)	Above 1m ³ /s	25%
		@ or below 1m ³ /s	100%	@ or below 1m ³ /s	50%

B Permits

Table 2 provides an overview of the current restriction regime that applies to B Permit holders for irrigation and community drinking water supply abstractions on the mainstem of the Temuka River at Manse Bridge. In summary:

- a. From October to March, restrictions on irrigation, domestic and stockwater, and community drinking water abstractions do not apply while the flow in the Temuka River at Manse Bridge is above 1.6 m³/s. At or below this flow, abstractions must cease.

- b. From April to September, restrictions on irrigation abstractions do not apply while the flow is above 1.9 m³/s. At or below this flow, abstractions must cease.

Table 2: Environmental Flow Regime for B Permit Holders in the Temuka Catchment

Permit Type	Season	Irrigation		Domestic and stockwater supply consents	
		Flow(m ³ /s)	Restriction	Flow(m ³ /s)	Restriction
B	1 Oct – 31 March	@ or below 1.6m ³ /s	100%	@ or below 1.6m ³ /s	100%
	1 April – 30 Sept	@ or below 1.9m ³ /s	100%	@ or below 1.9m ³ /s	100%

CURRENT ALLOCATION REGIME IN THE TEMUKA CATCHMENT

The ORRP sets an allocation limit for the Temuka Catchment for A and B Permits of 1.6 m³/s and 0.4 m³/s respectively for surface water and stream depleting groundwater. The limit for A Permits was considered to be the sum of all existing consented surface water abstractions from the Temuka Catchment as at 1 January 1999. The B Permit limit was set to provide for additional allocation for abstraction. Table 3 and 4 set out the current surface water allocation for A and B Permits in the Temuka catchment. In summary:

- a. The current A Permit allocation is 2,157 L/s;
- b. The current B Permit allocation is 653 L/s;
- c. There is 380 L/s of newly identified stream depletion effect that needs to be factored in either the A or B allocation block based on the subject consents original date of grant. This is based on Recommendation 4.9.2 of the Draft ZIPA.
- d. Both blocks are considered to be over allocated in the context of the existing allocation limits.

Table 3: Current Surface Water Allocation in the Temuka Catchment

Temuka River Catchment	Surface Water			
	A	B	KIL-A	KIL-B
Temuka River	98.90	-	-	-
Waihi River	306.50	119.00	62.30	45.00
Hae Hae Te Moana River	153.10	-	42.00	-
Kakahu River	75.70	-	27.00	23.00
Stony Creek	2.80	23.00	-	-
Total	637.00	142.00	131.30	68.00
Total A	768.30			
Total B	210.00			
Total No Block	68.00			

Table 4: Current Stream Depletion Groundwater Allocation in the Temuka Catchment

Temuka River Catchment	Stream Depletion			
	A	B	KIL-A	No Block
Temuka River	9.37	8.70		117.27
Raupo Creek	-	-		32.00
Waihi River	1,135.11	407.61	125.48	210.79
Hae Hae Te Moana River	85.64	26.78	12.30	20.21
Kakahu River	21.15	-		-
Stony Creek	-	-		-
Total	1,251.27	443.09	137.78	380.27
Total A	1,389.05			
Total B	443.09			
Total No Block	380.27			

ISSUES WITH THE CURRENT ENVIRONMENTAL FLOW AND ALLOCATION REGIME

When the existing environmental flow regime was designed, it was based on the sum of A permit consents at that time being 1.6 m³/s. Further allocation was provided for through the B block allocation limit of 400 L/s, with B permit water being available for abstraction above 1.6 m³/s. This regime results in no gap between the blocks and abstractors in the B allocation block can abstract at flows less than the top of the A allocation block. As the sum of allocation has increased for the A block in the Temuka, the extent to which the A and B block allocations overlap has increased. Currently the sum of the A allocation block is 2,157 L/s and a stepped partial restriction occurs at 300 L/s above the minimum flow. This means that any time more than 300 L/s is available above the minimum flow the full 2,157 L/s can be abstracted. Figure 1 show the allocation blocks and applicable minimum flows in

the Temuka Catchment. This figure graphically shows the overlap between the A and B allocation blocks.

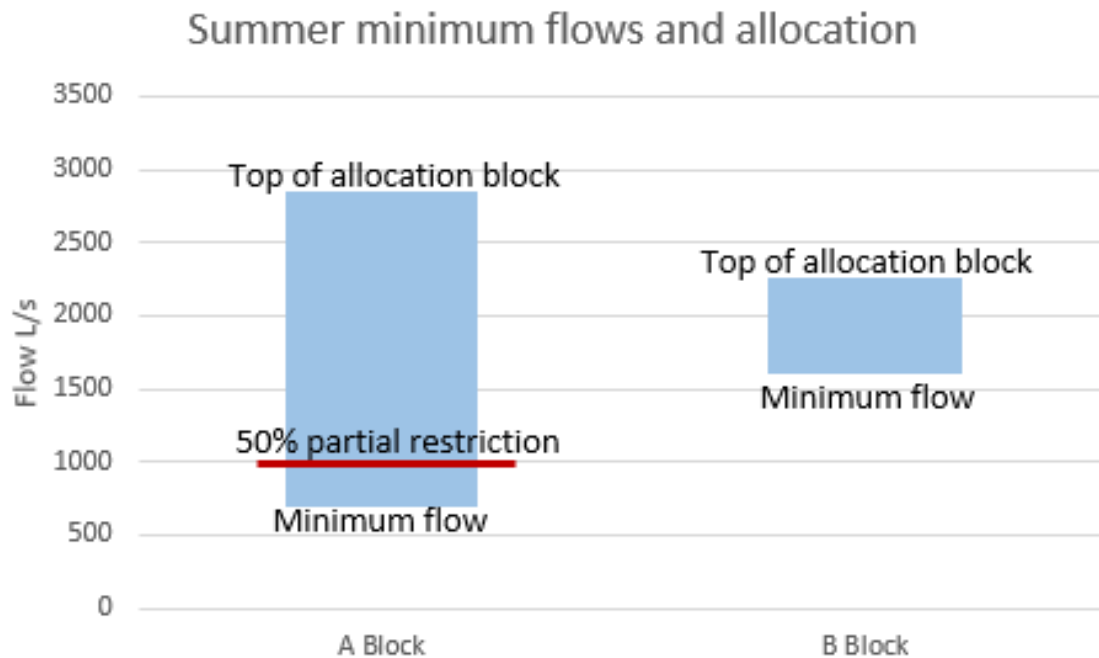


Figure 1 Diagram of summer time minimum flow, partial restrictions and block size in the Temuka Catchment

As the partial restrictions are not set pro-rata or with steps that prevent abstraction drawing flows below the minimum flow, the overlap between these two blocks does not result in B block abstractions causing restrictions to A block abstractors. The incorrectly stepped partial restrictions and overlapping allocation blocks can be seen as compensating errors. Setting correct partial restrictions without addressing the overlapping blocks would result in the B block abstractors having higher availability than the A Block during some periods as the B block abstractions are not subject to partial restrictions. This situation of the B block abstractions would also impact on the reliability of A block

This creates a “wicked problem” where fixing part of the problem in isolation will create further issues. The solution to this problem will require consideration of the minimum flows for both A and B blocks, the allocation block sizes and the partial restriction regime required to protect the minimum flow.

References

Opihi River Regional Plan (2000)