

## **Draft recommendations on flow and allocation for Temuka and Opihi Catchments, and nutrient Management for the high nitrate concentration areas.**

**This document details recommendations that have emerged from collaboration. However, the Zone Committee did not reach consensus on all the water quality and quantity recommendations provided. The committee is therefore seeking feedback from the community and Papatipu Rūnanga between September 21 and October 10, 2018 to ensure that the solutions package reflects the outcomes sought.**

Please provide your feedback to the zone committee

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**Feedback must be received by Environment Canterbury no later than 4pm, 10 October 2018.**



## 4.8 Water Quality and Ecosystem Health

Within the OTOP zone there is widespread concern regarding water quality and threats to drinking water, ecological, mahinga kai, cultural and recreational values. There is also recognition of the significance of farming to the local economy, coupled with a desire to limit further diffuse discharges of nutrients that place increased pressure on the environment. The recommendations that follow point to a variety of mechanisms to address these concerns, and include recommendations for planning, research, non-statutory actions and support for community science and catchment groups. These recommendations apply across the entire zone, however, where further actions are required specific to a FMU, additional recommendations are included in the FMU-specific sections of the addendum.

The overarching principles of these zone-wide recommendations are to first protect water quality and stream health where it is meeting National Bottom Lines<sup>1</sup> or better, or is within Attribute State C or better, for example upper Orari and upper Waihi Rivers in the hills and those waterbodies in the Fairlie Basin; and secondly, improve water quality to at least National Bottom Lines in spring-fed streams and wetlands of the lower catchments and coastal plains area which suffer poor health, such as Taumatakahu and Rhodes Streams.

Ensuring that the cultural, environmental, social and economic needs of the zone are met is a challenging task, and the Zone Committee have tried to find a balance between these factors when considering water quality issues by basing their decisions on principles of equity and fairness. To protect and enhance the lower reaches of hill-fed rivers and spring-fed streams, it is critical that contaminant inputs, habitat and flow regimes are managed.

Periphyton is one of the key ecosystem health attributes in the NPS-FM for which freshwater objectives are required to be set. Furthermore, the NPS-FM requires regional councils to set instream concentrations of dissolved inorganic nitrogen (DIN) and dissolved reactive phosphorus (DRP) in rivers to help them achieve their freshwater objectives for periphyton, where conspicuous periphyton is likely to occur. In the OTOP zone, conspicuous periphyton generally is found in the mainstems of the Pareora, Opihi, Temuka and Orari rivers and their major tributaries.

Environment Canterbury's summertime contact recreational monitoring programme identifies numerous sites across the zone as popular swimming sites. These sites are listed in Recommendation 4.8.5 of this document, and information about the state of the water at each is available at the following website: <https://www.lawa.org.nz/explore-data/canterbury-region/swimming>. These sites have been selected over several years based on community discussions, local knowledge and agreements with the relevant district councils and district health boards. Areas on rivers commonly used for swimming can be listed in Schedule 6 of the Land and Water Regional Plan, which affords these sites protection, particularly from stock access, and ensures that they will be monitored and reported on. The Committee have acknowledged these sites and have recommended further sites for inclusion in Schedule 6 of the Land and Water Regional Plan and the deletion of the Brussels Bridge site.

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<sup>1</sup> NPSFM 2017 sets the National Bottom Line nitrogen value for lowland spring-fed streams at 6.9mg/l

The key pathways for reducing the impact of farming on water quality are the implementation of industry agreed Good Management Practices (GMP), Farm Environment Plans (FEPs), and stock exclusion from waterways. The Committee support these mechanisms as provided for in Plan Change 5 (PC5) and the Canterbury Land and Water Regional Plan. PC5 requires high risk farming activities<sup>2</sup> to obtain a resource consent and prepare a Farm Environment Plan that is audited. The consent pathway for these properties will also require the preparation of an OVERSEER (or approved equivalent) modelled nutrient budget that will be registered with the Farm Portal and limit farming activities to a Nitrogen Baseline GMP Loss Rate limit from July 2020. Lower risk farming activities<sup>3</sup> are required to prepare a Management Plan that is not audited and will not be required to obtain resource consent.

The OTOP zone has large areas of erodible soils that occur on hill country and rolling downlands and that are a high risk for runoff of sediment and contaminants. The High Runoff Risk Phosphorus Zone identifies areas that are likely to result in runoff, particularly when under pressure from stock, high rainfall events, and cultivation or areas of bare soil (Figure 8). Research has indicated that winter forage crops grazed by cattle and deer are a significant source of soil loss and overland flow of nutrients to surface waterbodies, particularly on sloping land. The Committee consider the risks from large areas of winter grazing (greater than 20 ha) in the high run off risk zone should be managed through a resource consent and Farm Environment Plan that is audited. However, where this is the only reason for requiring an FEP and resource consent the Committee does not see the necessity for these farms to prepare a

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<sup>2</sup>Farming activities on properties greater than 10 hectares, with more than 50 hectares of irrigation; or greater than:

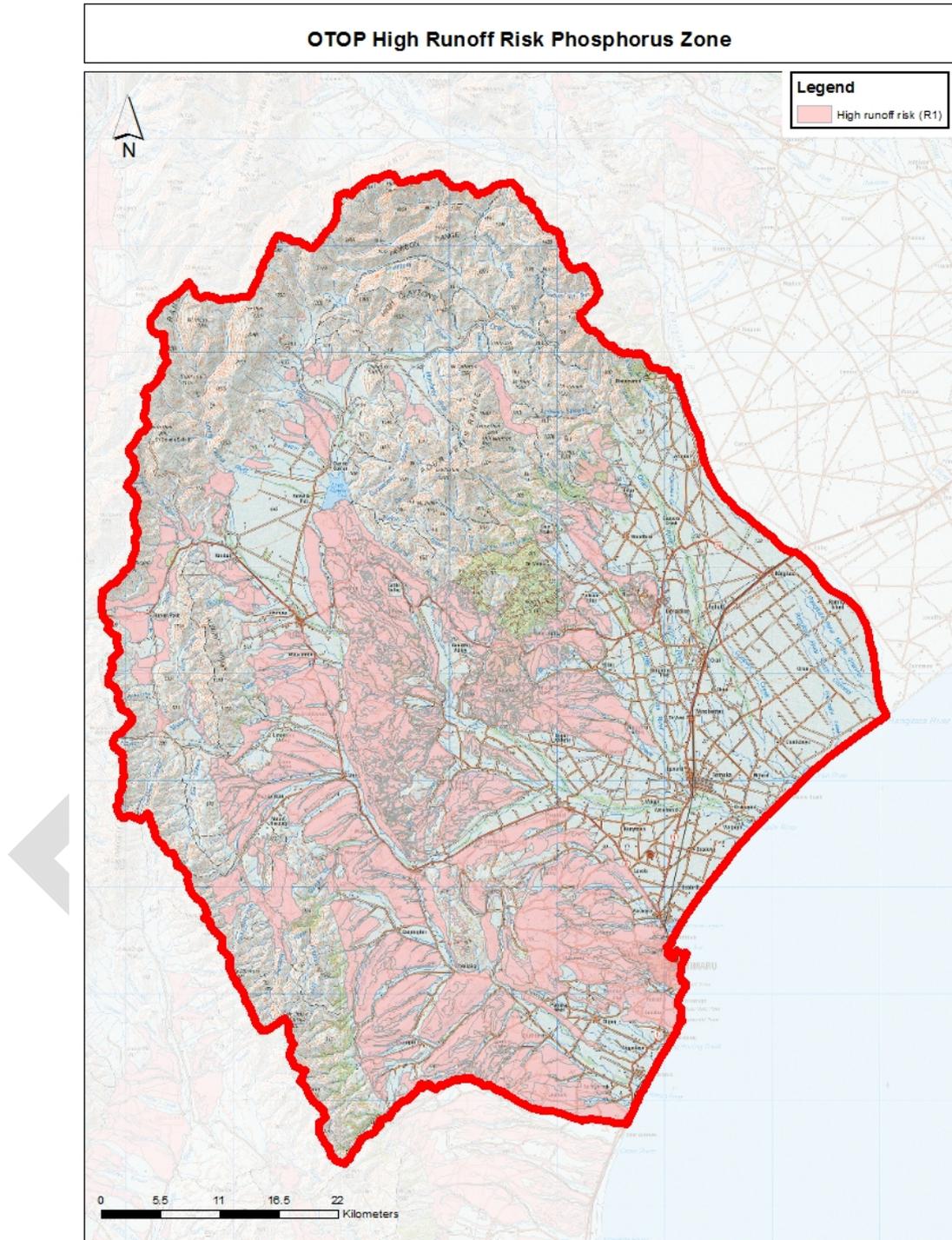
- a. 10 hectares of intensive winter grazing of cattle for properties less than 100 hectares in area;
- b. 10% of the area of the property for properties between 100 hectares and 1000 hectares in areas;
- c. 100 hectares for any property greater than 1000 hectares in area.

<sup>3</sup>Farming activities on properties greater than 10 hectares, with less than 50 hectares of irrigation; or less than:

- a. 10 hectares of intensive winter grazing of cattle for properties less than 100 hectares in area;
- b. 10% of the area of the property for properties between 100 hectares and 1000 hectares in areas;
- c. 100 hectares for any property greater than 1000 hectares in area.

nutrient budget. This recommendation seeks to ensure the effective management of critical source areas for overland flow of contaminants, while minimising the cost to the land owner.

**Figure 8: OTOP High Runoff Risk Phosphorus Zone<sup>4</sup>**



<sup>4</sup> The High Runoff Risk Phosphorus Zone indicates areas where there is a high potential for fine particulate matter with attached phosphorus to be carried by runoff flow to surface waterbodies

Spring-fed streams in OTOP generally have poor health in terms of sedimentation and faecal contamination because of inadequate riparian protection, run-off from critical source areas, and stock access to waterways. Open drains and canals can also be a direct conduit for contaminants into these streams. Stock exclusion from waterways and the effective management of riparian margins on farm are two of the most effective ways of minimising the overland flow of contaminants to surface water bodies from farming. The Committee have recommended that the stock exclusion rules in OTOP should be strengthened to include drains and canals discharging to surface waterbodies.

Farm Environment Plans and Management Plans are a key tool for ensuring stock are excluded from waterways with an appropriate setback distance. An “effective” setback distance for fencing a stream for stock exclusion will depend on the nature of the waterway, how vulnerable it is to contamination due to the surrounding land characteristics and practices, and whether the setback is for bank protection, or nutrient filtering and assimilation. The Committee consider these requirements will be best determined through the development, implementation and audit of FEPs and recommend some level of monitoring of Management Plans in high risk and priority areas.

Despite these pathways for maintaining or improving water quality, the current state water quality data indicates that there is a requirement in the future for land owners in the Rangitata Orton, Levels Plains, and Fairlie Basin areas to reduce nitrogen losses further than Baseline GMP loss rates to achieve water quality outcomes over time. These areas are referred to as nitrate hot spots and are areas with high nitrate concentrations where targeted nitrogen reductions are required (Figure 9).

A Farmers’ Reference Group investigated the costs and benefits of mitigations to further reduce nitrogen losses and has reported to the Zone Committee on opportunities currently available and some alternatives still under investigation. The results of the modelling undertaken by the Group showed that achieving loss rates beyond baseline GMP will require farm system changes for many of the affected farmers and will also be likely to increase the complexity of farm management. The practices to reduce nitrogen losses from farm that can be implemented now, and reflected in overseer nutrient budgets, include reducing nitrogen fertiliser applications and reducing the nitrogen in supplements by using lower protein feed sources such as grain, maize and fodder beet. The use of standoff pads during high risk periods was also investigated by the Group and found to be an effective (although likely to be the most expensive), mitigation to reduce nitrogen losses beyond baseline GMP.

Timaru, Waimate and Mackenzie district councils all operate reticulated stormwater networks which discharge contaminants into surface water bodies across the zone. From 30 June 2018, district councils operating an existing network are required to apply for a resource consent, and must comply with the water quality Receiving Water Standards contained in the Land and Water Regional Plan by 2025. A Stormwater Management Plan must accompany the application and detail how these limits will be met. The limits relate to toxicants, metals, sediment, nutrients and faecal indicator bacteria, and are based on the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) 2000. The limits provide different trigger values for different levels of protection (percentage of species expected to be protected).

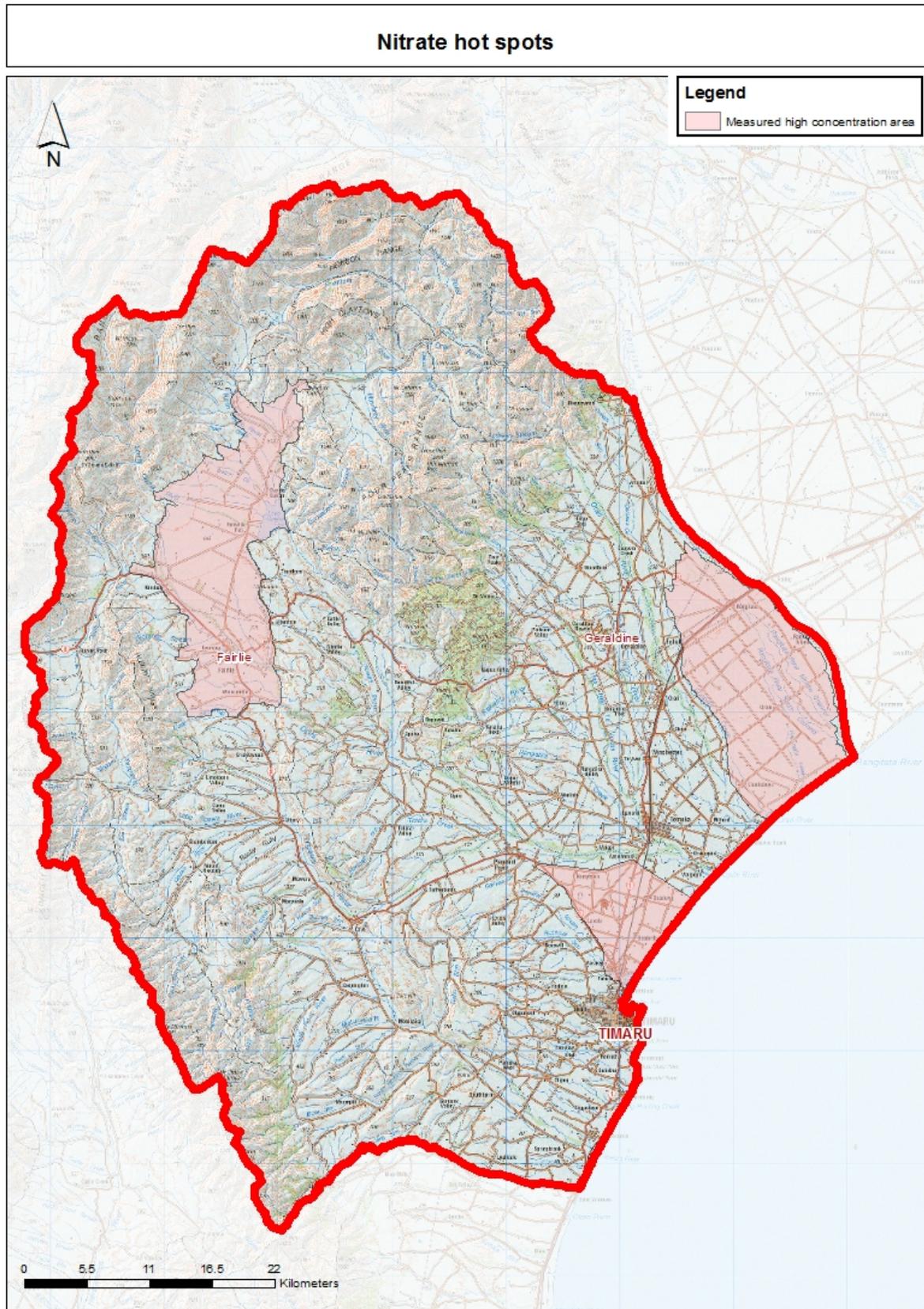


Figure 9: Nitrate Hot Spots

It is predominantly urban waterways in the zone that receive discharges of stormwater. The Land and Water Regional Plan requires these discharges to meet at least a 90% level of species protection by 2025. The Committee are supportive of this level of protection and timeframe for achievement, but have recommended that any new discharge of stormwater into a reticulated network will be expected to meet the 95% level of species protection threshold.

While water quality in the zone is under pressure from the primary sector, there are additional factors affecting water quality, and it is essential that these are recognised, monitored and managed. This includes Emerging Organic Contaminants (EOC), and large-scale discharges of industrial wastewater that occur in the zone. EOCs are defined as ‘any synthetic or naturally occurring chemical or any microorganism that is not commonly monitored in the environment but has the potential to enter the environment and cause known or suspected adverse ecological and (or) human health effects’. Potential sources of EOCs include: stormwater, sewage, landfill, and chemical use by the agricultural industry. Currently there is no routine monitoring of EOCs in our environment

There is also risk to in-stream values from the increased occurrence of potentially toxic Phormidium blooms across the zone, which over the past decade have had a profound impact on the community’s recreational use of rivers in the OTOP zone. Phormidium blooms not only create issues for recreational water users, but also cause concern for mahinga kai and drinking water supplies.

In making the following recommendations, the Committee aim to address the community’s concerns about water quality in the zone. The Committee acknowledge that there are already on-the-ground activities taking place, but that more needs to be done, over time, to protect ecological and cultural values in local waterbodies.

#### **4.8.1 Recommendation: Water Quality Outcomes (Groundwater and Spring-fed Streams) – Zone Wide**

The recommendations below are the freshwater outcomes that apply across the zone for freshwater resources.

- I. No Deterioration of Water Quality:
  - a. Where existing freshwater quality is already better than any outcome set out in this ZIPA, there shall be no deterioration of that water quality.
- II. Groundwater:
  - a. Annual average nitrate nitrogen concentrations in groundwater within each groundwater province (Figure X), excluding the hot spot areas of Rangitata Orton, Levels Plains, and the Fairlie Basin, shall be maintained at or improved beyond the current state limits set out in Table 1.
  - b. In the hotspot areas of Rangitata Orton, Levels Plains, and the Fairlie Basin, annual average nitrate nitrogen concentrations in groundwater shall not exceed 5.65 mg/L<sup>5</sup> as a target to be achieved at or before the dates specified in Recommendations 5.1.2, 5.3.4, and 5.4.3 of this ZIPA.

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<sup>5</sup> 5.65 mg/l is half the Maximum Allowable Value of 11.3 mg/L as set out in the Drinking Water Standard for New Zealand 2008

- c. Within five years of the OTOP sub-region plan change becoming operative *E. coli* in groundwater shall not exceed the limit in the Land and Water Regional Plan<sup>6</sup>.

III. Surface Water nitrates:

- a. Annual median concentrations of nitrate nitrogen in individual spring-fed streams shall be maintained at or improved beyond the current state limits set out in Table 2.
- b. In the hotspot areas of Rangitata Orton and Levels Plains, annual median concentrations of nitrate nitrogen in individual spring-fed streams set out in Table 3 shall not exceed 6.9 mg/L<sup>7</sup> as a target to be achieved at or before the date specified in Recommendation 5.1.2 and 5.4.3

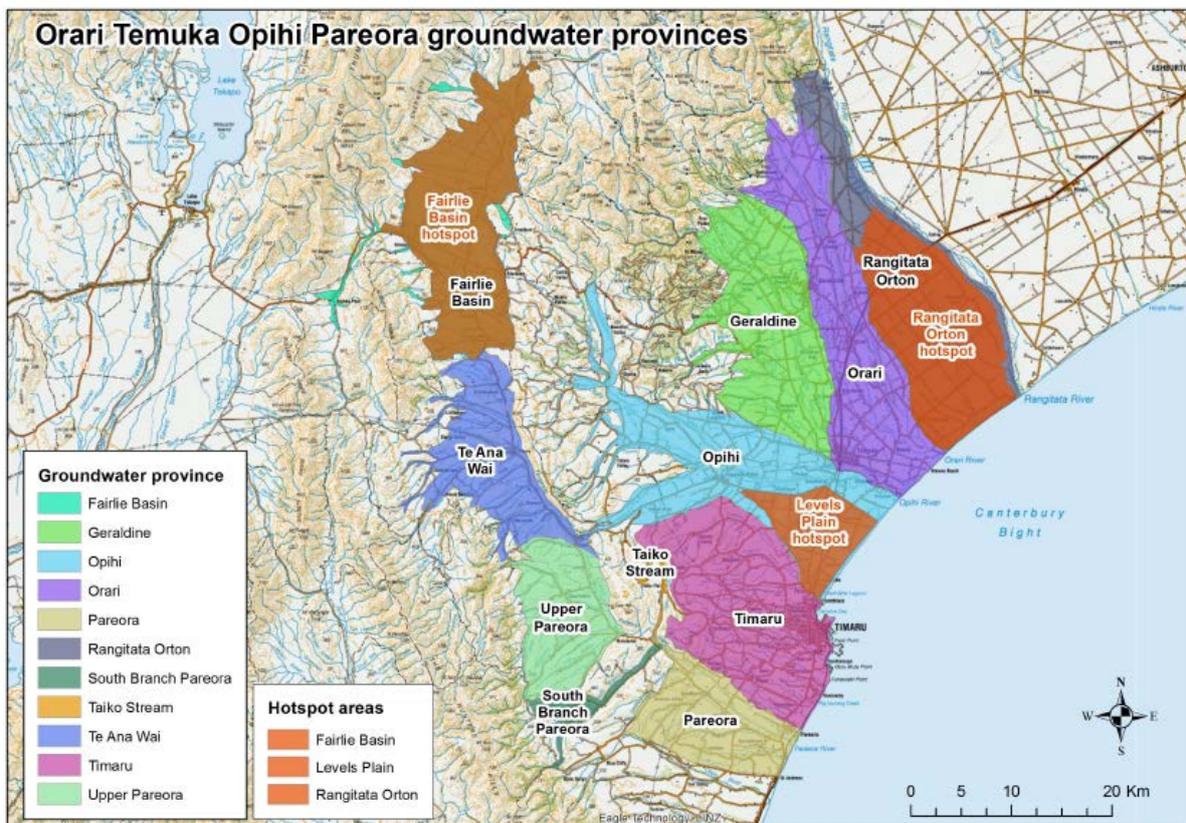


Figure X – Orari-Temuka-Orari-Pareora Groundwater Provinces

<sup>6</sup> In 95% of samples, *E. coli* must meet a limit of <1 organism per 100 millilitres.

<sup>7</sup> 6.9 mg/L is the National Bottom Line under the NPS-FM for nitrate toxicity for ecosystem health.

**Table 1: OTOP Groundwater Limits**

Groundwater Province	Current state average (2011-2016) (mg/L)	Limit - Annual average nitrate nitrogen (mg/L)
Geraldine	2.8	5.65  Or where groundwater quality is better than this limit, water quality shall not deteriorate below its existing state at plan notification
Opihi	4.7	
Orari	2.7	
Pareora (lower)	2.6	
South Branch Pareora	Insufficient data available and ongoing monitoring is required	
Taiko Stream		
Te Ana Wai		
Timaru		
Upper Pareora		

**Table 2 – OTOP Spring-fed Streams Nitrate Limits**

FMU	Site Name	Current state (2011 – 2016)	Recommended Limit
		5 year median (mg/l)	Annual median (mg/l)
Orari	Petries Drain Canal Road	5.0	6.9  For any surface waterway, where water quality is better than this limit, water quality shall not deteriorate below its existing state at plan notification
	North Branch Ohapi Creek Guild Rd	0.7	
	Ohapi Creek Guild Rd	0.7	
	South Branch Ohapi Creek Guild Rd	0.9	
	Ohapi Creek Above Orari Confluence	0.7	
	Coopers Creek SH72 Bridge	0.9	
	McKinnons Stream Wallaces Bridge	4.9	

Temuka	Smithfield Creek Te Awa Rd	3.8	
	Taumatakahu Stream Murray St	1.4	
	Raukapuka Creek Coach Road	1.8	
Opihi	Orakipaoa Creek Milford Lagoon	1.4	

**4.8.2 Recommendation: Pathways to Achieving Water Quality Outcomes**

- I. Diffuse discharges of nutrients are capped at current limits, and are reduced over time where required to meet water quality limits in hot spot areas:
  - a. Rangitata Orton;
  - b. Fairlie Basin;
  - c. Levels Plain.

## 5.1 ORARI FMU

***The recommendations for the Orari Freshwater Management Unit are in addition to those that apply across the OTOP zone.***

The upper reaches of the Orari River, above the mouth of the Orari Gorge, are recognised in the Land & Water Regional Plan as a high naturalness waterbody, and much of the area is identified as a regionally outstanding landscape by the Department of Conservation. The area also has high recreational and biodiversity values and good aquatic ecosystem health. The community has expressed concern about potentially adverse effects to this area from land use activities. The Zone Committee recognise and acknowledge the work of the local community to develop the Orari River Catchment Management Strategy, and fully supports its ongoing implementation as part of the Zone Implementation Programme (ZIP).

The LWRP defines a conjunctive use zone in the Orari catchment, an area with a high level of interaction between surface water and groundwater. To acknowledge this close link, shallow groundwater takes (less than 30m deep) are counted as stream depleting and have minimum flow conditions and are counted as abstractions from the river. It has been discussed that some groundwater abstractions near the boundary of this zone may have extenuating circumstances and may not be as closely linked to the river as the wider groundwater. In these special cases consent holders would like the opportunity to assess their degree of hydraulic connectivity to surface water.

To maintain the purpose and benefit of the conjunctive use zone, shallow groundwater abstractions need to continue to be classified as directly stream depleting, but with some flexibility for the small number of consents which may not be as directly linked to the surface water is possible. To meet this criteria consent holders would need to demonstrate that they have a moderate or low stream depletion effect via field testing.

### **5.1.1 Recommendation: General**

- I. Regional and district council's work programmes implement the Orari River Catchment Management Strategy 2008.
- II. Regional and district councils shall implement the Regional Pest Management Strategy to control invasive tree species

## Water Quality

### Rangitata Orton Hot spot

The Zone Committee note the challenges in the Orari FMU, particularly the nitrate hot spot in the Rangitata Orton area, and the generally poor health of the lowland spring-fed streams. While the Committee understand the need for a pathway to improving surface and groundwater quality, it is also recognised that these improvements will take time. While aiming to improve water quality across the entire zone, the Committee also support targeted mitigations that address nitrate hot spots and poor stream health in the area. Recommendation 5.1.2 sets out a staged regime for further nitrate reductions beyond the reductions that will be achieved by the implementation of Baseline GMP Loss Rates. The ZC acknowledge that for most land owners, the first step for improving water quality will be the requirement to operate at a Baseline GMP Loss rate which could incur significant cost.

To achieve the water quality targets, current measured concentrations indicate that total reductions in the order of 30-35% are required. The reduction in nitrate leaching from properties in the Rangitata Orton Hotspot area achieving their Baseline GMP Loss rate is expected to be approximately 15%. The staged regime set out below proposes a further step beyond GMP at 2030 of 10% and sets out a subsequent step that may be required at 2035 of 5-10% to achieve the water quality targets based on the current state modelling. Improvements in water quality made by the reductions in nitrogen loss rates achieved by 2035 are expected to be visible in the environment and in water quality reporting by 2040.

The Committee recommends a monitoring programme be implemented to inform future State of the Environment Monitoring and enable a review of the targets and outcomes set by the Committee. A core component of the monitoring programme will be to determine if the planned future stepped percentage reductions beyond GMP, as established based on current science, would still need to apply to meet the water quality targets, or whether lesser or greater percentage reductions would be required in a subsequent plan change as a result of new science.

The Committee considers that policy framework could further support this direction by requiring that land use consents to farm are granted with durations not exceeding ten years and would therefore only adopt one percentage reduction step beyond the current step. This would enable the renewal of farming land use consents to be relative to the five-yearly monitoring and ten yearly plan review cycles, and would ensure any future percentage reduction steps are relative to the future state.

The Committee also recognise the contribution of discharges from an industrial activity in the hotspot area. Clause (II) has been included in the regime to ensure that the burden of reducing nitrogen losses is shared between individual land owners and industry.

#### **5.1.2 Recommendation: Additional Pathways for Achieving Water Quality Outcomes in the Rangitata Orton Hot Spot Area**

- I. The water quality targets for nitrate nitrogen in ground and surface water set out in Table 3 are to be achieved at or before 2040 by requiring farming activities to reduce diffuse

discharges of nitrogen beyond Baseline Good Management Practice Loss Rates of not less than a further:

- a. 10% at 2030; and
  - b. 5-10% at 2035;
- II. In addition to clause (I), the water quality targets for ground and surface water set out in Table 3 are to be achieved at or before 2040 by requiring discharges from industrial activities to be reduced beyond current nitrogen discharge rates by up to 30% by 2035.
  - III. In addition to clauses (I) and (II), regional council should continue to support non-statutory measures for nitrogen reductions beyond Baseline GMP Loss Rates in order to achieve water quality outcomes before the target date specified in Table 3.
  - IV. To track progress towards achieving the water quality targets set out in Table 3, the regional council shall monitor and report on water quality<sup>8</sup> and report the progress towards achieving the targets within 5 years of the OTOP sub-region plan change becoming operative, and subsequently at 5 yearly intervals, to evaluate the efficiency and effectiveness of measures being taken to achieve water quality outcomes.
  - V. Where this monitoring and review demonstrates that the water quality targets are likely to be met prior to 2040, this information shall inform future plan changes for the OTOP zone to adjust the percentage reductions beyond Baseline GMP Loss Rates required to achieve the water quality targets.
  - VI. The OTOP sub-region plan change directs that land use consents to farm are granted with durations not exceeding 10 years and only adopt one percentage reduction step beyond GMP. This would enable the renewal of farming land use consents to be relative to the plan review cycle and ensure any future percentage reduction steps are relative to the future state.

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2. **Table 3: Water Quality Targets for the Rangitata Orton Hotspot Area**

Groundwater Province	Current state average (2012-2017) (mg/L)	Target - Annual average nitrate nitrogen (mg/L)	To be achieved at or before	Total percentage reduction required to achieve water quality target
Rangitata-Orton	8.4	5.65	2040	33%
Spring Fed Streams	Current State 5-year median (2011-2016) (mg/L)	Target – Annual median (mg/L)	To be achieved at or before	Total percentage reduction required to achieve water quality target
Old Orari Lagoon Outfall	9.1	6.9	2040	24%
Rhodes Stream Parke Road	9.8			30%

<sup>8</sup> Annual water quality reporting is available at the following website <https://www.lawa.org.nz/explore-data/canterbury-region>

## 5.2 TEMUKA FMU

***The recommendations for the Temuka Freshwater Management Unit are in addition to those that apply across the OTOP zone.***

The Temuka FMU covers an area of the zone that is of particular importance to Te Rūnanga o Arowhenua as a wāhi tūpuna, providing a variety of mahinga kai sites and areas of wāhi taonga. The philosophy of “ki uta ki tai” – the mountains to the sea – directs that all parts of the catchment are valued and protected, and that the health of all waterbodies is essential to realising the values within. The degradation of the waterbodies has affected cultural, ecological and recreational values in this catchment in many ways, and the Committee acknowledge the importance of addressing water quality and water quantity in this area as a priority.

The Temuka River drains the eastern foothills of the Opihi River catchment and has three tributaries, the Kakahu, Hae Hae Te Moana, and Waihi rivers that originate in the Four Peaks Range. In summer, lowland spring-fed tributaries provide significant contributions to surface flows in the Waihi-Temuka River. Notable among these tributaries are Raukapuka Creek, Dobies Creek and Taumatakahu Stream. There is also a strong interaction between groundwater in the Orari and the Temuka catchments, with water leaving the Orari River and emerging in the Waihi Catchment. The catchment is considered over allocated in respect of ecological and cultural values and the Zone Committee have requested further instream habitat assessments to facilitate decision making on flow and allocation regimes.

The Temuka FMU receives water from the Opihi Catchment through the Kakahu Irrigation Scheme. This water comes from the Opuha River and uses a combination of irrigation canals and natural waterways to convey water to shareholders.

### Water Quality

#### 5.2.1 Recommendations: Water Quality Outcomes for Temuka FMU

- I. The Committee acknowledges the Temuka River is of particular cultural significance and a priority area for improvement in water quality and quantity.
- II. Non-statutory mitigations, particularly in respect of sediment, *E. coli*, and phosphorous to be prioritised for the Temuka FMU.

### Water Quantity

Since the “Interim Minimum Flow Recommendations” were released for consultation in December 2017, instream habitat flow assessments have been undertaken at Manse Bridge and have informed the “Draft Environmental Flow and Allocation Regimes” recommendations set out below.

A Temuka Catchment Working Party has recently formed and is supported by the Zone Committee. The Working Party membership comprises irrigator representatives from the Temuka catchments, Zone Committee members, Central South Island Fish and Game, and

Timaru District Council, with coordination and technical advisory support from Opuha Water Ltd.

The Working Party has focussed on providing an interim flow and allocation proposal for Manse Bridge that balances ecological and economic concerns and enables further assessments and consultation on the proposed regimes to occur. The Zone Committee acknowledges the substantial amount of time and effort undertaken by the Working Party in providing a staged approach to improving flow and allocation for the Temuka River to the Zone Committee for further engagement. The Committee has accepted the Flow and Allocation Working Party's environmental flow, allocation and partial restriction regimes and recommended a further period of consultation on these regimes. The Zone Committee understands that an updated proposal will be provided by the Working Party following their review of modelled changes to reliability.

- I. Environmental Flow and Allocation Regimes have been developed for the Temuka River at Manse Bridge as set out in Tables 1 and 2. The Zone Committee is seeking feedback on the minimum flow, allocation and restriction regimes within these tables before recommending regimes for inclusion in the OTO plan change.

## Environmental Flow and Allocation Regime

### Temuka River – Manse Bridge

Table 1 sets out the draft stage 1 environmental flow and allocation regime that will apply to the Temuka River. It stipulates the minimum flow restrictions that are intended to apply within 3 years from the Orari-Temuka-Orari-Pareora sub region plan becoming operative. A and B block allocation will remain as existing, the B block is stacked on the A block and pro -rata restrictions protect the minimum flow.

**Table 1 Draft Stage 1 Environmental Flow and Allocation Regime for Temuka River**

Min flows	Jan-Mar	April	May Aug	Sep	Oct	Nov-Dec
Temuka A Block	850	1200	1500	1200	1000	850
Temuka B Block	3350	3700	4000	3700	3500	3350

Table 2 sets out the draft stage 2 environmental flow and allocation regime that will apply to the Temuka River. It stipulates the minimum flow restrictions that are intended to apply within 8 years from the Orari-Temuka-Orari-Pareora sub region plan becoming operative. A block allocation will reduce by approximately 500 l/s to 2000 l/s and B block allocation will reduce by approximately 280 l/s to 500 l/s. The B block is stacked on the A block and pro -rata restrictions protect the minimum flow.

**Table 2 Draft Stage 2 Environmental Flow and Allocation Regime for Temuka River**

Min flows	Jan-Feb	Mar	April-Aug	Sep	Oct	Nov-Dec
Temuka A Block	1050	1200	1500	1400	1200	1050
Temuka B Block	3550	3700	4000	3900	3700	3550

### 5.3 OPIHI FMU

***The recommendations for the Opihi Freshwater Management Unit are in addition to those that apply across the OTOP zone.***

The waterbodies that make up the Opihi FMU have high cultural and recreational values, providing for mahinga kai, water sports and related activities. A mātaītai reserve covers much of the Opihi River and its lagoons and tributaries. Recent deteriorations in water quality have had a negative impact on cultural and ecological values, and on recreational activities within the area. The Fairlie basin area has high concentrations of nitrate nitrogen in groundwater, and may require targeted reductions beyond GMP Loss Rates to achieve the recommended water quality outcomes.

Lake Opuha, situated behind the Opuha Dam, is an artificially created lake, with the primary purpose of storing water for irrigation, community supplies and environmental flows to the Opuha and Opihi rivers. It also serves as a locally-valued recreational resource for boating, fishing and swimming. Water quality of the lake is moderately enriched with nutrients but does not exhibit issues such as significant algal blooms. It is important for the lake and the downstream environment that no further increase in nutrient enrichment occurs. Microbial quality of the lake is generally good, and is considered suitable for swimming.

The Opuha Dam augments flows in the Opuha and Opihi rivers, and supplies reliable water for irrigation through the Opuha scheme, and to the urban and industrial users of Timaru via the Timaru District Council's community water take. There are three irrigation schemes that draw water from the Opuha and Opihi rivers and there are also shareholder irrigators who operate directly off those two rivers as well as the Te Ana a Wai, the Upper Opihi and North and South Opuha rivers above the dam. However, the Committee also acknowledge that there are no direct benefits to these tributaries from releases from the Opuha Dam as they are not augmented.

The Zone Committee have been charged with improving freshwater management in an area with complex hydrology and an economy that relies in part on water for irrigation. Ensuring more efficient use of the available water resource and addressing over-allocation are two pathways towards this. The North and South Opuha, Upper Opihi, and Te Ana Wai rivers are considered over-allocated in respect of ecological and cultural values and the Zone Committee has requested further instream habitat assessments to facilitate decision making on flow and allocation regimes. To ensure flow and allocation limits are as equitable as possible, the Zone Committee will be actively engaging with the community to ensure the development of a complete package that meets the outcomes sought, with input from a Flow and Allocation Working Party, and Catchment Groups.

The Committee acknowledge the contribution of the dam to the catchment, however concerns about water quantity remain, particularly the over-allocation of freshwater. As the catchment is operating under a 20-year old regime, there is a need to address these concerns, and the Committee recommend the management of the tributaries and mainstem as sub-catchments to protect their values.

## Water Quantity

The Committee seek a flow regime that provides for healthy and resilient ecological communities, cultural values, and community and stock water abstractions, while recognising irrigation, abstraction to storage and recreational and amenity values. The Committee acknowledge the environmental flow and allocation regime for the Opihi Catchment, however, changes are recommended which include establishing an environmental flow and allocation regime for each of the major sub-catchments in order to address the over-allocation of these freshwater resources. Setting allocation limits in this way acknowledges and protects values within both the mainstem and the tributaries of the waterbodies of the Opihi FMU. The Committee are aware that this measure will have an impact on land use economics, so have suggested time frames that will enable consent holders to plan and prepare for any changes to minimum flows.

Recent experience managing flows in very dry conditions, and the learnings developed by the Opuha Environmental Flow Release Advisory Group (OEFrag) have been built upon by the Adaptive Management Working Group (AMWG). The Committee have received a number of presentations from this group, and also Opuha Water Limited, who have sought a number of outcomes from the Healthy Catchments Project. These have been incorporated in the recommendations that follow.

### 5.3.1 Recommendations: Augmentation of the Opuha and Opihi Rivers

- I. The OTO sub-region plan change includes an Adaptive Management Regime for the augmentation of the Opuha and Opihi rivers that provides for:
  - a. Environmental Flows;
  - b. Flow Variability;
  - c. Flushing Flows and Freshes;
  - d. Community Drinking Water Supplies;
  - e. Irrigation Abstractions;
  - f. The Opuha Environmental Flow Release Advisory Group (OEFrag);
  - g. A flow regime that can be adapted to reflect the available water in the catchment.
- II. The OTO sub-region plan change includes a consenting pathway that provides for the amalgamation of resource consents affiliated to Opuha Water Limited.
- III. The OTO sub-region plan change retains Saleyards Bridge as the measurement location for releases from the Opuha Dam.

### Environmental Flow and Allocation Regimes

The Zone Committee have been presented with options for establishing environmental flow and allocation regimes based on ecological and cultural flow preferences. Since the “Interim Minimum Flow Recommendations” were released for consultation in December 2017, site-specific instream habitat flow assessments have been undertaken, and have informed the “Draft Environmental Flow and Allocation Regimes” recommendations set out below.

A Flow and Allocation Working Party was established by the Zone Committee following a request from Opuha Water Ltd for further targeted engagement with affected consent holders. The Working Party has focussed on the main tributaries of the Opihi River, being the North Opuha, South Opuha, Upper Opihi and Te Ana Wai. Additional to two irrigator representatives

from each of these four main tributaries, the Working Party membership also comprises Zone Committee members, Central South Island Fish and Game and Timaru District Council, with coordination and technical advisory support from Opuha Water Ltd.

The Zone Committee acknowledges the substantial amount of time and effort undertaken by the Working Party in establishing a preferred flow and allocation regime for each of the tributaries and providing these regimes to the Zone Committee as a comprehensive package of recommendations. The Committee has accepted the Flow and Allocation Working Party's environmental flow, allocation limit and partial restriction regimes for each of the tributaries and recommended a further period of consultation on these regimes.

In accordance with earlier Zone Committee recommendations on the setting of restriction regimes, partial restrictions have been set on each tributary to avoid the minimum flow being breached by abstraction in times of low flow. The exception to this is found on the Te Ana Wai where there is abstraction above and below the flow recording site. Partial restrictions protect the minimum flow upstream of the flow recording site and abstraction below the flow recording site is restricted to provide a residual flow limit.

Some additional allocation has been proposed from the mid-range flows harvested as a B block from each of the main tributaries. The intention for the additional allocation is to provide the opportunity for irrigators who may have some loss of reliability from changing minimum flows and partial restriction regimes for the tributary A blocks to offset this loss with additional water from the B block. The additional allocation would be available to be applied for by all abstractors.

#### **Recommendation: Environmental Flow and Allocation Regime**

- I. Environmental Flow and Allocation Regimes have been developed for the North Opuha, South Opuha, Upper Opihi, Te Ana Wai rivers as set out in Tables 1-9. The Zone Committee is seeking feedback on the minimum flow and restriction regimes within these tables before recommending regimes for inclusion in the OTOP plan change.

**South Opuha River – A Block**

Table 1 sets out the draft A Block environmental flow and allocation regime that will apply to the South Opuha River. It stipulates the minimum flow restrictions that are intended to apply from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 1: Draft A Block South Opuha Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for AA, AN and BA Permits <sup>9</sup> (L/s)								
		Current		From Operative Plan						
		1 Sep – 30 Apr	1 May – 31 Aug	1 Sep – 30 Sep	1 Oct – 14 Oct	15 Oct – 30 Nov	1 Dec – 31 Mar	1 Apr – 14 Apr	15 Apr – 30 Apr	May – Aug
South Opuha	Monument Bridge	500	800	1,000	900	800	500	800	1,000	1,200

<sup>9</sup> Excluding community drinking water supply abstractions

Table 2 sets out the draft A Block environmental flow and allocation regime that will apply to the South Opuha River. It stipulates the minimum flow restrictions that are intended to apply within 3 years from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 2: Draft A Block South Opuha Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for AA, AN and BA Permits <sup>10</sup> (L/s)												Partial Restrictions 3 Years from Operative Plan	Allocation Limits	
		Current		3 Years from Operative Plan											CDWS <sup>11</sup>	BA
South Opuha	Monument Bridge	1 Sep – 30 Apr 500	1 May – 31 Aug 800	1 Sep – 30 Sep 1,000	1 Oct – 14 Oct 900	15 Oct – 30 Nov 800	Dec 550	Jan – Feb 520	1 Mar – 14 Mar 550	15 Mar – 31 Mar 600	1 Apr – 14 Apr 800	15 Apr – 30 Apr 1,000	May – Aug 1,200	Pro Rata <sup>12</sup>	97	634.4

<sup>10</sup> Excluding community drinking water supply abstractions

<sup>11</sup> Existing Community Drinking Water Supply Consented Allocation

<sup>12</sup> Pro rata means the proportional reduction of a take between the point at which the take is required to start reducing and the minimum flow. For the South Opuha River, pro rata restrictions apply when the recorded flow at the flow recorder is less than the minimum flow specified, and the sum total of the BA allocation.

**South Opuha River – B Block**

Table 3 sets out the draft B Block environmental flow and allocation regime that will apply to the South Opuha River. It stipulates the minimum flow restrictions that are intended to apply from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 3: Draft B Block South Opuha Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for BN Permits (L/s)	Lake Opuha Level	Allocation Limit
		From Operative Plan	From operative plan	BN
South Opuha	Monument Bridge	All year	391.2 <sup>13</sup>	800
		3000		

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13 Lake level at which all BN takes must cease

**North Opuha River – A Block**

Table 4 sets out the draft A Block environmental flow and allocation regime that will apply to the North Opuha River. It stipulates the minimum flow restrictions that are intended to apply within 3 years from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 4: Draft A Block North Opuha Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for AA, AN and BA Permits <sup>14</sup> (L/s)				Partial Restrictions		Allocation Limits (L/s)			
		Current		3 years from operative		3 years from operative		AA	AN	BA	CDWS <sup>15</sup>
		1 Oct – 14 Apr	15 Apr – 30 Sep	1 Oct – 14 Apr	15 Apr – 30 Sep	Part of a Water User Group	Not Part of a Water User Group				
North Opuha	Clayton Road Bridge	850	1000	815	900	Pro Rata <sup>16</sup>	50% stepped reduction in rate of take <sup>17</sup>	61	175	7	7.5
							100% stepped reduction in rate of take <sup>18</sup>				

<sup>14</sup> Excluding community drinking water supply abstractions

<sup>15</sup> Existing Community Drinking Water Supply Consented Allocation

<sup>16</sup> Pro rata means the proportional reduction of a take between the point at which the take is required to start reducing and the minimum flow. For the North Opuha River, pro rata restrictions will apply to members of a Water User Group (WUG) when the recorded flow at the flow recorder is less than the minimum flow, and the sum total of the AA and BA allocation.

<sup>17</sup> For consent holders not part of a Water User Group, a 50% reduction in rate of take applies when the flow at the flow recorder is less than the applicable minimum flow and the sum total of the AN, AA and BA allocation.

<sup>18</sup> For consent holders not part of a Water User Group, a 100% reduction in rate of take applies when the flow at the flow recorder is less than the applicable minimum flow and 50% of the sum total of the AN, AA and BA allocation.

**North Opuha River – B Block**

Table 5 sets out the draft B Block environmental flow and allocation regime that will apply to the North Opuha River. It stipulates the minimum flow restrictions that are intended to apply from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 5: Draft B Block North Opuha Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for BN Permits (L/s)	Lake Opuha Level	Allocation Limit
		From Operative Plan	From Operative Plan	BN
North Opuha	Clayton Road	All year	391.2 <sup>19</sup>	500
		2,300		

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<sup>19</sup> Lake level at which all BN takes must cease

## Upper Opihi River – A Block

Table 6 sets out the draft A Block environmental flow and allocation regime that will apply to the Upper Opihi. It stipulates the minimum flow restrictions that are intended to apply within 3 years from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 6: Draft A Block Upper Opihi Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for AN and BA Permits <sup>20</sup> (L/s)							Partial Restrictions		Allocation Limits		
		Current		3 Years from Operative Plan					3 Years from Operative Plan		AN	BA	CDWS <sup>21</sup>
		Summer	Winter	Nov	Dec-Feb	Mar	Apr-Sep	Oct	Part of a Water User Group	Not part of a Water User Group			
Upper Opihi	Rockwood	790	1280	950	850	900	1500	1400	Pro Rata <sup>22</sup>	50% stepped reduction in rate of take <sup>23</sup>	65	409	122
									100% stepped reduction in rate of take <sup>24</sup>				

<sup>20</sup> Excluding community drinking water supply abstractions

<sup>21</sup> Existing Community Drinking Water Supply Consented Allocation

<sup>22</sup> Pro rata means the proportional reduction of a take between the point at which the take is required to start reducing and the minimum flow. In the Upper Opihi river, for consent holders part of a Water User Group pro rata restrictions apply when the recorded flow at the flow recorder is less than the minimum flow specified, and the sum total of the BA allocation.

<sup>23</sup> For consent holders not part of a Water User Group, a 50% reduction in rate of take applies when the flow at the flow recorder is less than the applicable minimum flow and the sum total of the AN and BA allocation.

<sup>24</sup> For consent holders not part of a Water User Group, a 100% reduction in rate of take applies when the flow at the flow recorder is less than the applicable minimum flow and 50% of the sum total of the AN and BA allocation.

**Upper Opihi– B Block**

Table 7 sets out the draft B Block environmental flow and allocation regime that will apply to the Upper Opihi River. It stipulates the minimum flow restrictions that are intended to apply from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 7: Draft B Block Upper Opihi Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for BN Permits (L/s)	River	Flow Recorder	Minimum flow for BN Permits (L/s)	Minimum flow for BN Permits (L/s)	Allocation Limit
		From Operative Plan			current	From Operative plan	BN
Upper Opihi	Rockwood	All year 4,500	Opihi mainstem	SH1	15,000	12,000	800

**Te Ana Wai– A Block**

Table 8 sets out the draft A Block environmental flow and allocation regime that will apply to the Te Ana Wai River. It stipulates the minimum flow restrictions that are intended to apply within 3 years from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 8: Draft A Block Te Ana Wai Environmental Flow and Allocation Regime**

Location of recorder site, or site where flow is measured	Current	Environmental flows and partial restrictions 3 years from operative						Allocation Limits				
	Minimum flow for all consented A block takes	Applicable time period	Minimum flow (flow at which all abstraction ceases) (L/s)	Residual flow (flow downstream of all abstraction) (L/s)	Part of Water User Group		Not Part of Water User Group		AA	BA	AN	CDWS
					Partial restriction	Flow at recorder site (L/s)	Partial restriction	Flow at recorder site (L/s)				
Cave	400	01 Oct – 31 Oct; 1 Apr – 30 Apr	700	415	50%	800	50%	Minimum flow + 380 L/s <sup>25</sup>	250.2	16.71	17.2	96
		01 Nov - 14 Nov; 15 Mar - 31 Mar	550	265		650						
		15 Nov – 31 Nov	500	215		600	100%	Minimum flow + 190 L/s <sup>26</sup>				
		01 Dec - 14 Mar	450	165		550						
		1 May – 31 July	1200	915		1300						
		01 Aug – 31 Aug	1100	815		1200						
		1 Sept – 30 Sept	900	615		1000						

<sup>25</sup> In the Te Ana Wai River, for consent holders not part of a Water User Group (WUG), a 50% reduction in rate of take is required whenever the flow at the recorder is less than the applicable monthly minimum flow, and the sum total of the AA, BA and AN consents.

<sup>26</sup> In the Te Ana Wai River, for consent holders not part of a Water User Group (WUG), a 100% reduction in rate of take is required whenever the flow at the recorder is less than 50% of the applicable monthly minimum flow, and the sum total of the AA, BA and AN consents.

**Te Ana Wai – B Block**

Table 9 sets out the draft B Block environmental flow and allocation regime that will apply to the Te Ana Wai River. It stipulates the minimum flow restrictions that are intended to apply from the Orari-Temuka-Orari-Pareora sub region plan becoming operative

**Table 9: Draft B Block Te Ana Wai Environmental Flow and Allocation Regime**

River	Flow Recorder	Minimum flow for BN Permits (L/s)	River	Flow Recorder	Minimum flow for BN Permits (L/s)	Minimum flow for BN Permits (L/s)	Allocation Limit
		From Operative Plan			current	From Operative plan	BN
Te Ana Wai	Cave	All year 2,500	Opihi mainstem	SH1	15,000	12,000	800

## Water Quality

The Zone Committee note the challenges in the Opihi FMU, particularly the nitrate hot spot in the Fairlie Basin area. While the Committee understand the need for a pathway to improving surface and groundwater quality, it is also recognised that these improvements will take time. The Ashwick Opuha Water Race network that services 4,500 hectares of land in Ashwick Flat has been identified as a potential contributor to this hot spot area. The Committee have acknowledged this and consider alternatives should be considered as part of the renewal of the Mackenzie District Council water permit in 2020. The Committee also support targeted mitigations that address the nitrate hot spot in the Fairlie Basin.

Recommendation 5.3.4 sets out a staged regime for further nitrate reductions beyond the reductions that will be achieved by the implementation of Baseline GMP Loss Rates. The ZC acknowledge that for most land owners, the first step for improving water quality will be the requirement to operate at a Baseline GMP Loss rate that could incur significant cost.

To achieve the water quality target, current measured concentrations indicate that reductions in the order of up to 20% are required. The reduction in nitrate leaching beyond the root zone from properties in the Fairlie Basin area achieving their Baseline GMP Loss rate is expected to be approximately 10%. The staged regime set out below proposes a further step beyond GMP at 2030 of 10%. Improvements in water quality made by the reductions in nitrogen loss rates achieved by 2030 are expected to be visible in the environment and in water quality reporting by 2035.

The Committee recommends a monitoring programme be implemented to inform future State of the Environment Monitoring, efficiency and effectiveness evaluations of the OTO plan change and the targets and outcomes set by the Committee. A core component of the monitoring programme will be to determine if the planned future stepped percentage reductions beyond GMP, as established based on current science, would still need to apply to meet the water quality targets, or whether lesser or greater percentage reductions would be required in a subsequent plan change as a result of new science.

The Committee considers that policy framework could further support this direction by requiring that land use consents to farm are granted with durations not exceeding ten years and would therefore only adopt one percentage reduction step beyond the current step. This would enable the renewal of farming land use consents to be relative to the five-yearly monitoring and ten yearly plan review cycles, and would ensure any future percentage reduction steps are relative to the future state.

### 5.3.3 Recommendations: Water Quality Outcomes for Lake Opuha

- I. Maintain trophic status level of Lake Opuha within current attribute states and with the maximum annual Trophic Level Index (TLI) to not exceed 4.
- II. Within five years annual median total nitrogen concentration of Lake Opuha does not deteriorate beyond Attribute State B.
- III. Annual median total phosphorous concentration of Lake Opuha does not deteriorate beyond Attribute State A.

- IV. Annual median chlorophyll a concentration of Lake Opuha does not deteriorate beyond Attribute State B midpoint (3.5 mg chl. a/ml) in accordance with NPS-FM.

**5.3.4 Recommendations: Additional Pathways for Meeting Water Quality Limits in the Fairlie Basin Nitrate Hot Spot Area**

- I. The water quality target for nitrate nitrogen in groundwater set out in Table 1 is to be achieved at or before 2035 by requiring farming activities to reduce diffuse discharges of nitrogen beyond Baseline Good Management Practice Loss Rates of not less than a further 10% at 2030.
- II. In addition to clauses (I), regional council should continue to support non-statutory measures for nitrogen reductions beyond Baseline GMP Loss Rates in order to achieve water quality outcomes before the target date specified in Table 4.
- III. To track progress towards achieving the water quality targets set out in Table 4, the regional council shall monitor and report on water quality<sup>27</sup> and report the progress towards achieving the targets within 5 years of the OTOP sub-region plan change becoming operative, and subsequently at 5 yearly intervals, to evaluate the efficiency and effectiveness of measures being taken to achieve water quality outcomes.
- IV. Where this monitoring and review demonstrates that the water quality target is likely to be met prior to 2035, this information shall inform future plan changes for the OTOP zone to adjust the percentage reductions required to achieve the water quality targets.
- V. The OTOP sub-region plan change directs that land use consents to farm are granted with durations not exceeding 10 years and only adopt one percentage reduction step beyond GMP. This would enable the renewal of farming land use consents to be relative to the plan review cycle and ensure any future percentage reduction steps are relative to the future state

**Table 1 – Water Quality Target for the Fairlie Basin Hotspot Area**

Groundwater Province	Current state average (2012-2017) (mg/L)	Target - Annual average nitrate nitrogen (mg/L)	To be achieved at or before	Total percentage reduction required to achieve water quality target
Fairlie Basin	6.9	5.65	2035	18%

<sup>27</sup> Annual water quality reporting is available at the following website <https://www.lawa.org.nz/explore-data/canterbury-region>

## 5.4 TIMARU FMU

***The recommendations for the Timaru Freshwater Management Unit are in addition to those that apply across the OTOP zone.***

### **Water Quality**

The Timaru FMU covers an area that includes the township of Timaru. The waterbodies, particularly Waitarakao/Washdyke Lagoon, are of significance to Papatipu Rūnanga, and were traditionally used for mahinga kai. A mātaimai reserve covers the area of the Waitarakao/Washdyke Lagoon and the Seadown Drain. While the area has strong cultural values and a rich history, these values are affected by the deterioration in both water quality and quantity. The deterioration has been the result of changes in land use, both rural and urban, and additional pressures, including stormwater discharges and other urban/industrial pollutants. Recent work by the Waitarakao/Washdyke Taskforce, which included membership from Papatipu Rūnanga, zone committee, regional council, Timaru District Council and Department of Conservation, has provided the basis for many of the recommendations that follow. The Committee acknowledge the work and commitment of those involved.

The water quality recommendations in this section for nitrates primarily aim to meet drinking water quality standards in Levels Plain groundwater. The Committee acknowledge that these measures alone will not achieve national bottom lines in Waitarakao/Washdyke Lagoon. The Committee also recognise that although high *E. coli* levels within Waitarakao Washdyke Lagoon are primarily related to large bird populations that inhabit the area, management of sources of faecal contaminants from agricultural and stormwater are still important.

The Committee have expressed a desire to move to the 99% level of species protection for all waterways in the area from toxicants from stormwater discharges, however, they also realise the need to make recommendations that, while aspirational, are realistic and achievable. The Committee support the approach in the Land and Water Regional Plan for stormwater and toxicants for a 90% level of species protection to be achieved by 2025 for stormwater discharges. However, they also consider the 95% threshold for species protection in Schedule 5 of the Land and Water Regional Plan should be achieved by 2035.

### **Levels Plan Nitrate Hotspot**

The Zone Committee note the challenges in the Timaru FMU, particularly the nitrate hot spot in the Levels Plains area and the elevated nutrient concentrations in the Waitarakao/Washdyke Lagoon and its tributaries. Recent monitoring of the Waitarakao/Washdyke Lagoon catchment has shown that not only does the lagoon fail to meet the national bottom-line for total nitrogen and total phosphorus, some of the tributaries in the catchment also do not meet the national bottom line for nitrate toxicity. The elevated groundwater nitrate concentrations across the Levels Plains are significant contributors to elevated nitrogen concentrations in the lagoon and tributaries. Other industrial and stormwater discharges within the Washdyke industrial area are also likely contributors but there is insufficient information currently to determine the relative contribution from these sources.

While the Committee understand the need for a pathway to improve water quality, it is also recognised that these improvements will take time. While aiming to improve water quality across the entire zone, the Committee also support targeted mitigations that address the nitrate hot spot in Levels Plains and Waitarakao/Washdyke catchment. The Committee also recognise that additional interventions and mitigations will be needed to address water quality issues of Waitarakao/Washdyke Lagoon.

Recommendation 5.4.3 sets out a staged regime for further nitrate reductions beyond the reductions that will be achieved by the implementation of Baseline GMP Loss Rates. The ZC acknowledge that for most land owners, the first step for improving water quality will be the requirement to operate at a Baseline GMP Loss rate, which could incur significant cost.

To achieve the water quality targets for groundwater and tributaries of Waitarakao (table 2), current measured concentrations indicate that reductions in the order of 30% are required. The reduction in nitrate leaching from rural properties in the Levels Plains Hotspot area achieving their Baseline GMP Loss rate is expected to be approximately 15%. The staged regime set out below proposes a further step beyond GMP at 2030 of 10% and sets out a subsequent step that may be required at 2035 of 5-10% to achieve the water quality targets based on the current state modelling. Improvements in water quality made by the reductions in nitrogen loss rates achieved by 2035 are expected to be visible in the environment and in water quality reporting by 2040.

The Committee recommends a monitoring programme be implemented to inform future State of the Environment Monitoring, efficiency and effectiveness evaluations of the OTOP plan change and the targets and outcomes set by the Committee. A core component of the monitoring programme will be to determine if the planned future stepped percentage reductions beyond GMP, as established based on current science, would still need to apply to meet the water quality targets, or whether lesser or greater percentage reductions would be required in a subsequent plan change as a result of new science.

The Committee considers that policy framework could further support this direction by requiring that land use consents to farm are granted with durations not exceeding ten years and would therefore only adopt one percentage reduction step beyond the current step. This would enable the renewal of farming land use consents to be relative to the five-yearly monitoring and ten yearly plan review cycles, and would ensure any future percentage reduction steps are relative to the future state.

The Committee also recognise the contribution of point source discharges from an industrial activity in the hotspot area. Clause (II) has been included in the regime to ensure that the burden of reducing nitrogen losses is shared between individual land owners and industry.

#### **5.4.1 Recommendations: Water Quality Outcomes for the Timaru FMU**

- I. Stormwater and Toxicants:
  - a. All urban waterways in the Timaru FMU receiving discharges of stormwater from a reticulated network are to meet the Receiving Water Body Standards and 95% level of species protection in accordance with Schedule 5 of the Land and Water Regional Plan by 2035.
- II. Waitarakao / Washdyke Lagoon:

- a. Chlorophyll A to continue meeting Attribute State A in accordance with the NPS-FM.
  - b. Total nitrogen and total phosphorous to meet NPS-FM 2017 National Bottom Line by 2050.
- III. Saltwater Creek, Washdyke Creek, and Seadown Drain
- a. These waterbodies do not deteriorate below Attribute State C for nitrate nitrogen and *E. coli*.

#### **5.4.2 Recommendations: Pathways to Achieving Water Quality Outcomes in the Timaru FMU**

- I. Regional council classify Seadown Drain as a “spring fed plains” waterway to protect in-stream values and receiving environment, and ensure stock are excluded to manage inputs to the lagoon.
- II. Stormwater management plan to address further requirement to meet 95% species protection by 2035.

#### **5.4.3 Recommendations: Additional Pathways for Meeting Water Quality Limits in the Levels Plains Hot Spot Area**

- I. The water quality targets for nitrate nitrogen in ground and surface water set out in Table 1 are to be achieved at or before 2040 by requiring farming activities to reduce diffuse discharges of nitrogen beyond Baseline Good Management Practice Loss Rates of not less than a further:
  - a. 10% at 2030; and
  - b. 5-10% at 2035;
- II. In addition to clause (I), the water quality targets for ground and surface water set out in Table 5 are to be achieved at or before 2040 by requiring discharges from industrial activities to be reduced beyond current nitrogen discharge rates by up to 30% by 2035.
- III. In addition to clauses (I) and (II), regional council should continue to support non-statutory measures for nitrogen reductions beyond Baseline GMP Loss Rates in order to achieve water quality outcomes before the target date specified in Table 5.
- IV. To track progress towards achieving the water quality targets set out in Table 5, the regional council shall monitor and report on water quality<sup>28</sup> and report the progress towards achieving the targets within 5 years of the OTOP sub-region plan change becoming operative, and subsequently at 5 yearly intervals, to evaluate the efficiency and effectiveness of measures being taken to achieve water quality outcomes.
- V. Where this monitoring and review demonstrates that the water quality targets are likely to be met prior to 2040, this information shall inform future plan changes for the OTOP zone to adjust the percentage reductions beyond Baseline GMP Loss Rates required to achieve the water quality targets.
- VI. The OTOP sub-region plan change directs that land use consents to farm are granted with durations not exceeding 10 years and only adopt one percentage reduction step beyond GMP. This would enable the renewal of farming land use

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<sup>28</sup> Annual water quality reporting is available at the following website <https://www.lawa.org.nz/explore-data/canterbury-region>

consents to be relative to the plan review cycle and ensure any future percentage reduction steps are relative to the future state.

#### 5.4.4 Recommendations: Non-Statutory

- I. Regional and district councils adopt and implement the Action Plan developed by the Waitarakao/Washdyke Taskforce, which includes the following:
  - a. Development of sustainable drain management extension;
  - b. Industrial and agricultural GMP extension;
  - c. Biodiversity enhancement actions;
  - d. Recreational access improvements, including cycle/walkway;
  - e. Investigate feasibility of constructed wetlands.

**Table 1 – Water Quality Target for the Levels Plain Hotspot Area**

Groundwater Province	Current state average (2012-2017) (mg/L)	Target - Annual average nitrate nitrogen (mg/L)	To be achieved at or before	Total percentage reduction required to achieve water quality target
Levels Plain	6.3	5.65	2030	10%
Surface waters	Current state average total nitrogen (2017-2018) (mg/L)	Target – Annual median (mg/L)	To be achieved at or before	Total percentage reduction required to achieve water quality target
Ring Drain	10.5	6.9	2040	34%
Seadown Drain	7.2	6.9	2030	4%

**Table 2 – Water Quality Target for the Waitarakao Lagoon**

Waitarakao/Washdyke Lagoon	Current state average total nitrogen (2017-2018) (mg/L)	Target - Annual average total nitrogen (mg/L)	To be achieved at or before	Magnitude of reduction required to achieve water quality target
Waitarakao/Washdyke Lagoon at mid beach	6.7	0.75	2050	Approximately 9-fold

## **Technical Information**

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Please find all technical reports and memorandums to the Zone Committee at the following link under 'Reports': <https://apps.canterburymaps.govt.nz/OTOP/otop.html>

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## Where to From Here?

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