

Memo

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To	OTOP Zone Committee
CC	
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Current Allocation in the Opihi and Temuka Catchment and Options for Setting Allocation Limits

1. PURPOSE:

The purpose of this paper is to:

- a. Inform the Orari, Temuka, Opihi and Pareora (OTOP) Zone Committee (ZC) on the current allocation status of surface and groundwater resources in the Opihi and Temuka Catchments; and
- b. Provide the ZC with options for setting allocation limits for surface water and groundwater abstraction.

2. INTRODUCTION

The National Policy Statement for Freshwater Management 2017 (NPS-FM 2017) requires regional councils to establish environmental flow and allocation regimes for freshwater resources. For surface water, these regimes must include a minimum flow and an allocation limit for abstraction. For groundwater resources, the regime must include an allocation limit for abstraction.

In the Opihi Catchment, the ORRP currently sets an allocation limit of 5.6 m³/s for all A Permits, and does not set an allocation limit for B Permit abstraction. In the Temuka Catchment, the ORRP sets allocation limits of 1.6 m³/s and 0.4 m³/s for A and B Permit abstraction respectively.

The ORRP also sets these allocation limits at a catchment scale, rather than waterbody by waterbody. This regime has resulted in a large proportion of the total allocation being taken up in a number of sub catchments, particularly in tributaries of the Opihi and Temuka. As a result, in these tributaries have high allocations in relation to the flow generated by these catchments. In these tributaries the size of the allocation block impacts both the values of the river and the reliability of supply of all consent holders within the block.

3. OPIHI CATCHMENT CURRENT ALLOCATION

The ORRP sets an allocation limit of 5.6 m³/s in the Opihi Catchment for AN and AA Permits. This allocation limit is for surface and stream depleting groundwater abstractions, the current AN and AA

Permit allocation is 5,506 L/s (5.5 m³/s), and current BN and BA allocation is 6,795 L/s (6.8 m³/s). As these allocation limits are set at a catchment scale, Table 1 to Table 6

Table 5 below illustrate where the abstraction is occurring in the Opihi Catchment based on the following Surface Water Allocation Zones (SWAZs):

- a. North Opuha
- b. South Opuha
- c. Opuha
- d. Upper Opihi
- e. Te Ana Wai
- f. Lower Opihi Mainstem

In the tables below “No Block” refers to newly identified stream depleters not yet allocated to a block

North Opuha River

The allocation for the North Opuha River includes the smaller contributing tributaries of Station Stream, Deep Creek, and Deep Creek.

Table 1 Current allocations in the North Opuha River SWAZ, all values are in L/s

North Opuha River SWAZ	Surface Water Permit Type and Allocation (L/s)					Stream Depleting Permit Type and Allocation (L/s)					
	AA	AN	BN	BA	A	AA	BA	AN	BN	A	No Block
North Opuha River	209	285	-	112							
Station Stream	-	-	250	30.6	4.0	-	-	-	-		10.0
Deep Creek	-	115	-	-	-	-	-	-	-		5.2
Total	209	400	250	142.6	4.0						15.2
Total A Permit											609 L/s
Total B Permit											392.6 L/s

South Opuha River

The allocation for the South Opuha River includes the smaller contributing tributaries of Three Springs Creek and Stoneleigh Stream.

Table 2 Current allocations in the South Opuha River SWAZ, all values are in L/s

South Opuha River SWAZ	Surface Water Permit Type and Allocation (L/s)					Stream Depleting Permit Type and Allocation (L/s)					
	AA	AN	BN	BA	A	AA	BA	AN	BN	A	No Block
South Opuha River	-	85	200	642.7	-	-	-	-	-	-	-
Three Springs Creek	-	-	-	-	-	-	-	-	-	-	-
Stoneleigh Stream	-	74	-	93.2	1.0	-	21.3	-	-	-	57.5
	-	159		735.9	1.0		21.3			-	-
Total A Permit											159 L/s
Total B Permit											957.3 L/s
Total No Block											57.45 L/s

Opuha River

The allocation for the Opuha River SWAZ is from the Dam to its confluence with the Opihi River

Table 3 Current allocations in the Opuha River SWAZ, all values are in L/s

Opuha River SWAZ	Surface Water Permit Type and Allocation (L/s)					Stream Depleting Permit Type and Allocation (L/s)					
	AA	AN	BN	BA	A	AA	BA	AN	BN	A	No Block
Opuha River	-	-	-	1,375	-	28.7	124.5	-	-	-	-
Total A Permit											28.7 L/s
Total B Permit											1,499.5 L/s

Upper Opihi

The allocation for the Upper Opihi SWAZ includes the Upper Opihi River, and the smaller contributing tributaries of Halls Stream, Strathconan Stream, Coal Stream, Firewood Stream, Wellshot Stream and Raincliff Stream.

Table 4 Current allocations in the Upper Opihi River SWAZ, all values are in L/s

Upper Opihi SWAZ	Surface Water Permit Type and Allocation (L/s)					Stream Depleting Permit Type and Allocation (L/s)					
	AA	AN	BN	BA	A	AA	BA	AN	BN	A	No Block
Upper Opihi	-	86	-	261.9	-	-	340.3	31.4	-	-	46.4
Halls Stream	-	20	0.3	36.3	-	-	-	-	-	-	-
Strathconan Stream	-	-	-	-	-	-	155	-	-	-	-
Coal Stream	-	5.0	-	-	-	-	-	-	-	-	-
Firewood Stream	-	-	-	-	1.00	-	-	-	-	-	-
Wellshot Stream	-	2.0	-	36.3	-	-	-	-	-	-	-
Raincliff Stream	-	-	-	-	-	-	65.6	-	-	-	-
Total A Permit											144.4 L/s
Total B Permit											895.7 L/s
Total No Block											46.4 L/s

Te Ana Wai

The allocation for the Te Ana Wai includes the smaller contributing tributaries of the Opawa River and Totara Creek

Table 5 Current allocations in the Te Ana Wai River SWAZ, all values are in L/s

Te Ana Wai SWAZ	Surface Water Permit Type and Allocation (L/s)					Stream Depleting Permit Type and Allocation (L/s)					
	AA	AN	BN	BA	A	AA	BA	AN	BN	A	No Block
Te Ana a Wai River	329.2	-	854.4	2.0	-	46.8	-	-	-	-	67.8
Opawa River	-	14.9	-	-	-	-	-	-	-	-	-
Totara Creek	53.3	-	-	-	-	20.28	-	-	-	-	18.7
Total A Permit											467.5 L/s
Total B Permit											856.4 L/s
Total No Block											86.5 L/s

Lower Opihi Mainstem

The allocation for the Lower Opihi River below the Opihi Opuha confluence includes mainstem and the small tributaries of German Creek and Pleasant Point Stream.

Table 6 Current allocations in the Lower Opihi River SWAZ, all values are in L/s

Lower Opihi SWAZ	Surface Water Permit Type and Allocation (L/s)					Stream Depleting Permit Type and Allocation (L/s)					
	AA	AN	BN	BA	A	AA	BA	AN	BN	A	No Block
Lower Opihi Mainstem	2415.6	2112.5	-	898.4	-	466.7	456.9	13.5	4.2	229	361
German Creek	-	-	-	-	5					15.4	7
Pleasant Point Creek	-	-	-	-	-	113.4	100	6.4	-	53.9	23.5
Total A Permit											5431.4
Total B Permit											1459.5
Total No Block											391.5

4. TEMUKA CATCHMENT CURRENT ALLOCATION

The ORRP sets an allocation limit of 1600 L/s for A permits and 400 L/s for B permits in the Temuka Catchment. The currently consented allocation in the Temuka Catchment is 2510.1 L/s for A permits, 650.09 for B permits and 214.7 L/s which is not currently assigned to a block. This is currently considered to be over allocated in the context of the allocation limits in the ORRP.

Table 7 provides an overview of where this allocation is located in the Temuka Catchments, and has been broken down into the following sub catchments:

- a. Temuka River
- b. Raupo Creek
- c. Waihi River
- d. Hae Hae Te Moana
- e. Kakahu River
- f. Stoney Creek

Table 7 Current allocations in the Temuka River Catchment, all values are in L/s

	Surface Water Permit Type and Allocation (L/s)					Stream Depleting Permit Type and Allocation (L/s)					
	A	B	KIL	KIL-A	KIL-B	A	B	AA	BA	AN	No Block
Temuka River	98.9	-	-	-	-	167.9	8.7	-	-	14.4	117.3
Raupo Creek	-	-	-	-	-	-	-	27.3	-	13.5	32
Waihi River	306.5	116	389	95.1	45	1,441.4	407.6	-	-	-	62
Hae Hae Te Moana River	153.1	-	90	-	-	65.4	26.8	-	-	-	3.5
Kakahu River	75.7	-	270	27	23	21.2	-	-	-	-	-
Stony Creek	2.80	23	-	-	-	-	-	-	-	-	-
Total	637	139	749	122.1	68	1,695.8	443.1	27.3	-	27.8	214.7
Total A Block (L/s)	2,510.1										
Total B Block (L/s)	650.1										
Total allocation without a Block (L/s)	214.7										

5. OPTIONS FOR SETTING ALLOCATION REGIMES

Allocation limits for Opihi River mainstem and tributaries

Key decision area

- Option one: continue with one catchment scale allocation limit
- Option two: set allocation limits for each of the main surface water allocation zones

Allocation limits on the Temuka River and Tributaries.

Key decision area

- **Option one: Set an allocation limit for the whole of the Temuka Catchment**
This maintains the status quo and protects the values within the mainstem of the Temuka River. This treats allocation from any part of the catchment the same.
- **Option two: Set separate allocation limits for each of the major tributaries of the Temuka**
Setting allocation limits for the Waihi, Hae Hae Te Moana, Kakahu and Temuka River mainstem acknowledges and protects values within the tributaries, not just those in the mainstem of the Temuka River. This approach may lead to some parts of the catchment being considered to be more over allocated than others.

The flows we are seeing in the rivers within the catchment are a result of minimum flows, allocations, restriction regimes and actual usage. Capping allocation at the sum of the currently active consents is a way of preventing any further allocation occurring within the catchment.

LWRP regional allocation limit setting methodology

The Land and Water Regional Plan (LWRP) sets interim minimum flows and allocation block sizes for water bodies where no catchment specific regime is in place. This methodology is used in places without existing flow plans, which generally have low abstractive pressures. The Opihi Catchment has an existing flow plan so this methodology does not currently apply, it does however give an indication of what may apply in the absence of a catchment specific flow regime. Minimum flows and allocations are a set as below:

Minimum flow of 50% of the 7dMALF and an allocation limit of 20% of the 7dMALF

Draft NES

Draft National Environment Standard on Ecological Flows and Water Levels (NES) proposes allocation block sizes based on 7dMALF as below:

For rivers and streams with a mean flow <5 m³/s

Minimum flow of 90% of the 7dMALF and an allocation of the greater of 30% of 7dMALF or the total allocation from the catchment on the date that the NES comes into force, less any resource consents surrendered, lapsed, cancelled or not replaced.

For rivers and streams with a mean flow >5 m³/s

Minimum flow of 80% of the 7dMALF and an allocation of the greater of 50% of 7dMALF or the total allocation from the catchment on the date that the NES comes into force, less any resource consents surrendered, lapsed, cancelled or not replaced.

Cultural preferences for allocation

Arowhenua Rūnanga have been working with Dr Gail Tipa to develop cultural preferences for flow regimes in the Opihi Catchment. A summary of this work has been presented to the zone committee and at public meetings during the scenario phase of the healthy catchment project. These flow preferences reflect flows to protect cultural values in the Opihi Catchment.

Key decision areas

For each major tributary there are two key decisions sought from the zone committee. These are as follows:

Setting allocation regimes for catchments and tributaries

Table 8 to Table 17 show the allocations and limits for each of these options.

- **Option one: Cap allocations at sum of current allocations**
- **Option two: Apply allocation methodology from LWRP**
- **Option three: Draft NES flow recommendation**
- **Option four: Cultural allocation preferences**

Timing for allocation limits to apply

- **Option one: Any new allocation limit applies from when the plan becomes operative**
- **Option two: allocation limits are progressively staged over time after the plan becomes operative**

Table 8 Current allocations and other allocation options in the North Opuha River Catchment

North Opuha River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	609L/s	165 L/s	249 L/s	Not specified
Total B	392.6 L/s			
No Block	-			

Table 9 Current allocations and other allocation options in the South Opuha River Catchment

South Opuha River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	159 L/s	133 L/s	200 L/s	Not specified
Total B	957.3 L/s			
No Block	57.5 L/s			

Table 10 Current allocations and other allocation options in the Opuha River Catchment (below the dam to the Opihi Confluence)

Opuha River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	28.7 L/s	N/A as controlled by releases from Opuha Dam	N/A as controlled by releases from Opuha Dam	1200 L/s
Total B	1499.5 L/s			
No Block	-			

Table 11 Current allocations and other allocation options in the Upper Opihi River Catchment

Upper Opihi River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	144.4 L/s	273 L/s	684 L/s	600 L/s
Total B	895.7 L/s			
No Block	46.4 L/s			

Table 12 Current allocations and other allocation options in the Te Ana Wai River Catchment

Te Ana Wai River					
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation	
Total A	467.5 L/s	123 L/s	185 L/s	160 L/s	
Total B	856.4 L/s				
No Block	86.5 L/s				

The LWRP and draft NES allocations in the Lower Opihi River (in Table 13) are based upon an unmodified flow, calculated to represent flows at SH1 if Opuha Dam was not in place. Allocations in this table only represent the allocation in the reach of the river and do not include those from tributaries and upstream of the Opihi Opuha confluence

Table 13 Current allocations and other allocation options in the Lower Opihi River Catchment (mainstem below the Opihi Opuha confluence)

Lower Opihi Mainstem					
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation	
Total A	5431.4 L/s	537 L/s	1342.5 L/s	1600 L/s	
Total B	1459.5 L/s				
No Block	391.5 L/s				

6. OPTIONS FOR SETTING ALLOCATION LIMITS – Temuka Catchment

The Temuka River receives water from the Waihi, Hae Hae Te Moana and Kakahu catchments. These three tributary rivers have flow recorders located in their upper reaches, which provide us with flow statistics such as 7dMALF. But as these rivers leave the foothills and enter the Temuka they gain flows, including groundwater emerging into the river. For this reason the LWRP and draft NES recommendations for allocations in the tributaries will be low and may not be appropriate for setting allocation in the catchment based solely on the flows in the upper catchment. Table 14 to Table 16 show the spatial distribution of the allocation, and show a large proportion of the total

Temuka allocation is coming from the Waihi catchment, specifically stream depleting groundwater takes.

As all of these ultimately feed into the Temuka River and the Manse Bridge recorder is near the bottom of the catchment the LWRP and draft NES allocations based on 7dMALF are more appropriate than those upstream. Table 17 show that overall the Temuka current allocation is much higher than the LWRP, draft NES or cultural recommendation for allocation.

Key decision areas

As per Section 5

Table 14 Current allocations and other allocation options in the Waihi River Catchment

Waihi River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	1,843 L/s	37 L/s	55 L/s	55 L/s
Total B	568.6 L/s			
No Block	62.0L/s			

Table 15 Current allocations and other allocation options in the Kakahu River Catchment

Kakahu River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	126.7 L/s	5.2 L/s	7.8 L/s	7.5 L/s
Total B	46 L/s			
No Block	-			

Table 16 Current allocations and other allocation options in the Hae Hae Te Moana River Catchment

Hae Hae Te Moana River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	218.5 L/s	32 L/s	47 L/s	48 L/s
Total B	26.8 L/s			
No Block	-			

Table 17 Current allocations and other allocation options in the Temuka River Catchment (including allocation in upstream tributaries)

Temuka River				
Current Allocation		LWRP Default Allocation	Draft NES Allocation	Cultural Allocation Recommendation
Total A	2,510.1 L/s	332.8 L/s	832 L/s	650 L/s
Total B	650.1 L/s			
No Block	214.7 L/s			

7. COMMUNITY DRINKING WATER SUPPLY

Currently the ORRP restricts community drinking water supplies when flows are reduced. In the LWRP community drinking water supplies are not restricted provided that they are subject to a Water Supply Strategy.

Key decision area

- **Should community supplies be unrestricted in the Opihi catchment, provided they are subject to a Water Supply Strategy?**

8. AFFILIATED CONSENTS

Affiliated consent holders hold shares in Opuha Water Limited, and benefit from any water released from the Opuha Dam for augmentation to meet minimum flow requirements in the Opuha and Opihi Rivers, and to provide water for community and irrigation supply. These abstractors are managed in accordance with the augmented flow in the Opuha / Opihi River when Opuha Water Limited is releasing water. When OWL is not releasing water, affiliated consent holders are restricted as if they were non-affiliated consent holders.

Opuha Water Limited and the Adaptive Management Working Group have put forward a proposal for an environmental flow regime for affiliated consent holders with the following components:

- i. Environmental Flows
- ii. Variability
- iii. Community water supply and irrigation abstractions;
- iv. Adaptability:
 - a. OEFrag
 - b. Potential Available Volume (PAV)
 - c. Three tiers / levels for the management of water levels in Lake Opuha
 - d. Restrictions on shareholders
 - e. Artificial freshes

Key decision areas

The flow regime for affiliated shareholders and management of Opuha Dam should contain:

- **Monthly or seasonal minimum flows to protect values at different times of the year**
- **A flow regime which can be implemented in extremely dry years (1 in 20 year dry)**
- **Flow regime established and managed to take into account available water in the catchment**
- **Day to day operational flexibility**
- **Variability in flows**

9. STREAM DEPLETING GROUNDWATER

The management of stream depleting groundwater under the Land and Water Regional Plan is calculated over 7 and 150 day periods. It is more appropriate to calculate the effect of a shallow groundwater abstraction on a nearby surface water body over a longer period to determine the effect the abstraction is actually having on the surface water body, and whether there would be any direct benefit to the surface water body if the abstraction were to be managed on a minimum flow restriction.

Key decision area

Methodology to calculate stream depletion effect

- **Align the Opihi Catchment stream depletion rules with those in the LWRP to align with the rest of the region and zone.**

Assigning 'new' stream depletion abstractions to an allocation block

- **Option one: Include 'new' stream depleters in the A block allocation**

New stream depleters will have a reduction in reliability by getting a minimum flow. Including them in the A block maintains some of their reliability and recognises that they are an existing activity and their effect has already been occurring. Including them in the A block will reduce the reliability of supply for other A block consent holders

- **Option two: Include 'new' stream depleters in the B block allocation**

Including the new stream depleters in the B block will protect the reliability of supply of the existing A block consent holders. But the new stream depleters will get very poor reliability, B block water is generally suitable for storage and this option does not recognise the existing effect of the new stream depleters and their existing reliability

- **Option three: Apply the same rules as the existing ORRP to determine which block stream depleters are in, consents prior to the plan are A block, those that came later are B block.**

This approach would protect the reliability of the consents which were in place prior to the ORRP, and treat these as A block takes, and those which were granted after the plan would be B block. This would mean that some more recently granted stream depleters will have a large drop in reliability.

10. GROUNDWATER

There are three groundwater allocation zones included or partially included in the Opihi Catchment. These are Fairlie, Levels Plains and Orari Opihi. Table 18 shows the allocation limits and current allocation for each of these. Through the calculation of 'stream depletion' using the 7 day and 150 day methodology, many consents are now counted in the surface water allocation, which has in turn reduced the groundwater allocation. As this new method reduces the allocation it means that allocation within the current limit becomes available to new consent holders. There may be a desire for community drinking water supplies to source higher quality or higher reliability water supplies by taking deeper groundwater, the Zone Committee may wish to allow this as part of its recommendations. If further allocation is freed up and re-allocated this may lead to further decreased in groundwater levels and increased pressure on stream flows.

The groundwater allocation zones do not cover all parts of the catchment. This means that in areas outside a groundwater zone people are able to apply for new consents to abstract. Extending the

boundary of the allocation zones would ensure that any new application would need to fit within the allocation limit in the plan.

Table 18 Groundwater allocation limits and current allocation if 150 day SD rule applies in the Opihi Catchment

Zone	Current Limit	Current allocation
Fairlie	37.0 Mm3/yr	0.81 Mm3/yr
Levels Plain	32.9 Mm3/yr	19.6 Mm3/yr
Orari Opihi	71.1 Mm3/yr	44.3 Mm3/yr

Key decision area

Groundwater allocation limits

- **Option one: Cap allocation at current and reduce limit to current allocation**
Prevents any further allocation. But does not leave flexibility for new stream depleters to prove they are not connected or source deeper groundwater.
- **Option two: Cap allocation at current but retain a higher limit to allow new stream depleters to go deeper or prove they are not connected**
Provides a pathway for new stream depleters to keep reliability by proving they are not connected or by sourcing deeper groundwater
- **Option three: Leave limit at current plan limit**
This allows further groundwater allocation to be granted and new stream depleters to prove they are not connected or to go deeper.

Any of these three options could include a provision for community Drinking water being sourced from groundwater

Groundwater allocation zone boundaries

- **Extend Groundwater allocation zone boundaries to include areas currently outside of an allocation zone.**

Timing for groundwater allocation limits to apply

- **Option one: Any new allocation limit applies from when the plan becomes operative**
- **Option two: allocation limits are progressively staged over time after the plan becomes operative**