

Pareora Catchment Environmental Flow and Water Allocation Regional Plan

Prepared under the Resource Management Act 1991

21 July 2012



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**Pareora Catchment Environmental Flow and Water Allocation
Regional Plan**

Operative 21 July 2012

CANTERBURY REGIONAL COUNCIL

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Environmental Flow and Water Allocation
Regional Plan**

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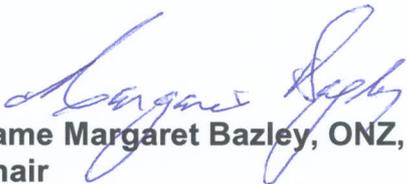
This is the approved Pareora Catchment Environmental Flow and Water Allocation Regional Plan

This Plan will be publicly notified on 14 July 2012 and will become operative on 21 July 2012

The Common Seal of Canterbury Regional Council was fixed in the presence of:



**Bill Bayfield
Chief Executive
Canterbury Regional Council**



**Dame Margaret Bazley, ONZ, DNZM, Hon DLit
Chair
Canterbury Regional Council**

28 June 2012

Contents

Part 1 – Introduction	1
Plan Structure	1
Plan Purpose and Scope	1
Area to which the Plan Applies	1
Part 2 – Legal Framework	2
Resource Management Act 1991	2
Ngāi Tahu Claims Settlement Act 1998	2
Other Plans and Documents	2
Part 3 – The Natural and Physical Resources of the Pareora River Catchment	4
Overview	4
Natural Resources	5
Catchment Ecology	7
Social, Economic and Cultural Characteristics	8
Part 4 – Demand for Water	10
Physical Requirements of River Systems for Water	10
Ecology	10
Tāngata Whenua	10
Town and Community	10
Recreation and Tourism	11
Agriculture and Horticulture	11
Commercial and Industrial	11
Part 5A – National Direction	11A
Part 5 – Issues	12
Part 6 – Objectives and Policies	14
Objectives	14
Policies	15
Part 7 – Rules	22
Surface Water	22
Groundwater	24
General	25
Part 8 – Definitions	30
Appendix 1 – Pareora Surface Water Allocation Zones Map	32
Appendix 2 – Pareora Groundwater Allocation Zone Map	33

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Part 1 – Introduction

Plan Structure

This Plan contains several parts:

- Part 1** is the introductory part. It contains the stated purpose, defines the scope, and outlines the structure of the Plan. It also summarises which regional rules apply to which activities and provides some explanation of activity classes.
- Part 2** sets out the statutory basis of this Regional Plan for the Pareora River Catchment. There are references to the legislative framework provided by the Resource Management Act 1991 (RMA), the Operative Canterbury Regional Policy Statement, the Regional Coastal Environment Plan, the Canterbury Natural Resources Regional Plan, and to district, iwi and other regional plans.
- Part 3** describes the Pareora River Catchment where this Plan applies and outlines the characteristics and resource values of the catchment.
- Part 4** outlines the demand for water from the Pareora River Catchment for different types of activities, values and uses.
- Part 5** sets out the issues in relation to water allocation in the Pareora River Catchment.
- Part 6** sets out the objectives and policies for the Pareora River Catchment.
- Part 7** sets out the rules used in the Plan. This includes defining the amount of water to be retained in water bodies and how this is to be implemented, allocation of water to activities, reduction of water takes when the amount of water available for taking and diverting is low, the taking of groundwater from the Upper Catchment and other matters relevant to resource consents.
- Part 8** defines the abbreviations and terminologies used in the Plan.

Plan Purpose and Scope

The purpose of this Plan is to promote the sustainable management of water in the Pareora River Catchment. The Plan sets out the resource management issues related to the abstraction of ground and surface water in the Pareora River Catchment, and the objectives, policies, and methods for managing them. Because the focus of this Plan is on water allocation, other potential catchment issues such as water quality are only addressed to the extent necessary to provide for water allocation and the Plan does not make comprehensive provision for them.

In this catchment potential demand for water for out of stream uses is high and there is little additional resource available for abstraction without significant adverse effects on instream values and reliability of supply for existing abstractors. Water

from the Pareora River Catchment is used for irrigation, industry, and as a community water supply for Timaru City and other communities. Therefore, the Plan focuses on maintaining the existing environment, maintaining existing instream values for surface water bodies, and ensuring existing surface and groundwater abstractors maintain a reasonable reliability of supply, in the first instance.

The Plan provides for a limited amount of additional surface water abstraction through a B Block allocation on the main stem of the Pareora River. This allocation comprises water from freshes in the river, so would need to be managed as a take to storage, to provide a reasonable reliability of supply.

The Plan also sets targets for improving the environment for instream values over time through increasing minimum flows and reducing the quantity of run-of-river allocation. The timeframe for increasing minimum flows is five years from the Plan becoming operative to give abstractors time to consider alternatives such as on-farm or community storage schemes.

A second part of the planning framework for the Pareora River Catchment is to manage water resources should current environmental conditions alter; particularly if the potential amount of water available for abstraction increases substantially through augmentation, transfer or storage schemes. In such a case, the following aspects of the Plan framework would need reviewing:

- The environmental flow and allocation regime for surface water in the catchment;
- The groundwater allocation limit, if increased irrigation from surface water leads to increased groundwater recharge; and
- The need to incorporate water quality and land use provisions.

Any such review would need to be undertaken by way of a plan change, and would require the issues, objectives, policies and rules of this Plan to be reassessed against Part 2 of the Resource Management Act 1991, and the Visions and Principles of the Canterbury Water Management Strategy.

Area to which this Plan Applies

This Plan applies to:

- Surface water takes (including stream-depleting groundwater takes), uses, diverts and dams, within the surface water allocation zones shown in Appendix 1; and
- Groundwater takes within the groundwater allocation zone shown in Appendix 2.

Part 2 – Legal Framework

Resource Management Act 1991

The purpose of the Resource Management Act 1991 (RMA) is to promote the sustainable management of natural and physical resources. Part II of the RMA establishes the purpose and principles, which have been the over-riding consideration in this Plan.

Sections 63 to 70 set out the relevant matters relating to the preparation of a regional plan. In particular, section 67 states that:

A regional plan must state—

- (a) the objectives for the region; and
- (b) the policies to implement the objectives; and
- (c) the rules (if any) to implement the policies.

For the purposes of an environmental flow and allocation plan, section 30 sets out the relevant regional council functions, which include (relevant extracts only):

- (a) the establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the natural and physical resources of the region:
- (b) the preparation of objectives and policies in relation to any actual or potential effects of the use, development, or protection of land which are of regional significance:
- (e) the control of the taking, use, damming, and diversion of water, and the control of the quantity, level, and flow of water in any water body, including—
 - (i) the setting of any maximum or minimum levels or flows of water:
 - (ii) the control of the range, or rate of change, of levels or flows of water:
- (fa) if appropriate, the establishment of rules in a regional plan to allocate any of the following:
 - (i) the taking or use of water (other than open coastal water):
- (g) in relation to any bed of a water body, the control of the introduction or planting of any plant in, on, or under that land, for the purpose of—
 - (i) soil conservation:
 - (ii) the maintenance and enhancement of the quality of water in that water body:
 - (iii) the maintenance of the quantity of water in that water body:
 - (iv) the avoidance or mitigation of natural hazards:
- (ga) the establishment, implementation, and review of objectives, policies, and methods for maintaining indigenous biological diversity:
- (gb) the strategic integration of infrastructure with land use through objectives, policies, and methods:
- (h) any other functions specified in this Act.

A rule to allocate a natural resource established by a regional council in a plan under subsection (1)(fa) or (fb) may allocate the resource in any way, subject to the following:

- (a) the rule may not, during the term of an existing resource consent, allocate the amount of a resource that has already been allocated to the consent; and
- (b) nothing in paragraph (a) affects section 68(7); and
- (c) the rule may allocate the resource in anticipation of the expiry of existing consents; and
- (d) in allocating the resource in anticipation of the expiry of existing consents, the rule may—
 - (i) allocate all of the resource used for an activity to the same type of activity; or
 - (ii) allocate some of the resource used for an activity to the same type of activity and the rest of the resource to any other type of activity or no type of activity; and
- (e) the rule may allocate the resource among competing types of activities; and
- (f) the rule may allocate water, or heat or energy from water, as long as the allocation does not affect the activities authorised by section 14(3)(b) to (e).

Ngāi Tahu Claims Settlement Act 1998

The Ngāi Tahu Claims Settlement Act 1998 (the Settlement Act) gave effect to the Deed of Settlement signed by the Crown and Te Rūnanga o Ngāi Tahu in 1997, to achieve a final settlement of the Ngāi Tahu historical claims against the Crown. The Settlement Act includes statutory acknowledgements, which recognise the special relationship of Ngāi Tahu with a range of areas in the South Island. There are no statutory acknowledgements within the Pareora River Catchment.

Schedule 95 of the Settlement Act grants a Nohoanga entitlement to two sites in the Pareora River. The terms of use of Nohoanga Sites are listed in Schedule 95 and explain that they are for the exclusive, non permanent and non commercial use of Ngāi Tahu Whanui, to allow access to the waterway for lawful fishing and gathering of other natural resources.

Other Plans and Documents

Sections 66(2A) and 67(2)(a) of the RMA apply to the preparation of a regional plan. Section 66(2A) specifies that a regional council must take into account any relevant planning document recognised by an iwi authority and lodged with the council. Section 67(2) states that a regional plan must give effect to any national policy statement or any New Zealand coastal policy statement. Sections 67(4)(a) and (b) state that a regional plan must not be inconsistent with any water conservation order or any other regional plan for the region, respectively.

Iwi Management Plans

There are two iwi management plans that fall into the category of relevant planning documents recognised by an iwi authority (Te Rūnanga o Ngāi Tahu) and lodged with the council. These are:

- Te Rūnanga o Ngāi Tahu Freshwater Policy; and
- Te Whakatau Kaupapa – Ngāi Tahu Resource Management Strategy for the Canterbury Region.

The plans have equal status as plans recognised by the iwi authority.

Te Rūnanga o Ngāi Tahu Freshwater Policy outlines the following principles which Ngāi Tahu believe should govern the formulation of water plans with the rohe of Ngāi Tahu:

- Water plays a unique role in the traditional economy and culture of Ngāi Tahu;
- Water is taonga;
- Water is a holistic resource;
- Water is a commodity that is subject to competition;
- Water has many stakeholders; and
- Water should be managed at the local level because most threats to waterbodies are local.

Te Whakatau Kaupapa – Ngāi Tahu Resource Management Strategy for the Canterbury Region is a statement of Ngāi Tahu beliefs and values, and contains a number of policies relating to water values and waterways.

New Zealand Coastal Policy Statement

As elements of water management will impact on the coastal environment, the provisions of the New Zealand Coastal Policy Statement, gazetted in 1994, have been considered where relevant. There is no other relevant National Policy Statement. However, it is recognised that there are impending changes to the Coastal Policy Statement and impending National Policy Statements on fresh water.

Canterbury Regional Policy Statement

The Canterbury Regional Policy Statement, in providing an overview of the resource management issues of the region, indicates the direction to be taken in regional plans. A regional plan must give effect to the regional policy statement and may not be inconsistent with any other regional plan in the region.

This Plan closely follows, and is consistent with, the framework of the water and river chapters of the Canterbury Regional Policy Statement. This Plan has adopted the relevant issues, objectives, policies and methods of the Regional Policy Statement but has modified them so that they are specific to the Pareora River Catchment and the particular circumstances within the catchment.

The Regional Policy Statement sets out matters of resource management significance to Ngāi Tahu. These matters include water quality, water quantity, harvesting of mahinga kai, consultation and process issues, and where possible these matters have been integrated into this Plan.

Canterbury Regional Coastal Environment Plan

The Canterbury Regional Coastal Environment Plan was adopted in part on 11 December 2003. The Plan promotes the sustainable management of the natural and physical resources of the Coastal Marine Area and the coastal environment and its integrated management. It sets out the issues relating to protection and enhancement of the coast, water quality, controls on activities and structures and coastal hazards.

Land and Vegetation Management Regional Plan

The Land and Vegetation Management Regional Plan consists of three parts that address earthworks and vegetation clearance on the Kaikoura East Coast (Part I) and Port Hills (Part II) and land management fires in the hill and high country (Part IV).

Canterbury Natural Resources Regional Plan

The Canterbury Natural Resources Regional Plan became operative on the 11 June 2011 and includes sections on air, water and land. The Canterbury Natural Resources Regional Plan applies to the whole of the Canterbury Region and addresses issues on a regional or sub-regional basis.

The provisions of the Canterbury Natural Resources Regional Plan apply to activities within the Pareora River Catchment, which are not covered by this Plan, including water quality (and discharges), the draining of wetlands and activities in the beds of lakes and rivers. The Canterbury Natural Resources Regional Plan also contains provisions to manage the taking and use of surface and groundwater, but they do not apply in catchments which have their own river plans or water plans. In the event of any potential conflict between the provisions in the Canterbury Natural Resources Regional Plan and this Plan for activities which are covered by this Plan, the provisions in this Plan will prevail within the Pareora River Catchment.

District Plans

Territorial authorities are responsible for the integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district. The Pareora River Catchment falls within the boundaries of three territorial authorities; Timaru; Mackenzie; and Waimate - the district plans of these territorial authorities were made operative in March 2005, May 2004 and October 2001, respectively.

Part 3 – The Natural and Physical Resources of the Pareora River Catchment

Vision and Principles of the Canterbury Water Management Strategy

The Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010 came into force on 13 April 2010. Under s63 of that Act, the Council, in making decisions on regional plans, must have particular regard to ‘the vision and principles of the Canterbury Water Management Strategy’ as set out in Part 1, Schedule 1 of that Act. The vision of the Canterbury Water Management Strategy is:

To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework.

This Plan recognises the importance of water for people’s well-being, especially with respect to community supply takes, but also recognises that the river system has reached its bottom line, both in terms of instream values and reliability of supply for existing abstractors.

Within the “Primary principles” of the Canterbury Water Management Strategy first and second order priority considerations are outlined. First order priority considerations are: the environment; customary uses; community supplies; and stock water. Second order priority considerations are: irrigation; renewable electricity generation; recreation; tourism; and amenity.

This Plan gives effect to the principles of the Canterbury Water Management Strategy in two ways. Firstly, by halting further expansion of second order priorities at the expense of first order priorities. And secondly, by indicating measures to improve the environment, by increasing the minimum flow and reducing run-of-river allocation, over time.

Overview

Located just to the south of Timaru, the Pareora River is a hill-fed river draining the eastern flanks of the Hunter Hills. The north and south branches of the Pareora River merge just upstream of the catchment’s long-standing telemetered flow recorder, a point approximately 16.5 km from the coast. The flow recorder lies at the base of Mount Horrible, and adjacent to the small batch settlement known as “the huts”. This flow recorder (hereafter referred to as “the huts flow recorder”) was established in 1982 and, at the time of writing, is classed as a secondary recorder site because it has a flow record of less than 30 years.

The Pareora River has a catchment area of 539 km², of which 424 km² lies above the huts flow recorder. Flows in the rivers draining the higher rainfall steeplands are mostly perennial whereas many of those draining the lower rainfall downlands region are intermittent (Aitchison-Earl et al. 2006).

As with many Canterbury hill-fed rivers, the Pareora River is affected by moderately regular flood events interspersed by long periods of lower flow. Long periods of stable flow are particularly common over summer, which is also when water demand for abstraction is highest. From a water abstraction perspective, the Canterbury Regional Council regards the Pareora River as being highly-allocated. The Timaru District Council is heavily reliant on the Pareora River as a source of water for households and industry in the city of Timaru. The Timaru District Council take is the largest in the catchment, with a maximum consented rate of take of 215 L/s. There are also a number of large agricultural and horticultural operations which have been established in the catchment and are heavily reliant on water from the Pareora River Catchment for their sustainability. The other major water user in the catchment is the Pareora Meat Processing Facility (now Silver Fern Farms), located near the coast on the northern bank of the Pareora River.

Natural Resources

Climate

The location of the Pareora River Catchment between the Hunter Hills (to the west) and the South Canterbury coast (to the east) results in the climate of this region being unique in comparison to other regions of Canterbury (Aitchison-Earl et al. 2006). Two distinct features of the climate in this region are the relatively low rainfalls and relatively low incidence of north-westerly wind.

Rain in this region is typically associated with easterly and south-easterly airflow, as the Hunter Hills act as a barrier which shelter the region from rain associated with westerly and south-westerly airflow (Aitchison-Earl et al. 2006). Furthermore, the data presented in Aitchison-Earl (et al. 2006) shows a trend of higher rainfall in the summer months, namely December and January, and lower rainfall during the winter months.

In her report considering the effects of climate change on the Canterbury Region, O’Donnell (2007) says it is expected that in the future, as a whole, Canterbury will experience increased

rainfall in the ranges and decreased rainfall on the plains. If proved to be correct, this prediction will have particular significance for foothills-fed rivers, including the Pareora River (O'Donnell 2007).

Landform, Geology and Land Cover

The Pareora River Catchment intersects three districts – Timaru, Waimate, and Mackenzie. Relatively short and steep, the catchment comprises an area of 539 km², of which roughly one third is steep land and two thirds is rolling hill country, becoming less steep towards the coast (Pfluger 2009). The catchment also includes two gorged sections with a flat alluvial valley in the lower catchment (Hayward et al. 2003). Farming is the predominant land use in the catchment, with a mixture of pastoral, dairying and arable. The entire catchment is underlain with argillite and greywacke sedimentary rocks, with tertiary sediments, including silt stone, limestone and marine greensand, mainly present in the middle reaches of the catchment (Waugh 1987).

The source of the river itself is high in the Hunter Hills, which Pfluger (2009) describes as “a fault controlled basement rock range”. The Hunter Hills lie in a north-west to south-east orientation and have an average height of 1000 m above sea level. From its source, the river flows almost due north for approximately 5 km, before curving towards the north-east. Shortly after making this change of direction, the river flows through the first of its two gorges. It is in this gorge that the Timaru District Council water supply dam is located. The upper reaches of the Pareora River contain larger boulders than the other reaches of the river, and the land cover in this part of the catchment is comprised largely of native vegetation. The Upper Gorge is around 4 km long, and after leaving it the river flows in an easterly direction before entering a geological area known as the Cannington Basin.

Thorley et al. (2008) describe the Cannington Basin as “a fault bounded structure with outcropping greywacke basement to the west and up thrust greywacke/tertiary sediments to the east, where the North Branch of the Pareora River enters the Lower Pareora Gorge”. The Pareora River flows across the Cannington Basin for some 18 km, and as it does so it tends toward the south-east before entering the Lower Gorge. The Lower Gorge is about 3 km long, and the river flows through it in an easterly direction. The eastern margin of the Cannington Basin is marked by a low range which runs roughly parallel to the Hunter Hills. This range includes the Mount Horrible outcrop, which is an extinct volcano “whose Basalt rock cliffs starkly contrast with the rolling downlands generally dominating the rest of the landscape” (Waugh 1987). To the east of this range the Pareora River falls gradually for a further 17 km before reaching the coast, 12 km south of Timaru. For the majority of its length from Mount Horrible to the coast, the Pareora River is bordered and confined by willow trees and stop banks.

At the river mouth the flood plain terminates at a gravel barrier beach. The prevailing longshore drift on this part of the Canterbury coastline is from south to north, and when the Pareora River flow is less than around 15 cumecs, the beach gravels migrate northwards, moving the mouth northwards as well; with mouth closure occurring at flows less than around 6 cumecs (de Joux and Scarf 2010).

Water resources

The Pareora River Catchment can be separated into two distinct parts (see Appendix 1). The Upper Pareora River includes the South Branch of the Pareora River (which joins the North Branch just above the huts flow recorder site), Taiko Stream, and all of the other tributaries in the Cannington Basin, including the Motukaika and White Rock rivers. The Lower Pareora River includes the mainstem from the huts flow recorder to the coast, and a number of small (mostly ephemeral) waterways, including Gordons Stream and Southburn Creek.

The margins of the mainstem of the Pareora River in the Upper and Lower Catchments are quite distinct. The Pareora River in the Upper Catchment retains much of its natural character. In contrast, the river from the huts to the coast has seen a significant amount of human modification in the form of flood protection works, including stop banks and willow planting. The flood protection works within the lower section of the Pareora River are maintained by the Canterbury Regional Council's River Engineering section, who currently carry out their functions under the Soil Conservation and Rivers Control Act 1941 and the Land Drainage Act 1908.

Surface Water Resource

Upstream of the Lower Gorge the Pareora River receives tributary inflows from the Motukaika and White Rock Rivers, as well as Burnett Stream. The South Branch of the Pareora River and the Taiko Stream provide inflows below the Lower Gorge, such that the total river flow is contained within a single channel at the huts flow recorder site. From the huts to the coast the river is typically contained within a single channel, and receives only minor tributary inflows from ephemeral waterways, namely Gordons Stream and Southburn Creek (de Joux and Scarf 2010).

Figure 1 below shows the flow in the Pareora River (as measured at the huts flow recorder) for the 5-year period between July 2003 and June 2008, while Figure 2 shows the flows for a 12-month period between July 2005 and June 2006. As can be seen, the river experiences some significant peaks, up to several times per annum, with long periods of low flows.

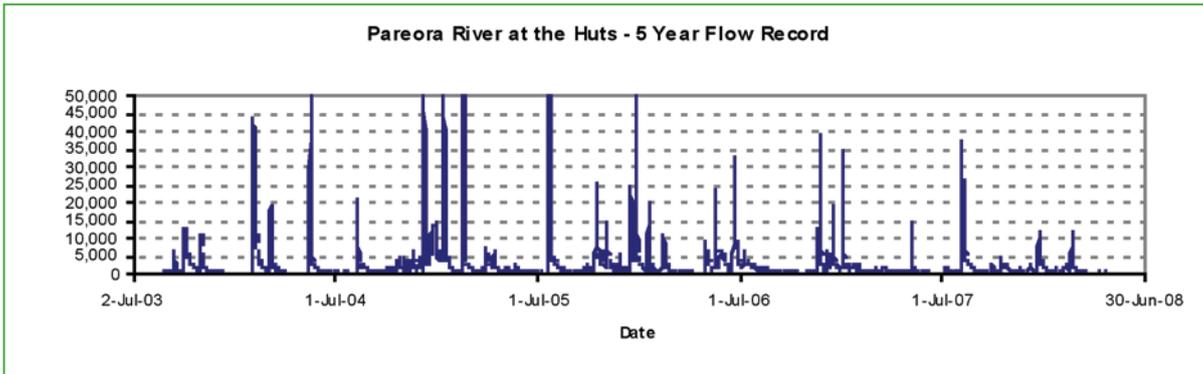


Figure 1: Pareora River flow for the period 2 July 2003 to 30 June 2008

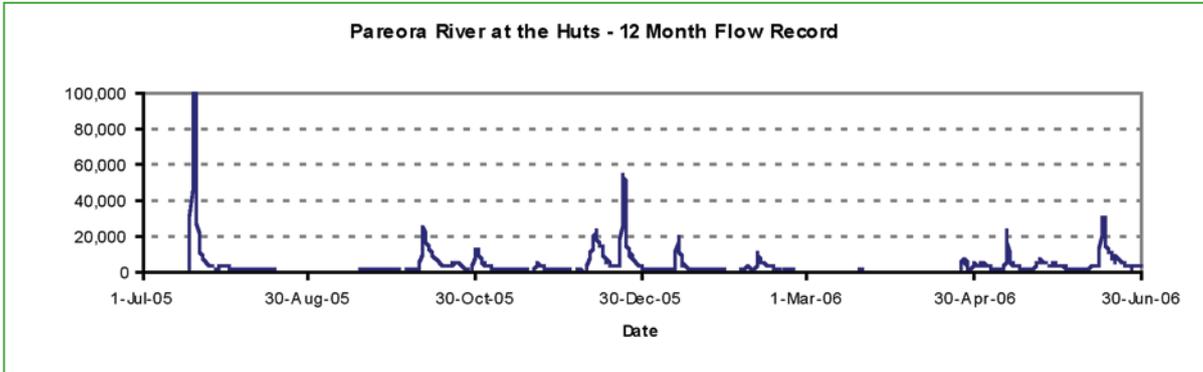


Figure 2: Pareora River flow for the period 1 July 2005 to 30 June 2006

It is important to note that Figures 1 and 2 show flows from the latter part of the flow record, and that these flows are not necessarily typical of earlier periods.

Flow information for the Pareora River based on the huts flow record between 1982 and 2008 is:

Mean Annual Flow: 3659 L/s

Median Flow: 1633 L/s

Naturalised Seven-day Mean Annual Low Flow: 660 L/s

Recorded 7-day Mean Annual Low Flow: 479 L/s

1-in-5 Year Low Flow: 473 L/s

Floods >15 cumecs: approximately 4 per annum

As shown above, the naturalised seven-day mean annual low flow, based on flows measured by the Canterbury Regional Council at the huts flow recorder site, is 660 L/s (at the time of writing). The naturalised flow is calculated by adding the measured flow and an estimate of what would have been abstracted above the flow recorder each day for the period of the flow record. This flow statistic is an important one in the context of this Plan, because it forms the basis for determining the desired A Block allocation limit. The Draft National Environmental Standard on Ecological Flows and Water Levels says that, for rivers the size of the Pareora (mean annual flows less than 5 cumecs), the A Block should be 30% of the naturalised seven-day mean annual low flow (which is 198 L/s in the case of the Pareora River).

The Pareora River has various gaining and losing reaches where surface flow is gained from or lost to groundwater due to the influence of the underlying geology. The North Branch of the Pareora River is a losing reach up until a point between the Cave Pareora Road Bridge and the Lower Gorge, from which point the river gains flow down to Evans Crossing. Because of the marine sediments which underlie the huts flow recorder site, the total water resource is accounted for at this site (de Joux and Scarf 2010). From the huts flow recorder site the river loses flow down to a point somewhere between Brasells Bridge and the State Highway 1 Bridge, from which point the river gains flow all the way to the coast. Between Holme Station Bridge and Brassells Bridge the surface flow is lost to the south side of the river, but below Brassells Bridge the majority of the surface flow loss occurs to the north side of the river (de Joux and Scarf 2010).

Anecdotal and hydrological evidence both indicate that the Pareora River has always gone dry in its lower reaches; however the abstraction of water from the catchment has increased the duration and frequency of the dryness. Hydrological modelling carried out by de Joux and Scarf (2010) showed that, in the absence of any water abstraction, the Pareora River would be dry at State Highway 1 for around one percent of the time. With the addition of community water supply abstractions, the percentage of time the river is dry at State Highway 1 increases to five percent of the time, and this figure increases to more than 15 percent of the time when irrigation abstraction is factored in.

As mentioned earlier, the lower reaches of the Pareora River are bordered by willow trees. The width of the willow planting averages around 100 m, and they are in full leaf from around mid September through until the end of April (de Joux and Scarf 2010). Due to their proximity to the river the willows can access surface and subsurface flows, and are in a continual process of evapotranspiration, which results in a reduction in surface flow in the Lower Pareora River.

The mouth of the Pareora River tends to be closed when the flow in the river is less than around 6 cumecs. As flows greater than 6 cumecs only occur about 10 percent of the time, the river mouth is closed for much of the year. When the mouth is closed the river flow drains through the gravel barrier to the sea (de Joux and Scarf 2010).

Lower Pareora Groundwater Resource

Downstream of the huts flow recorder site, groundwater exists within a shallow (typically less than 15 metres) layer of recent river gravels and is highly connected to surface water. The shallow groundwater is primarily recharged from surface water, with data showing that flow rates in the Pareora River directly influence shallow groundwater levels (de Joux and Scarf 2010). Aitchison-Earl et al. (2006) also make reference to the interconnection between surface water and shallow groundwater downstream of the huts flow recorder site, noting rapid increases in groundwater levels in response to high river flow events. By comparing groundwater levels and river flow, Aitchison-Earl et al. (2006) believe that the shallow aquifer is full when the flow at the huts recorder is around 1000 L/s.

Upper Pareora Groundwater Resource

Thorley et al. (2008) state that the geological structure of the Cannington Basin would mean that any groundwater within older gravels would probably flow from west to east, and that the presence of up-thrust greywacke basement in the east would act as a barrier to groundwater flow so that any groundwater flow in this direction would be expected to discharge upwards. When the flow at the huts flow recorder is around the recorded seven-day mean annual low flow (479 L/s), re-emergent groundwater from upstream of the Lower Gorge accounts for around a quarter of surface flow (119 L/s) (Thorley et al. 2008).

Catchment Ecology

The Pareora River and its tributaries support a variety of life forms and ecosystems, including indigenous plants, birds, aquatic macroinvertebrates and fish.

Indigenous Plants

The lower reaches of the Pareora River, below the huts flow recorder, contain very little in the way of indigenous vegetation. This section of the river has become restricted within the flood plain by flood protection works, which see willow trees as the predominant form of vegetation. Partridge (2008) carried out site assessments in March 2008 at the State Highway 1 Bridge and the railway bridge in the lower reaches of the Pareora River, and said that “These lowermost reaches of Canterbury’s braided rivers rarely carry any native species and this is no exception. With the exception of widespread New Zealand wireweed, there are no native plants in any of the zones”.

In contrast to the lower river, Partridge (2008) says that the hills surrounding the Pareora Basin “...have recently revealed new native plant species (e.g. *Hebe pareora*)...” and are regarded as a biodiversity ‘hotspot’. There are a number of native trees and shrubs in the headwaters of the river, including kowhai, kanuka and mikimiki.

Birds

Schmechel (2008) includes a count of the bird species identified during a field visit to the Pareora River in November 2008. which were: banded dotterels; southern black-backed gulls; paradise shelduck; spur-winged plover; South Island pied oystercatcher; pied stilt; white fronted tern; white-faced heron; black shag; black swan; kingfisher; mallard; and pipit. Of these species the banded dotterel, South Island pied oystercatcher and the Southern black billed gull are all threatened. Ranked most threatened of the bird species, the banded dotterel were found to be lower in numbers than expected, but river flows during the survey were below average for the time of year and below the level when dotterels are usually found breeding on the river (Schmechel 2008).

Te Rūnanga o Arowhenua identify the following bird species found in the Pareora River Catchment as mahinga kai: hawk; magpie; bellbird; plover; and piwaiwaka (fantail). Some bird species are also classified as taonga species, and these are: waders; waterfowl; gulls; terns; swamp rail; Australasian bittern; marsh crake; and whio (Tipa and Associates 2009).

With respect to bird habitat in the Pareora River Catchment, O’Donnell (2000) ranks a section of the Upper Pareora River as “Medium 2” (habitat of low significance), and the lower river (downstream of the huts, and including the mouth) as “High 3” (habitat of regional significance). O’Donnell (2000) commented that in the Upper Pareora River there were “low numbers of blue duck” but that it was uncertain if they were still a breeding population.

Invertebrates

The Pareora River supports a moderately diverse invertebrate fauna, which is similar to that of other hill-fed rivers in Canterbury. Stony-cased caddisflies are dominant in the Lower Pareora River. Chironomid midges and snails were also relatively abundant in the Lower River, reflecting the high coverage of filamentous algae and low flow conditions prior to the most

recent sampling, carried out in 2008. The abundance of snails in the lower river was also touched on by Hayward et al. (2003), who noted that the lower reaches of the Pareora River provided suitable conditions for snails due to their lower water velocities and increased sedimentation and macrophyte growth. Mayflies were slightly more abundant at the huts site, but overall were rare during the sampling (Golder Associates 2008).

Fish

The Pareora River is a brown trout fishery of local significance, with high brown trout values at the huts site due to the deep pools and the adult brown trout present at the site. Brown trout values in the lower river were regarded as moderate due to the lack of deep pools and lower flow limiting habitat.

The fish species found in the Pareora River catchment are upland bully, bluegill bully, common bully, torrentfish, shortfin eel, longfin eel, the non-migratory galaxias, koura, inanga, koaro, Canterbury mudfish and brown trout. Of the native species, the Canterbury mudfish is classified as being nationally endangered whilst the longfin eel is at risk and declining nationally along with the bluegill bully, torrentfish, inanga, non-migratory Canterbury galaxias, koaro and koura. Golder Associates (2008) conclude that the main stem of the Pareora river and its tributaries should be considered to have high native fish values and “the water supply dam, dry mid-reaches and whether or not the river mouth is open to the sea are all factors that restrict fish migrations and hence influence fish species diversity, distribution and abundance”.

Social, economic and cultural characteristics

Significance to Ngāi Tahu

Te Rūnanga o Ngāi Tahu is comprised of the 18 Papatipu Runanga, each of which is defined in the Te Rūnanga o Ngāi Tahu Act 1996. This establishes who holds manawhenua rights over specific lands and waters within the rohe of Ngāi Tahu, and confirms that the Pareora River is within the Takiwa of Te Rūnanga o Arowhenua (Tipa and Associates 2009).

Ki Uta Ki Tai (from the mountains to the sea) is the holistic approach taken by Maori to manage after water resources (Tipa and Associates 2009). Consistent with this philosophy, Te Rūnanga o Arowhenua values the entire Pareora River Catchment, from its source to the sea.

The catchments of South Canterbury have historically represented a highly prized landscape in terms of mahinga kai, with enough kai available “to feed the immediate and extended whanau with some remaining to donate or trade” (Tipa and Associates 2009). Te Rūnanga o Arowhenua identify a number of mahinga kai bird, plant and fish species within the Pareora River Catchment. There are also a number of sites of cultural significance to Te Rūnanga o Arowhenua within the catchment, including: Urupa; Tuhituhi Nehera; Kaika Nohoanga; Tauranga Waka; Tauraka Ika; Pa Tawhito; Umu; Wahi kohatu; and Ara Tawhito.

Population and Communities

The main settlement within the Pareora River Catchment is the township of Pareora, which lies approximately 10 km south of Timaru City. The population of Pareora at the time of the 2006 census was 450 people. The Pareora Meat Processing Facility, which commenced operation in 1904 and continues to operate to this day, is the largest single employer within the catchment. Other smaller settlements within the catchment include Springbrook, Southburn and Cannington.

The lower reaches of the Pareora River are bordered by flood protection works, in the form of stop banks and willow trees. As well as providing flood protection to the Pareora township, the flood protection works are a vital flood defence for other high-value assets on the flood plain, including houses and farms, roads, power and telephone lines, and water supply intakes.

The maintenance of the Pareora River's flood protection infrastructure is carried out by the Canterbury Regional Council's River Engineering section. The River Engineering section also carry out works in order to control vegetation and shingle movement, which would otherwise reduce the capacity of the river channel, and divert active channels of the river away from new planting works or eroding sections of river bank. These works include spraying, dozing, cutting exotic vegetation in the fairway, and direction and control of the commercial extraction of shingle.

Recreation and Tourism

The Pareora River system supports a range of recreational activities, including angling, swimming, picnicking and four-wheel-driving. In the 2007/2008 fishing season the Pareora River recorded 390 angler days (Unwin 2009). Comparing this figure to the angler days for the Opihi River during the same period, which were 19,690, supports the view that the Pareora River is a fishery of local, rather than regional, significance.

The mainstem of the Lower Pareora River is sometimes used for recreation by four-wheel-drive vehicle enthusiasts. The small bach settlement adjacent to Mount Horrible known as "the fishing huts", or simply "the huts", have been a popular holiday and recreation spot for a number of decades, particularly over the summer months.

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Part 4 – Demand for Water

Water plays various roles in sustaining the environmental, cultural, economic and social values of the catchment, with each role requiring different amounts and timing of water. There is potential for increased demand for abstraction for irrigation. There is also demand for more water to remain instream to cater for ecological, recreational, cultural, amenity and other instream values. The different flow requirements of these various uses and their relative importance are all matters which need to be considered as part of a water allocation and management plan for the Pareora River Catchment.

Physical requirements of river systems

The natural flow character of the Pareora River is that of a hill-fed river which, although affected by moderately regular flood events, experiences long periods of lower flow. The relatively low rainfall in the region means that river flows are just as likely to be low during the winter months as they are during the irrigation season.

Variability of flows over different time-scales is important for both hydrological and ecological functioning of the catchment, with different aquatic species adapted to different flow conditions. A key role of water is the maintenance of the overall form and dimensions of the channel. The river's pattern, depth, width, bed material, bank stability and the functioning of the river mouth depend on the flow regime in the river. Floods are the major natural channel-forming mechanism, reshaping and refreshing the bed and riparian areas within the confines of the flood protection works. Lower flows provide important physical conditions, particularly depth and width, and maintain connections between the main channel and adjoining habitats, such as pools or riparian margins.

Ecology

Birds

The bird species of principal interest from the perspective of the hydrological regime are banded dotterel, which nest on the open river bed. Banded dotterel were one of the two threatened species identified during the 2008 survey, the other being the South Island pied oystercatcher (Schmechel 2008). In addition the black billed gull is also believed to be present.

A key factor determining the extent of bare gravel nesting area is the frequency of floods large enough to wash over and rework the bed and clear the bed of weeds. Birds require flows that maintain vegetation-free gravel bars for nesting, and that provide food producing and feeding areas during the nesting and breeding period (September to January/February).

Fish

The Pareora River is a trout fishery of local significance, and also has value as a source of mahinga kai. A number of the fish species present migrate between the river and the sea, and this results in the greatest diversity and abundance towards the river mouth. The fish in the Pareora River need water flows and levels that provide:

- Freshes that open the mouth of the river and allow for fish migration;
- Habitat conditions suitable for freshwater insects as a food source;
- River bank vegetation to provide shelter and keep water cool, especially during times of low flow;
- Suitable turbidity, temperature and oxygen levels;
- Stable water levels in areas where trout spawn and fluctuating water levels to encourage indigenous eggs to hatch and fish to spawn;
- Suitable water depths and velocities for the range of fish present; and
- Prevention of high levels of plant growth caused by prolonged low flows.

Tāngata Whenua

Ngāi Tahu believe that people, flora, fauna and other natural phenomena (including water) possess a mauri, or life force. Waterbodies with an intact mauri are those of good quality that flow with life and energy, sustain healthy ecosystems and support mahinga kai (Tipa and Associates 2009). When visiting the Pareora River Catchment Ngāi Tahu expect to see a thriving community of plants, birds and fish in the river, and it is of concern and viewed as an adverse effect on its mauri if the life and vitality of a river is absent (Tipa and Associates 2009).

Te Rūnanga o Arowhenua believes that the Pareora River Catchment suffers from:

- Dewatering (drying up) of streams resulting from abstraction and draining;
- Adverse effects associated with infrastructure development (e.g. weirs, impoundments enabling extraction for drinking water);
- Water abstraction, including the extraction of water for drinking water supply;
- River management works (e.g. gravel management and flood control); and
- Land use change and intensification.

Recommendations made by Te Rūnanga o Arowhenua which are directly related to matters addressed in this Plan include:

- Te Rūnanga o Arowhenua and the Canterbury Regional Council are to agree that the issue of over-allocation is to be addressed; and
- That the overall flow regime considers floods, freshes and low flows, both in the mainstem of the Pareora River and its tributaries.

Town and Community

The Pareora River has a long history of abstraction for domestic and community water supply. In total, the combined maximum rate of take for these uses is around 240 L/s (this includes surface water takes and stream-depleting groundwater takes).

The Timaru District Council first started taking water from the river in the 1870s. The Timaru District Council's initial take was from a water supply dam in the lower gorge (now disused but still in place) with the water being transferred to Timaru via open races. In the 1940s the take was re-established in the upper gorge, and it is from this location that the Timaru District Council takes its water today. In any given year, the Pareora River supplies the city of Timaru with 50 percent of its water for domestic and industrial use.

The Waimate District Council has been abstracting water from Nimrod Stream since the late 1970s, when the Cannington-Motukaika Rural Water Scheme was established. Nimrod Stream is a headwater tributary of the White Rock River, which in turn is a major tributary of the Pareora River. The maximum consented rate of take for the Cannington-Motukaika Rural Water Scheme is 5.5 L/s, and there are around 38 properties connected to the scheme, which serves a population of around 120 people.

There are also a number of smaller community water supply and stockwater abstractions from within the Pareora River Catchment.

Recreation and Tourism

For many recreationists and tourists, who do not directly use water, the main role of water bodies in the catchment is to provide a backdrop or setting to the activity. The most significant effect of changing water use is likely to be on experiences or perceptions of the amenity values of the area and the 'naturalness' of the environment. A notable exception here is angling, which requires flows between low and fresh flows in order to be a feasible recreation option. Four-wheel-drive enthusiasts prefer a river flow which poses a challenge to navigating the river.

Agriculture and Horticulture

Most of the current water abstractions from within the Pareora River Catchment are for run-of-river irrigation. The most critical time for an irrigation abstraction is the October to April period.

There are a number of large agricultural and horticultural operations which have been established in the catchment, and which currently require irrigation water from the Pareora River Catchment for their current land use. The agricultural operations within the catchment are diverse and numerous, and include deer, sheep and beef, and dairy operations. There is also a significant blackcurrant growing operation, which supplies currants to Ribena as well as exporting them to Japan. Water use for the blackcurrant production is not just limited to irrigation; it is also used for frost protection, which can be crucial for maximising the yield of a given harvest.

Commercial and Industrial

The major industrial water user in the catchment is the Pareora Meat Processing Facility, located near the coast on the northern bank of the Pareora River. Processing beef, veal, goat, lamb and mutton, the Meat Processing Facility is a major employer in the region. The original minimum flow on the Pareora River (300 L/s at the huts flow recorder site) was set in the early 1980s to ensure that there was sufficient flow in the lower river to enable the Meat Processing Facility to abstract water from their infiltration gallery. The Meat Processing Facility still abstracts water from this gallery, although they also have two bores (both more than 100m deep) from which they abstract water in times of low flow.

The Meat Processing Facility deep bores are not considered as having a stream depletion effect on the Pareora River. However the infiltration gallery, from which the Meat Processing Facility is authorised to take up to 7354 m³ per day at a maximum rate of 227 L/s, has been assessed as having a stream depletion effect of 71.3 L/s on the Pareora River. For the year 1 August 2008 to 31 July 2009, the Meat Processing Facility used 1.99 million m³ of water, 1.45 million m³ of which was taken from the unconfined aquifer via the infiltration gallery (de Joux and Scarf 2010).

References for Part 4

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Part 5A- National Direction

This section of the Plan contains provisions that have been incorporated into the Plan in accordance with directions in a national policy statement, national planning standard or other national direction.

Objectives

Objective 5A.1

The passage of fish is maintained, or improved, by instream structures, except where it is desirable to prevent the passage of some fish species in order to protect desired fish species, their life stages, or their habitats.¹

Policies

Note: in addition to the definitions contained within this plan, the definitions contained within cl. 3.21(1) of the NPSFM 2020 apply to policies 5A.1 – 5A.5.

Policy 5A.1

- (1) When considering any application for a discharge the consent authority must have regard to the following matters:
 - (a) the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and
 - (b) the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.

- (2) When considering any application for a discharge the consent authority must have regard to the following matters:
 - (a) the extent to which the discharge would avoid contamination that will

- have an adverse effect on the health of people and communities as affected by their contact with freshwater; and
- (b) the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their contact with fresh water resulting from the discharge would be avoided.

- (3) This policy applies to the following discharges (including a diffuse discharge by any person or animal):
 - (a) a new discharge or
 - (b) a change or increase in any discharge - of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.

- (4) Paragraph 1 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.

- (5) Paragraph 2 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2014 takes effect.²

Policy 5A.2

- (1) When considering any application the consent authority must have regard to the following matters:
 - (a) the extent to which the change would adversely affect safeguarding the life

¹ NPSFM 2020 (amended 2022)

²² NPSFM 2014

supporting capacity of fresh water and of any associated ecosystem and

- (b) the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.

(2) This policy applies to:

- (a) any new activity and
- (b) any change in the character, intensity or scale of any established activity – that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).

(3) This policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.³

Policy 5A.3

- (a) The loss of extent of natural inland wetlands is avoided, their values are protected, and their restoration is promoted, except where:
 - (i) the loss of extent or values arises from any of the following:
 - (ii) the customary harvest of food or resources undertaken in accordance with tikanga Māori
 - (iii) wetland maintenance, restoration, or biosecurity (as defined in the National

Policy Statement for Freshwater Management 2020)

- (iv) scientific research
 - (v) the sustainable harvest of sphagnum moss
 - (vi) the construction or maintenance of wetland utility structures (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020)
 - (vii) the maintenance or operation of specified infrastructure, or other infrastructure (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020
 - (viii) natural hazard works (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020); or
- (b) the regional council is satisfied that:
- (i) the activity is necessary for the purpose of construction or upgrade of specified infrastructure; and
 - (ii) the specified infrastructure will provide significant national or regional benefits; and
 - (iii) there is a functional need for the specified infrastructure in that location; and
 - (iv) the effects of the activity are managed through applying the effects management hierarchy;⁴ or

- (c) the regional council is satisfied that:
 - (i) the activity is necessary for the purpose of urban development that contributes to a well-functioning urban environment (as defined in the National Policy Statement on Urban Development); and
 - (ii) the urban development will provide significant national, regional or district benefits; and
 - (iii) the activity occurs on land identified for urban development in operative

³ NPSFM 2014

⁴ NPSFM 2020

- provisions of a regional or district plan; and
 - (iv) the activity does not occur on land that is zoned in a district plan as general rural, rural production, or rural lifestyle; and
 - (v) there is either no practicable location for the activity within the area of the development, or every other practicable location in the area of the development would have equal or greater adverse effects on a natural inland wetland; and
 - (vi) the effects of the activity will be managed through applying the effects management hierarchy; or
- (d) the regional council is satisfied that:
- (i) the activity is necessary for the purpose of quarrying activities; and
 - (ii) the extraction of the aggregate will provide significant national or regional benefits; and
 - (iii) there is a functional need for the activity to be done in that location; and
 - (iv) the effects of the activity will be managed through applying the effects management hierarchy; or
- (e) the regional council is satisfied that:
- (i) the activity is necessary for the purpose of:
 - (A) the extraction of minerals (other than coal) and ancillary activities; or
 - (B) the extraction of coal and ancillary activities as part of the operation or extension of an existing coal mine; and
 - (ii) the extraction of the mineral will provide significant national or regional benefits; and
 - (iii) there is a functional need for the activity to be done in that location; and
 - (iv) the effects of the activity will be managed through applying the effects management hierarchy; or

- (f) the regional council is satisfied that:
 - (i) the activity is necessary for the purpose of constructing or operating a new or existing landfill or cleanfill area; and
 - (ii) the landfill or cleanfill area:
 - (A) will provide significant national or regional benefits; or
 - (B) is required to support urban development as referred to in paragraph (c); or
 - (C) is required to support the extraction of aggregates as referred to in paragraph (d); or
 - (D) is required to support the extraction of minerals as referred to in paragraph (e); and
 - (iii) there is either no practicable alternative location in the region, or every other practicable alternative location in the region would have equal or greater adverse effects on a natural inland wetland; and
 - (iv) the effects of the activity will be managed through applying the effects management hierarchy.⁵

Policy 5A.3A

Resource consents for activities set out in Policy 5A.3 subclauses (a)-(f), that would result in the loss of extent or values of a natural inland wetland will not be granted unless:

- (a) the council is satisfied that:
 - (i) the applicant has demonstrated how each step of the effects management hierarchy will be applied to any loss of extent or values of the wetland (including cumulative effects and loss of potential value), particularly (without limitation) in relation to the values of: ecosystem health, indigenous biodiversity, hydrological functioning, Māori freshwater values, and amenity values; and
 - (ii) if aquatic offsetting or aquatic compensation is applied, the applicant has complied with principles 1 to 6 in Appendix 6 and 7 of the National Policy

⁵ NPSFM 2020 (amended 2022)

Statement for Freshwater Management 2020, and has had regard to the remaining principles in Appendix 6 and 7, as appropriate; and

(iii) there are methods or measures that will ensure that the offsetting or compensation will be maintained and managed over time to achieve the conservation outcomes; and

(b) any consent granted is subject to:

(i) conditions that apply the effects management hierarchy; and

(ii) a condition requiring monitoring of the wetland at a scale commensurate with the risk of the loss of extent or values of the wetland; and

(iii) conditions that specify how the requirements in (a)(iii) will be achieved.⁶

Policy 5A.4

The loss of river extent and values is avoided, unless the council is satisfied:

(a) that there is a functional need for the activity in that location; and

(b) the effects of the activity are managed by applying the effects management hierarchy.⁷

Policy 5A.5

Resource consents for activities set out in Policy 5A.4 subclauses (a)-(b), that would result in the loss of extent or values of a river will not be granted unless:

(a) the council is satisfied that:

(i) the applicant has demonstrated how each step in the effects management hierarchy will be applied to any loss of extent or values of the river (including cumulative effects and loss of potential value), particularly (without limitation) in relation to the values of: ecosystem health, indigenous biodiversity,

hydrological functioning, Māori freshwater values, and amenity; and

(ii) if aquatic offsetting or aquatic compensation is applied, the applicant has complied with principles 1 to 6 in Appendix 6 and 7 of the National Policy Statement for Freshwater Management 2020, and has had regard to the remaining principles in Appendix 6 and 7, as appropriate; and

(iii) there are methods or measures that will ensure that the offsetting or compensation will be maintained and managed over time to achieve the conservation outcomes; and

(b) any consent granted is subject to:

(i) conditions that apply the effects management hierarchy; and

(ii) conditions that specify how the requirements in (a)(iii) will be achieved.⁸

⁶ NPSFM 2020 (amended 2022)

⁷ NPSFM 2020

⁸ NPSFM 2020 (amended 2022)

Part 5 - Issues

This Plan identifies and manages issues relating to the allocation and use of surface water and groundwater in the Pareora River Catchment. Issues relating to water quality and land uses are addressed in the Canterbury Natural Resources Regional Plan.

Issue 1 – The Pareora River Catchment is a water-short catchment

The Pareora River is hill-fed and lies within a region of South Canterbury which receives significantly less rainfall than other parts of Canterbury, and as a result the river's natural state is to have very low flows. There is a high demand for water for abstractive uses, namely industrial, Community Water Supply and irrigation. The Pareora River Catchment lies within what Aitchison-Earl et al. (2006) refer to as “arguably the most water deficient region in the country”.

The largest single instantaneous abstraction from within the Pareora River Catchment is that taken from the Upper Pareora River by the Timaru District Council. This take is from the Timaru District Council's water supply dam in the Upper Gorge, and has a maximum consented rate of take of 215 L/s. Although the Council cannot take the full consented amount all the time, its average take is in the region of 180-200 L/s. This water take accounts for around 50 percent of Timaru City's domestic and industrial water in any given year, and is therefore critical for the social and economic wellbeing of the city's people and businesses. The Timaru District Council consent includes a condition requiring a residual flow of 30 L/s to be left below the dam, and the take is restricted as river flows drop due to the design of the intake structure, but due to the importance of the take it does not (and will not) have a minimum flow condition.

Demand for additional water abstraction within the Pareora River Catchment from both surface water and groundwater sources is potentially high. For surface water, the main option is to access water from floods and freshes and store it to improve reliability of supply. Augmentation from out-of-catchment sources is an option but would need to be part of a larger scheme to be economically viable.

The Pareora River has various reaches where surface flow is either lost to or gained from groundwater, due to the influence of the underlying geology. From the huts flow recorder site the river loses surface flow to groundwater down to a point between Brasells Bridge and the State Highway 1 Bridge, from which point the river gains flow all the way to the coast. There is an overall loss of around 430 L/s between the huts flow recorder and State Highway 1. This means that the flow at the huts has to be in excess of 430 L/s for there to be any flow at State Highway 1. In order to try and sustain a flow for longer in the lower river to better provide for ecological, cultural, recreational and amenity values, the minimum flow at the huts would have to be raised significantly, which in turn would have a significant impact on reliability of supply for existing

abstractors. These natural losses of surface water from the lower reaches of the river, in combination with the large amount of water abstracted from the catchment, mean that increasing the minimum flow in the short-term in an attempt to establish continuous surface flow in the lower river is not a realistic option.

Issue 2 – Abstraction has impacts on the instream values of the Pareora River Catchment

Water abstraction can have impacts on instream values, particularly during low flow periods where it can prolong or exacerbate low flow conditions. Abstraction within the Pareora River Catchment is managed using minimum flow triggers at which most abstractions must cease. It is accepted that the river can fall below the minimum flow trigger levels naturally, but these triggers are intended to reduce the duration and extent of times of low flow in order to protect instream values. Abstraction of surface and stream-depleting groundwater has the potential to exacerbate or prolong these low flow conditions, by leaving the river flowing at or near its minimum flow for longer periods than would occur without abstraction.

The key points to note here regarding the effects of abstraction on instream values within the Pareora River Catchment are:

- The river currently has minimum flows that are lower than the natural seven-day mean annual low flow, which limits available habitat for fish;
- There is a high proportion of water allocated for abstractive use relative to the natural seven-day mean annual low flow; and
- Hydrological modelling indicates that the current level of abstraction from the catchment increases the time the river is dry at State Highway 1 from around one percent of the time naturally to over 15 percent of the time currently.

Taking water from freshes or flood flows to storage can help reduce the impact of abstraction on low flows but, in turn, has the potential to reduce flow variability, which is also important for the health of the river. Freshes and flood flows of differing velocities transport sediment and rework the bed, cool water temperature, restore fish passage, remove algal growth and other vegetation, and open the lagoon mouth, which allows migratory fish passage between freshwater and marine environments to complete their life cycle. Freshes and floods are also important to allow ecosystems to recover from periods of low flow, and to 'reset' the river ecosystem.

Groundwater abstraction can also affect surface water flows within the catchment: both directly, through stream-depleting groundwater takes; and indirectly, through lowering the water table which can affect surface water flow in spring-fed streams and streams that gain surface flow from, or lose surface flow to, groundwater. A reduction in cooler groundwater inputs to surface water bodies can also degrade ecological conditions.

It is the view of Canterbury Regional Council groundwater scientists that, due to the geology of the Upper Pareora Catchment, groundwater from the Cannington Basin re-emerges at the Lower Gorge and contributes to base flow in the lower reaches of the Pareora River. As a result, the groundwater scientists are of the opinion that the abstraction of groundwater at any depth from the Cannington Basin will likely have the effect of reducing flows in the Lower Pareora River.

Based on the view of Canterbury Regional Council groundwater scientists, not only would a further reduction in groundwater contribution to the Lower Pareora River from Cannington Basin groundwater adversely effect ecological, cultural, recreational and amenity values in the lower river, it would also reduce reliability of supply to existing abstractors because the water is being abstracted upstream of the huts flow recorder, to which the majority of abstractors are tied. Groundwater abstraction from the Upper Pareora Catchment must be carefully managed under this Plan to ensure that it does not undermine the environmental flow regime designed to maintain reliability of supply to existing users and protect instream values. Surface and groundwater resources in the Pareora River Catchment are interconnected, and further abstraction from one has the potential to adversely affect flows and levels in the other. The integrated nature of the water resources in the Pareora River Catchment demand that they be managed in an integrated fashion, and the objectives and policies in this Plan have been developed in order to achieve this.

Issue 3 – There is high social and economic dependence on water abstracted from the Pareora River Catchment and a lack of alternative water sources at present

There is high social and economic dependence on the water abstracted from the Pareora River, not only to the individual abstractors but to the South Canterbury region. Over the decades which have passed since water was first abstracted from the Pareora River Catchment, a large number of farming operations and ancillary services such as meat processing have been established, many of which are now heavily reliant on water abstraction for their sustainability. Farming and associated practices and services have been developed based on the current reliability of supply, to the extent where a significant increase in the minimum flow would severely affect the economic viability of established businesses.

Water harvesting during periods of high flows for storage provides a sustainable means of providing irrigation water for use during periods of low natural flows. Given its potential to increase reliability of and access to irrigation water it is important for maintaining and enhancing viability of agricultural activities through irrigation.

Part 6 – Objectives and Policies

Summary of Water Management in the Pareora River Catchment

The objectives, policies and methods (including rules) in this Plan manage the allocation of surface water and groundwater in the Pareora River Catchment. A summary of the approach taken follows.

Key characteristics:

- The water resources of the Pareora River Catchment are interconnected and must be managed in an integrated manner.
- The Pareora River Catchment is a naturally dry area with high irrigation demand and most surface water and groundwater is fully allocated.
- The catchment has been modified through many years of abstraction, including a take from the Pareora River North Branch to supply the City of Timaru which has been occurring for over 100 years.
- Until such time as there is large-scale augmentation of water in the catchment it is unlikely that there will be a significant change in water allocation.

A five-pronged approach is taken to managing the catchment in this Plan:

1. The importance of existing surface water and groundwater abstraction to the economic and social well-being of the community is recognised and existing abstractions are provided for under the Pareora Plan, until such time as additional water sources are introduced into the catchment (i.e. augmentation).
2. Groundwater and run-of-river (A Block) surface water resources are recognised as fully allocated, and there is no further allocation of these resources provided for (other than replacements of existing takes).
3. Providing for some additional surface water abstraction in the Pareora River Catchment, through a B Block allocation for takes to storage.
4. Pragmatic steps to reduce the impact of abstraction on instream values (particularly in periods of low flow) while maintaining reliability of supply for existing users are taken through policies such as restricting the A Block to the amount of water currently used; not reallocating A Block water when a resource consent is surrendered, lapsed or cancelled; promoting efficiency in water use through policies and rules requiring both technical efficiency and metering of takes; and signalling that minimum flows will be increased over time.
5. Should additional economically viable water become available for abstraction in the Pareora River Catchment through augmentation (or another method), to review the allocation regime for the Pareora River Catchment to reduce the impact of abstraction on instream values during periods of low flow.

Objectives

- Objective 1** The Pareora River Catchment is managed in an integrated fashion, recognising the interconnectedness of surface and groundwater resources in the catchment.
- Objective 2** The maintenance and enhancement of ecological, cultural, recreational and amenity values in the Pareora River and its tributaries are recognised and provided for when maintaining the economic and social benefits of surface water abstraction from the Pareora River Catchment.
- Objective 3** The economic and social benefits of surface and groundwater abstraction from the Pareora River Catchment are recognised and provided for, while avoiding any adverse effects of water abstraction on surface water bodies, groundwater recharge rates, or the reliability of supply for existing abstractors.
- Objective 4** Water that is abstracted within the Pareora River Catchment is used efficiently.
- Objective 5** To reduce the effects of water abstraction on instream values by increasing the minimum flow for A Block takes five years after the Plan becomes operative, and by returning water to the river.

Explanation of Objectives

The water resources in the Pareora River Catchment are interconnected. The surface run-off in the upper catchment and the flow in tributaries affect the quality and quantity of water available in the large tributaries and the Pareora River main stem and land uses determine the quantity and quality of surface water run-off. Ground and surface water resources are also highly connected in many places, with some surface water bodies losing and gaining water directly to and from groundwater (e.g. the Pareora River mainstem below the huts flow recorder).

Objective 1 - Recognises these interconnections and seeks to manage the catchment as a whole. Te Rūnanga o Arowhenua advocates for the concept of Ki Uta Ki Tai – ‘from the mountains to the sea’, which recognises the interconnectedness of water resources in the catchment and water to the land. Embracing the principle of interconnectivity achieves the purpose of the RMA, and recognises and provides for Te Rūnanga o Arowhenua’s relationship with water resources in this catchment. Managing both surface and groundwater in this Plan is also consistent with one of the primary principles of the Canterbury Water Management Strategy, which states that “Both surface and groundwater are given equal importance”.

There is always some tension between the need to recognise and manage interconnectivity and the need to keep plans simple enough to be easily understood and effectively administered. Managing surface and groundwater allocation together with

other activities which may affect water quantity in the Pareora River Catchment is considered to be an appropriate balance.

Objectives 2 and 3 - The available surface and ground water in the Pareora River Catchment is highly sought after, due to the water-short nature of the catchment. Additional run-of-river allocation within the Pareora River Catchment is undesirable, given the existing high levels of abstraction from the river and hydraulically connected groundwater, and associated environmental effects. At the same time, the community and local economy are very dependent on the water that is currently abstracted. There is a requirement to balance the needs of water abstractors with instream values by recognising and maintaining existing abstraction as part of the environment, while providing time for water abstractors to adjust to an increase in the minimum flow to take effect five years from the time this plan becomes operative. These objectives are achieved through policies which require any additional surface water abstraction from the Pareora River Catchment to be part of a B Block allocation, unless and until such time as the amount of water (expressed as maximum rate of take in L/s) consented from the A Block allocation reduces to no more than 30% of the seven-day mean annual low flow. Until then, the only water allocated in the A Block is the replacement of existing water takes, on expiry at the same or a reduced rate of take and volume. Where that water is not required (e.g. the consent lapses, is surrendered or is cancelled) it cannot be reallocated for abstraction as part of the A Block.

The availability of an alternate source of water could alleviate some of the current reliance on water from the Pareora River Catchment, and in turn could alleviate some (or all) of the current pressure on instream values. Although at the present time there are no obvious alternative sources of water for irrigation abstractors in the catchment to utilise, this could well change in the future. Should economically viable water from another source be made available within the catchment in the future, it would be necessary to review the environmental flow regime in this Plan.

Objective 4 - Seeks to maximise the use of the water which is available for abstraction in the catchment by ensuring it is used efficiently, and that there is not wastage. The objective is achieved through policies which require: water allocations to match actual or reasonable use; water application rates to achieve 80% efficiency relative to the land use; and the use of irrigation infrastructure and technology to minimise leakage or wastage.

Objective 5 - Recognises that the current level of abstraction is putting stress on instream values and that this should be addressed by increasing minimum flows over time. The 'returning' of water to the river will be via the means mentioned above, whereby lapsed, surrendered or cancelled consents are not reallocated for abstraction as part of the A Block. In light of the current stress on instream values, the minimum flow for A block takes are to be increased five years from the date this Plan becomes operative. Following this time further monitoring and study of instream values, and of the social and economic effects of a further increase in the minimum flow prior to the next review

of the plan under section 79 of the RMA, should be undertaken. In the meantime, upon the Plan becoming operative, increases in the minimum flow for the months of October and November will be implemented to provide some relief to the river and to facilitate trout fishing. Consents within the Pareora Catchment which authorise the taking, using, diverting and damming of water should be reviewed as soon as practicable once this Plan is operative, and upon the year-round increase in the minimum flow regime in five years time, in order to align them with the provisions of this Plan.

Policies

The policy framework for managing surface water is contained in Section 1. The policy framework for managing groundwater is contained in Section 2, and Section 3 contains general policies for catchment management, including policies for efficient use of water, metering and consent transfers.

Policy Section 1 – Surface Water Takes, Use, Damming or Diversion

Policy 1.1 To ensure any take, use or diversion of surface water or hydraulically connected groundwater in the Pareora River Catchment:

- (a) Maintains residual flows in surface water bodies which are sufficient to maintain or enhance existing instream values;
- (b) Maintains flow variability and sediment transfer within the Pareora River and its tributaries;
- (c) Allows freshes and floods to pass downstream with sufficient frequency and duration to maintain the ecological, recreational, cultural and amenity values of the catchment and 'reset' the riverine ecosystem; and
- (d) In the mainstem of the Pareora River, protects freshes of 4.5 cumecs to scour periphyton build up and freshes of 15 cumecs to open the river mouth.

Explanation

Policy 1.1 identifies the key hydrological features of the Pareora River Catchment which need to be protected when surface water is taken, used, diverted or dammed to sustainably manage the catchment. The policy should be read and implemented in conjunction with the more specific policies for taking, using and damming surface water in the catchment, below. Policy 1.1 (d) is based on the need to maintain a flow of at least 4200 - 4500 L/s in order to initiate and promote the scouring of built up periphyton and fine sediment from the river bed.

Policy 1.2 To ensure any taking or use of surface water or hydraulically connected groundwater in the Pareora River Catchment complies with the environmental flow and allocation regime set out in Table 1; and prevent the taking or use of surface water or hydraulically connected groundwater

in the Pareora River Catchment which, either singularly or in combination with any other activity, will:

- (a) Reduce the river below the minimum flow specified in Table 1; or
- (b) Extend the A or B Block above the maximum amount specified in Table 1; or
- (c) Reduce the size of the gap between the A and B Block specified in Table 1;
- (d) unless Policies 1.3 or 1.4 apply.

Policy 1.3 Notwithstanding Policy 1.2 above, to allow the taking or use of surface water which does not comply with the environmental flow and allocation regime set out in Table 1, where the take or use is a temporary take or diversion of water to allow for the maintenance, repair or replacement of existing infrastructure and the take or diversion does not result in a decrease in water quality.

Policy 1.4 Notwithstanding Policy 1.2 above, to allow the taking or using of surface water that does not comply with the environmental flow and allocation regime set out in Table 1, provided:

- (a) The take or use is for a non-consumptive use; and
- (b) The water is discharged back into the same surface water body from which it is taken at the same rate; and
- (c) The take or use does not adversely affect instream values or any other lawfully established water take or use.

Explanation

Table 1 sets out an environmental flow and allocation regime for the Pareora River Catchment, which applies to any take or use of surface water and stream-depleting groundwater within the catchment. Policies 1.3 and 1.4 contain exceptions for when the taking or use of surface water does not have to comply with the environmental flow and allocation regime in Table 1. The exception in Policy 1.3 relates to the temporary taking or diversion of water for the maintenance or repair of infrastructure.

Policy 1.4 deals with non-consumptive uses. This term covers activities which involve a temporary take and then discharge back of surface water. Examples of non-consumptive uses include fish hatcheries and hydro-electricity generation. While non-consumptive uses only involve a temporary take of surface flow, the rate of take, the duration for which it is held, and the location of the take and discharge points, can potentially affect both instream values and reliability of supply for other abstractors.

Therefore, water takes for non-consumptive uses require resource consents so these potential effects can be assessed and managed.

Policy 1.5 To define and manage hydraulically connected groundwater takes using the relevant provisions of the Canterbury Natural Resources Regional Plan.

Explanation

Groundwater resources are fully allocated in the Pareora River Catchment (see Policy Section 2). The only additional water available for abstraction under this Plan is some additional surface water as a B Block take from the Pareora River mainstem. This policy recognises that where that surface water is being abstracted via a hydraulically connected groundwater connection, the surface water component of the take can be managed as part of the surface water allocation block. The degree of connectivity is calculated to ensure that the abstraction will not affect groundwater recharge rates or reliability of supply for other groundwater abstractors. The stream-depletion effect for groundwater takes within the Pareora River Catchment is to be defined and managed using the relevant provisions of the Canterbury Natural Resources Regional Plan.

Policy 1.6 To limit any damming of surface water in the mainstem of any waterway within the Pareora River Catchment, except where that damming was lawfully established prior to this Plan becoming operative.

Explanation

Damming of the mainstem of any waterway within the Pareora River Catchment is inappropriate as it has the potential to significantly impact flow levels and variability in the Pareora River, which would affect both instream values and reliability of supply for abstractors. Damming of a mainstem within the catchment would also affect the ability of the river to carry freshes, floods and sediment downstream, which is vital to reset the river ecosystem after periods of low flow and to open the river mouth. Any additional damming of the Pareora River mainstem could also result in increased coastal erosion, as a result of less sediment being transported to the coast for beach nourishment. Accordingly, while not prohibited, any damming of the river should be subject to a stringent test by way of non-complying activity status.

Policy 1.7 Notwithstanding Policy 1.2 above, to allow the taking or use of surface water and hydraulically connected groundwater from within the Pareora River Catchment which does not comply with the

environmental flow and allocation regime set out in Table 1, where the take or use is for an existing, lawfully established Community Water Supply, and the consent holder has an approved asset management plan which outlines measures to reduce water use during times of low flow.

Explanation

There is a strong reliance on water from the Pareora River Catchment to satisfy the demands of Community Water Supply needs. By far the most significant community supply take is that of the Timaru District Council, which is taken from the upper reaches of the Pareora River at a maximum rate of 215 L/s. Both the RMA and the Canterbury Water Management Strategy clearly signal the importance of water for domestic and stock drinking needs, and this policy reflects that priority.

Policy 1.8 To limit the A Block to water takes which were lawfully established at the time this Plan was notified on 7 August 2010 and new consents issued to replace expiring or expired consents that continue to be exercised under section 124 of the RMA; unless and until the total amount of water taken within the A Block, including the water take applied for, is less than 30% of the naturalised seven-day mean annual low flow at the huts flow recorder site.

Policy 1.9 To limit the amount of water allocated in any new consent that replaces an expiring consent to take water within the A Block set out in Table 1, to no more than the rate of take used under the previous consent.

Policy 1.10 To limit the total volume of surface water abstracted for any lawfully established consent used for irrigation purposes from within the Pareora River Catchment to an annual volume calculated using the relevant provisions of the Canterbury Natural Resources Regional Plan.

Policy 1.11 To ensure that the water from any existing water take included in the A Block in Table 1 which lapses, is surrendered or is cancelled, is not reallocated as an A Permit unless it complies with Policy 1.8.

Policy 1.12 To provide for water in the A Block to be used for either:

- (a) A take to storage; or
- (b) A run-of-river take; provided that:
 - (i) The minimum flow for the take to storage is increased to that shown in Table 1 for a take to storage;

- (ii) The water taken for run-of-river irrigation is not taken concurrently with that water which is taken to storage; and
- (iii) There is no increase in the annual volume.

Explanation

In establishing an environmental flow and allocation regime for the Pareora River Catchment, the Canterbury Regional Council has increased the minimum flow in the months of October and November, but held the minimum flow at the current level for the remainder of the year. In this case, the Council decided the effects on reliability of supply for existing abstractors of increasing the minimum flow further, or for more months of the year, did not achieve the purpose of the RMA. Rather the Plan adopts an approach of avoiding any further adverse effects on ecological, recreational, cultural and amenity values by capping the run-of-river takes in this catchment at the existing, lawfully established takes. If any of these takes lapse or are surrendered or cancelled under the RMA, the water must not be reallocated as part of any A Block, until the allocated A Block is less than 30% of seven-day mean annual low flow for that water body, as recommended in the draft National Environmental Standard for Ecological Flows, for rivers of the size of the Pareora.

In the meantime, any additional water abstraction in the Pareora River Catchment, other than replacements of existing consents, must be provided for as part of a B Block and subject to a higher minimum flow. In addition, any conversion of existing run-of-river takes in the A Block to takes to storage must include the higher minimum flow conditions for that activity shown in Table 1. The reason for this is that higher minimum flows throughout the rest of the year assist the catchment ecosystems to recover from periods of low flow. If run-of-river takes are converted to takes to storage, there is potential for more of the water to be taken over a longer period down to the minimum flow than for a run-of-river take. The minimum flow for takes to storage is higher than those for run-of-river takes.

Policy 1.13 In reviewing or replacing a resource consent for an activity already established at the date this Plan became operative, in terms of compliance with the rules in the Plan for minimum flows and allocation, regard may be had to:

- (a) the extent to which the take may affect low flows in the river, with respect to the specific use of the water, the volume and duration of the take, the time of the year of the take, and other demands on surface and groundwater at that time;

- (b) the nature and extent of existing physical infrastructure which has been established in order to exercise the take and use water; and
- (c) any existing specific consent conditions.

Explanation

Some land use activities may be particularly adversely affected by restrictions on the availability of water, which is a factor that needs to be taken into account during the review of consents. For example, the use of water for frost protection is crucial for abstractors with frost sensitive crops. If access to water is prevented during key times of the year because of minimum flow restrictions abstractors could lose entire harvests and considerable income. The volume of water taken for frost protection is typically less than that taken for irrigation, so the adverse effects of this use should be minor.

In addition, there are circumstances where substantial permanent infrastructure, such as storage dams, have already been established in reliance on existing consents at the time this Plan became operative. This justifies consideration to be given to the duration of the consent and the adverse economic and social effects that would result if the consent could not be exercised.

Policy 1.14 To encourage the Timaru District Council to discharge water at a rate of 70 L/s from their water supply pipe into the South Branch of the Pareora River, during the months of October and November, when the flow in the Pareora River (as measured at the huts flow recorder) is less than 700 L/s.

Explanation

Through the plan development process Timaru District Council agreed that it would be prepared to release additional water into the South Branch of the Pareora River during the months of October and November, when flows were below 700 L/s, on the proviso that their supply from the Opihi River was not restricted. The months of release (October and November) were determined during the plan development process as those in which the additional water would be most beneficial to trout. The method for implementing this policy is not a rule, but rather this policy will be implemented through ongoing collaboration between the Canterbury Regional Council and the Timaru District Council in order to establish the required infrastructure and implement an ongoing monitoring regime.

Policy 1.15 To ensure any additional takes of surface water from the Pareora Catchment are managed as part of the B Block as set out in Table 1, unless Policy

1.8 applies, and to ensure that B Block takes are apportioned having regard to the need to compensate existing A Block consent holders for losses in reliability of supply, the size of the land area to be irrigated, the efficiency of use, and equity between landowners.

Policy 1.16 To provide for any additional water abstraction in the Pareora River Catchment above that provided for in the B Block set out in Table 1 or provided for in the policies in this Plan, through augmentation of water into the catchment or a community-based storage and irrigation scheme; by way of a plan change.

Explanation

As discussed in Part 5 of this Plan, any additional water for abstraction, over and above that provided for in the B Block on the Pareora River main stem, will need to come from 'out of catchment' sources; unless there is a significant surrender or lapsing of existing allocated takes. The Canterbury Water Management Strategy includes a proposal for the extension of the Hunter Downs Irrigation Scheme to the north, which could provide for augmentation of the Pareora River Catchment; though this is not necessarily the only or preferred augmentation option.

Policy 1.17 To reduce the effects of run-of-river abstraction on instream values in the Pareora River Catchment by increasing the minimum flow for surface water and hydraulically connected groundwater takes (as defined using the relevant provisions of the Canterbury Natural Resources Regional Plan) during the months of October and November when this Plan becomes operative. An increase in the minimum flow over the entire year will also take effect five years from the date this Plan becomes operative.

Policy 1.18 To limit the maximum rate of take of any surface water and hydraulically connected groundwater abstracted under any lawfully established A Block consent used for irrigation from within the Pareora River Catchment to 50% of the consented maximum rate of take as per Table 1, unless the consent holder is part of a Water Users Group approved by the Canterbury Regional Council which gives effect to the environmental flow and allocation regime in Table 1.

Explanation

The Pareora River Catchment is heavily committed to water abstraction, and as a result the minimum flows in this Plan are lower than those recommended to provide for instream values. Policy 1.17 seeks to address this imbalance by increasing the minimum flows during the key trout

fishing months of October and November, and from a period of five years from the date of this Plan becoming operative, the minimum flows will be increased over the whole year. This interim period is to enable adaptation to the new flow regime. Policy 1.18 seeks to ensure that when the river begins to approach the minimum flow, abstraction from the river is reduced to 50% of the maximum consented rate of take. Policy 1.18 also provides for the establishment of a Water Users Group to enable the community to manage the total abstraction in a way that ensures the principles of the environmental flow and allocation regime shown in Table 1 are adhered to. For example, a consent holder with a maximum rate of take of 100 L/s who is not a member of a Water Users Group would have to reduce their maximum rate of take to 50 L/s if the flow in the Pareora River fell below the 50% restriction flow in Table 1 of this Plan. However, if two consent holders, each with a maximum rate of take of 100 L/s formed a Water User Group, one of the consent holders could pump 100 L/s as long as the other consent holder was not taking any water.

Policy 1.19 The minimum flow levels for any take or use of surface water or hydraulically connected groundwater in the Pareora River Catchment shall increase in accordance with Table 1 five years from the date this Plan becomes operative.

Explanation

The minimum flow levels in Table 1 are lower than those recommended to protect the life supporting capacity of the river and instream values. However these have been set as the status quo in the interim to provide abstractors lead in time (five years) to make necessary changes to their farming operations, including the installation of on-farm storage facilities. This policy gives effect to the minimum flows recommended to balance abstractors (out-of-stream) use with instream use. This policy seeks to further address the imbalance between out-of-stream use and instream values by increasing the minimum flow for A block abstractions five years from the date this Plan becomes operative, by providing the necessary lead-in time to enable adaptation to farming operations including the installation of on-farm storage.

Policy Section 2 – Groundwater

Note: Hydraulically connected groundwater abstractions are managed as a surface water allocation in accordance with Policy 1.5.

Policy 2.1 To prevent any additional abstraction of groundwater within the Upper Pareora

Groundwater Zone except where:

- (a) the abstraction is a replacement of an existing, lawfully established take, at the same or a lesser rate and the same or lesser annual volume; or
- (b) Policy 2.2 applies.

Explanation

A study undertaken by the Canterbury Regional Council in 2008 proposed that the Cannington Basin be managed as a groundwater allocation zone, and stated that if it were a zone currently, it would be considered fully allocated. The same study also concluded that groundwater within the Cannington Basin re-emerges at the Lower Gorge and contributes to the base flow of the Pareora River. Therefore, based on current knowledge, groundwater takes at all depths from the Cannington Basin are believed to have a depletion effect on surface water resources in the Lower Pareora River, and any additional groundwater takes will reduce reliability of supply to existing abstractors and further degrade ecological, recreational, cultural and amenity values. A precautionary approach to the management of groundwater resources in the Upper Catchment is believed to be the best management option, and is consistent with the ‘Primary principles’ of the Canterbury Water Management Strategy, which state that “a cautious approach is taken when information is uncertain, unreliable, or inadequate”.

Policy 2.2 To enable additional abstraction of groundwater from within the Upper Pareora Groundwater Zone only if:

- (a) The total amount of groundwater consented for abstraction, including that from the application(s) being considered, does not total more than 1,312,146 m³ per annum; and
- (b) The take does not adversely affect the reliability of supply for existing abstractors.

Policy 2.3 To limit the total volume of groundwater abstracted for any lawfully established consent used for irrigation from within the Pareora River Catchment to an annual volume calculated using the relevant provisions of the Canterbury Natural Resources Regional Plan.

Explanation

The groundwater resources of the Pareora River Catchment have been estimated by the Canterbury Regional Council through several studies, most recently in 2008. Until such time as metering of all groundwater takes provides at least 5 years of actual take and use data for groundwater abstraction, this

is the best estimate of the state of the resource. The level of groundwater availability in the Pareora River Catchment is restricted to the limits specified in Policy 2.2.

Policy 2.1 limits further allocation of groundwater for abstraction within the Upper Pareora River Catchment.

Policy 2.4 Where groundwater abstraction is provided for under Policies 2.1 and 2.2, to ensure any bores and any associated groundwater abstraction are sited and operated in accordance with the well interference and aquifer penetration guidelines of the Canterbury Natural Resources Regional Plan.

Explanation

The location and depth of groundwater bores can affect the efficiency of groundwater abstraction and zones of influence on other abstractors. The Canterbury Natural Resources Regional Plan contains a detailed methodology for how adequate aquifer penetration and zones of influence can be calculated.

Policy Section 3 – General Catchment Management

Transfers

Policy 3.1 To allow the transfer of surface water takes provided:

- (a) The transfer is within the same surface water allocation zone as shown in Appendix 1;
- (b) The transfer is for the same or a lesser rate of take and volume;
- (c) The transfer does not result in a reduction in the reliability of supply for any other lawfully existing surface or groundwater take;
- (d) Exercising the consent post-transfer does not result in an increase in the length or duration of river dryness;
- (e) The transfer does not result in adverse effects on instream values; and
- (f) The conditions of the consent are consistent with the provisions of the Plan, including the allocation regime and flow regimes set out in Table 1, and water metering requirements.

Policy 3.2 To allow the transfer of groundwater takes within the Pareora River Catchment, provided:

- (a) For groundwater takes with a stream depletion effect:
 - (i) The transfer occurs within the same groundwater and surface water allocation zones as shown in Appendices 1 and 2;
 - (ii) The take is for the same or lesser rate and annual volume;

- (iii) The stream depletion effect will be the same or less after the transfer as prior to it;
- (iv) The transfer does not result in a reduction in the reliability of supply for any other lawfully existing surface or groundwater take;
- (v) Exercising the consent post-transfer does not result in an increase in the length or duration of river dryness;
- (vi) The transfer does not result in adverse effects on instream values; and
- (vii) The conditions of the consent are consistent with the provisions of the Plan, including the allocation regime and flow regimes set out in Table 1, and water metering requirements.

(b) For groundwater takes without a stream depletion effect:

- (i) The transfer occurs within the Upper Pareora Groundwater Allocation Zone as shown in Appendix 2;
- (ii) The take is for the same or lesser rate and annual volume;
- (iii) The transfer does not result in a stream depletion effect on any surface water body within the Pareora River Catchment, as shown in Appendix 1;
- (iv) The transfer does not result in a reduction in the reliability of supply for any other lawfully existing surface or groundwater take; and
- (v) Exercising the consent post-transfer does not result in an increase in the length or duration of river dryness.

Explanation

The Pareora River is under stress from existing water abstraction. It could be the case that not all consent holders are fully utilising their consents (i.e. they are not taking water at their maximum consented rate or volume), in which case any further utilisation resulting from the transfer of a consent has the potential to place additional stress on the river. Policies 3.1 and 3.2 provide for the transfer of surface and groundwater consents as long as certain conditions are met, including no increase in utilisation.

Water Use Efficiency

Policy 3.3 To work towards maximum efficiency in the taking and use of water in the Pareora River Catchment, including:

- (a) Minimising any leakage in the design and operation of infrastructure used to take or convey water;
- (b) Encouraging the surrender of unused water takes;

- (c) Requiring a minimum of 80% irrigation efficiency in the application of water;
- (d) Requiring water metering and data recording devices on all water takes; and
- (e) Requiring any water take to be for a specified use and ensuring the rate of abstraction and annual volume are reasonable and efficient for the proposed end use.

Explanation

The Pareora River Catchment is water-short, so an essential part of promoting sustainable management within this catchment is ensuring that the allocated water resources are used as efficiently as possible. This includes both technical efficiency, such as minimising leakage or losses in infrastructure, and allocative efficiency, by ensuring abstractors are taking an amount of water which is reasonable for the proposed use, and applying that water at rates and under conditions which maximise its value to the crop being watered. This policy should not be interpreted as promoting a preference for land uses which are more water efficient but rather ensuring that any water taken and used is done so in an efficient manner for the land use to which it relates.

Policy 3.4 To require the installation and operation of water metering and data recording devices on all water takes and provision of recorded data to the Canterbury Regional Council.

Explanation

Metering of water takes is necessary to assist both the abstractor and the consent authority in ascertaining how much water a person is actually taking and using. This can help improve estimates of the amount of water available as well as compliance with consent conditions. The metering of all water takes is proposed to become a requirement of all consent holders under National Regulations introduced under section 360(1)(d) of the RMA. In anticipation of this requirement and due to the importance of being able to accurately measure water takes, all new resource consents are required to have metering, including replacements of existing consents. Existing resource consents will be subject to a review of conditions to include the requirement for metering under section 128(1)(b) of the RMA.

Priority of Use

Policy 3.5 As part of any proposal to provide additional water for irrigation in the Pareora River Catchment under Policy 1.16, to review the environmental flow and allocation regime (and groundwater allocation limits) for the Pareora River Catchment, in particular the minimum

flows set out in Table 1, ensuring that any revised minimum flow will benefit environmental values.

Explanation

The environmental flow and allocation regime in Table 1 and the groundwater allocation limit set in Policy 2.2 are based on current environmental conditions and best estimates of allocation and use of water resources based on current data. Should environmental conditions alter in the future, for example, through an increase in water available for irrigation through augmentation of the catchment, these regimes will need to be reviewed. In particular:

- A substantial increase in irrigation from surface water abstraction may increase the groundwater allocation limit through increased surface recharge; and
- A review of minimum flows for surface and stream-depleting groundwater takes may be appropriate.

Policy 3.6 To consider any need for fish screening when applications are made for surface water takes.

Policy 3.7 Notwithstanding Policy 3.5 above, to reprioritise consents that are replaced after expiring on 1 January 2025 based on the first and second order priorities outlined in the principles of the Canterbury Water Management Strategy.

Explanation

As outlined in Part 2 of this Plan, the Canterbury Water Management Strategy sets out first and second order priority considerations within its “Primary principles”. First order priority considerations are: the environment, customary uses, community supplies and stock water. Second order priority considerations are: irrigation, renewable electricity generation, recreation, tourism and amenity. There is currently no prioritisation of water use within the A Block in the Pareora River Catchment. Policies 3.6 and 3.7 allow the Canterbury Regional Council the opportunity to address this issue after notification of the second generation of this Plan.

Policy 3.8 To recognise and manage the cumulative effects of multiple water takes, including small water takes, in the catchment.

Explanation

While the effects of individual takes may be minor, the cumulative effect of a number of takes can have a significant impact on surface and groundwater. Although it is not anticipated that there will be a significant number of new takes, as part of considering consents and replacement of expired consents it is appropriate to consider cumulative effects as part of that assessment.

Part 7 – Rules

Surface Water

Rule 1 – Permitted Activities

Rule 1.1 The diverting of surface water for the purpose of maintaining, repairing or replacing existing infrastructure is a permitted activity, provided all of the following conditions are complied with:

Conditions:

- (a) The water is not diverted out of the riverbed;
- (b) Surface water flow remains continuous and sufficient to ensure continuous fish passage and sustainability of the ecosystem;
- (c) The surface flow is not diverted away from the intake of any other lawfully established water take;
- (d) The diversion occurs for no more than 15 days, unless the activity is carried out by the Canterbury Regional Council's Regional Engineer, or under the supervision or instruction thereof; and
- (e) The diversion does not result in a decrease in water quality or quantity.

Note

As the Pareora River Catchment is fully allocated, this Plan does not provide for any permitted takes, only diversions as specified under Rule 1.1. Any individual is not prohibited from taking water for their reasonable domestic needs, or for the reasonable needs of animals for drinking water, under Section 14(3)(b) of the RMA, provided the taking or use does not, or is not likely to, have an adverse effect on the environment. Individuals are also not prohibited from taking water for fire-fighting purposes under Section 14(3)(e) of the RMA.

Rule 1.2 The discharge of water into the Pareora River by the Timaru District Council for the purpose of increasing the flow within the lower Pareora River is a permitted activity, provided all of the following conditions are complied with:

Conditions:

- (a) The discharge does not result in a decrease in water quality; and
- (b) The discharge does not result in any adverse effects on the environment which are more than minor.

Rule 2 – Restricted Discretionary Activities

Rule 2.1 The taking, using, diverting and discharging of surface water for any non-consumptive activity is a restricted discretionary activity, provided it complies with all of the following standards and terms:

Standards and terms:

- (a) The take, diversion or use is for a non-consumptive activity;
- (b) The water is discharged back into the same surface

water body from which it is taken at the same rate and quality;

- (c) The water is discharged back into the same surface water body and into active flowing water within 250 metres of the point of take; and
- (d) Fish shall be prevented from entering the water intake, by way of a fish exclusion device.

The Canterbury Regional Council will restrict the exercise of its discretion when deciding to grant or decline a resource consent, and in imposing any conditions, to the following matters:

- The reasonable need for the quantities of water sought to be taken or diverted for the proposed activity;
- Any effects on instream values; and
- Any effects on any other lawfully established take, use or diversion of water within that waterway.

Rule 2.2 The damming, taking, using or diverting of surface water for community water supply is a restricted discretionary activity, provided it complies with all of the following standards and terms:

Standards and Terms:

- (a) When a new consent is sought to replace an expiring consent, or an expired consent that is continuing to be exercised under section 124 of the RMA, the rate of take and volume are the same or less than that which was previously granted;
- (b) The consent holder has provided the Canterbury Regional Council with an asset management plan, which clearly states what steps will be taken to reduce water usage during times of low flow;
- (c) Fish shall be prevented from entering the water intake, by way of a fish exclusion device; and
- (d) Mainstem dams used for Community Water Supply which were lawfully established prior to notification of this Plan are covered by this rule. New mainstem dams are non-complying activities under Rule 4.2.

The Canterbury Regional Council will restrict the exercise of its discretion when deciding to grant or refuse a resource consent, and in imposing any conditions, to the following matters:

- The reasonable need for the quantities of water sought, the intended use of the water and the ability of the applicant to abstract those quantities including whether storage of water is proposed;
- The availability and practicality of using alternative supplies of water;
- The intended use of the water and the technical efficiency of the exercise of the consent;
- The effects the take has on surface water flows, including floods and freshes;

- The effects the take has on any other authorised takes;
- The management of supply during times of low flow; and
- The collection, recording, monitoring and provision of information concerning the exercising of the consent.

Rule 2.3 The taking, using or diverting of surface water is a restricted discretionary activity, provided it complies with all of the following standards and terms:

Standards and Terms:

- (a) When a new consent is sought to replace an expiring consent, or an expired consent that is continuing to be exercised under section 124 of the RMA, the rate of take is the same or less than that which was previously granted, and the volume is no greater than that calculated using the relevant provisions of the Canterbury Natural Resources Regional Plan;
- (b) Where a new consent is sought to replace an expiring consent, or an expired consent that is continuing to be exercised under section 124 of the RMA, and the consent that is being replaced did not have an annual volume, an annual volume calculated using the relevant provisions of the Canterbury Natural Resources Regional Plan shall be applied to the new consent;
- (c) The take or diversion is not within a wetland that has not been classified according to the criteria for classifying wetlands in the Canterbury Natural Resources Regional Plan or has been classified as a wetland of moderate or higher significance in the Canterbury Natural Resources Regional Plan;
- (d) The take, use or diversion is not within the Pareora River Lagoon;
- (e) The take or diversion of water by itself or in combination with any other take or diversion:
 - (i) When used for frost protection:
 - (a) Is a replacement of an existing take for frost protection, at the same or lesser rate and the same or lesser annual volume; or
 - (ii) When an existing A Block take is changed from a run-of-river take to a combined run-of-river take and a take to storage:
 - (a) The annual volume is no greater; and
 - (b) The minimum flow sought is no less than the minimum flow for A Block takes to storage in Table 1;

(iii) For irrigation takes:

- (a) Complies with the minimum flow for that activity set out in Table 1;
- (b) The annual volume is no greater than that calculated under the relevant provisions of the Canterbury Natural Resources Regional Plan;
- (c) Does not take water which is allocated to maintain a gap between A and B Blocks for that water body, as set out in Table 1; and
- (d) Fish shall be prevented from entering the water intake, by way of a fish exclusion device.

(iv) In all other instances:

- (a) Complies with the minimum flow for that activity set out in Table 1;
- (b) Does not take water which is allocated to maintain a gap between A and B Blocks for that water body, as set out in Table 1; and
- (c) Fish shall be prevented from entering the water intake, by way of a fish exclusion device.

The Canterbury Regional Council will restrict the exercise of its discretion when deciding to grant or refuse a resource consent, and in imposing any conditions, to the following matters:

- The reasonable need for the quantities of water sought, the intended use of the water, and the ability of the applicant to abstract and apply those quantities, including whether storage of water is proposed;
- The availability and practicality of using alternative supplies of water including alternative public or community reticulated supplies;
- The intended use of the water and the technical efficiency of the take and use;
- The effect the take has on surface water flows, including floods and freshes;
- The effects the take has on any other authorised takes;
- The reduction in the rate of take in times of low flow; and
- The collection, recording, monitoring and provision of information concerning the exercising of the consent.

Rule 3 – Discretionary Activities

Rule 3.1 Any damming of surface water in the Pareora River Catchment is a discretionary activity, provided that the damming is not on the mainstem of any waterway.

Rule 4 – Non-complying Activities

Rule 4.1 Unless specified as a permitted activity or restricted discretionary activity, any take, use or diversion of surface water is a non-complying activity.

Rule 4.2 The damming of the mainstem of any waterway in the Pareora River Catchment.

Rule 4.3 The taking, using, damming or diverting of water from a wetland that:

- (a) Has not yet been classified according to the criteria for classifying wetlands in the Canterbury Natural Resources Regional Plan; or
- (b) Has been classified as a wetland with a moderate or higher significance in the Canterbury Natural Resources Regional Plan; is a non-complying activity.

Groundwater

Rule 5 – Permitted Activities

Rule 5.1 The taking or use of groundwater from within the Upper Pareora Groundwater Allocation Zone, as shown in Appendix 2, for the carrying out of bore development or pumping tests is a permitted activity, provided it complies with the relevant provisions of the Canterbury Natural Resources Regional Plan.

Rule 6 – Restricted Discretionary Activities

Rule 6.1 The taking or use of groundwater from the Upper Pareora Groundwater Allocation Zone is a restricted discretionary activity, where it complies with all of the following standards and terms:

Standards and terms:

- (a) The taking is either:
 - (i) The replacement of a lawfully established take in accordance with the provisions of section 124 of the RMA and the rate of take is the same or less than that which was previously granted, and the annual volume is the same or less than that calculated using the relevant provisions of the Canterbury Natural Resources Regional Plan; or
 - (ii) A new take where the volume of the proposed take, in addition to the existing consented takes and all prior applications to take groundwater, does not exceed 1,312,146 m³; and

- (b) Where a new consent is sought to replace an expiring consent, or expired consent that is continuing to be exercised under section 124 of the RMA, and the consent that is being replaced did not have an annual volume, an annual volume calculated using the relevant provisions of the Canterbury Natural Resources Regional Plan shall be applied to the new consent; and
- (c) The take does not cause drawdown in other lawfully established bores being used for groundwater takes of more than the greater of 0.1m and 20% of the available drawdown; and
- (d) If the groundwater take is hydraulically connected to surface water as defined in the relevant provisions of the Canterbury Natural Resources Regional Plan, the take is managed as such and must comply with the environmental flow and allocation regime as set out in Table 1.

The Canterbury Regional Council will restrict the exercise of its discretion when deciding to grant or refuse a resource consent, and in imposing any conditions, to the following matters:

- The reasonable need for the quantities of water sought, the intended use of the water and the ability of the applicant to abstract and apply those quantities including whether storage of water is proposed;
- The availability and practicality of using alternative supplies of water including alternative public or community reticulated supplies;
- The intended use of the water and the technical efficiency of the exercise of the consent;
- The effects the take has on surface water flows;
- The effects the take has on any other authorised takes;
- The reduction in the rate of take in times of low flow;
- The collection, recording, monitoring and provision of information concerning the exercising of the consent; and
- The effect the take has on significant habitats of indigenous fauna and on instream values.

Rule 6.2 The taking or use of groundwater for Community Water Supply from the Upper Pareora Groundwater Allocation Zone is a restricted discretionary activity, provided it complies with the following standards and terms:

Standards and Terms:

- (a) When a new consent is sought to replace an expiring or expired consent that is continuing to be exercised under section 124 of the RMA, the rate of take and volume are the same or less than that which was previously granted; and
- (b) The consent holder has provided the Canterbury Regional Council with an asset management plan, which clearly states what steps will be taken to reduce water usage during times of low flow.

The Canterbury Regional Council will restrict the exercise of its discretion when deciding to grant or refuse a resource consent, and in imposing any conditions, to the following matters:

- The reasonable need for the quantities of water sought, the intended use of the water and the ability of the applicant to abstract those quantities including whether storage of water is proposed;
- The availability and practicality of using alternative supplies of water;
- The intended use of the water and the technical efficiency of the take and use;
- The effects the take has on surface water flows;
- The effects the take has on any other authorised takes;
- The management of supply during times of low flow; and
- The collection, recording, monitoring and provision of information concerning the exercising of the consent.

Rule 7 – Non-complying Activities

Rule 7.1 Unless specified as a permitted activity or restricted discretionary activity, the taking and use of groundwater from the Upper Pareora Groundwater Allocation Zone is a non-complying activity.

General

Rule 8 – Area to which this Plan applies

Rule 8.1 This Plan applies to the taking, using, damming, diverting of water, and the discharge by Timaru District Council of surface water and stream-depleting groundwater within the Pareora River Catchment, as shown in Appendix 1; and to the taking and using of groundwater within the Upper Pareora Groundwater Allocation Zone, as shown in Appendix 2. Where an activity is expressly provided for in this Plan, the provisions of this Plan apply. For all other activities, the provisions in the

Canterbury Natural Resources Regional Plan apply.

Rule 9 – Restricted Discretionary Activities

Rule 9.1 The transfer of a consent to take or use surface water wholly within one surface water allocation zone, as shown in Appendix 1, is a restricted discretionary activity provided it complies with all of the following standards and terms.

Standards and Terms:

- (a) The technical efficiency of the use of the water in the transferred location is at least as high as in the original location;
- (b) The reliability of supply for any other lawfully established water take is not reduced; and
- (c) The rate of take after the transfer is less than or equal to the rate of take prior to the transfer;
- (d) The volume of take after the transfer is less than or equal to the volume of take prior to the transfer; and
- (e) The consent must comply with the allocation and flow regime set out within Table 1.

The Canterbury Regional Council will restrict the exercise of its discretion when deciding to grant or refuse a resource consent, and in imposing any conditions, to the following matters:

- The reasonable need for the quantities of water sought, the intended use of the water and the ability of the applicant to abstract and apply those quantities;
- The technical efficiency of the exercise of the consent;
- The reduction in the rate of take in times of low flow or water levels;
- The collection, recording, monitoring and provision of information concerning the exercising of the consent;
- Compliance with any water quality standards in the Canterbury Natural Resources Regional Plan;
- For surface water takes, the need for and provision of any additional restriction to prevent the flow from reducing to zero; and
- For surface water takes, the method of preventing fish from entering any water intake.

Rule 9.2 The transfer of a consent to take or use groundwater wholly within the Upper Pareora Groundwater Allocation Zone, as shown in Appendix 2, is a restricted discretionary activity provided it complies with all of the following standards and terms.

Standards and Terms:

- (a) The technical efficiency of the use of the water in the transferred location is at least as high as in the original location;

- (b) The take in the new location does not cause drawdown in other lawfully established bores being used for groundwater takes of more than the greater of 0.1m and 20% of available drawdown;
- (c) The bore proposed to be used for the take adequately penetrates the aquifer, as identified in the relevant provisions of the Canterbury Natural Resources Regional Plan;
- (d) For hydraulically connected groundwater, the stream depletion effect and degree of hydraulic connection effect are no greater in the transferred location than it is in the original location;
- (e) The rate of take after the transfer is less than or equal to the rate of take prior to the transfer; and
- (f) The volume of take after the transfer is less than or equal to the volume of take prior to the transfer.

The Canterbury Regional Council will restrict the exercise of its discretion when deciding to grant or refuse a resource consent, and in imposing any conditions, to the following matters:

- The reasonable need for the quantities of water sought, the intended use of the water and the ability of the applicant to abstract and apply those quantities;
- The technical efficiency of the exercise of the consent;
- The collection, recording, monitoring and provision of information concerning the exercising of the consent; and
- Compliance with any water quality standards in the Canterbury Natural Resources Regional Plan.

Rule 10 – Non-complying Activities

Rule 10.1 The transfer of a consent to take or use water that does not comply with Rule 9.1 or 9.2 is a non-complying activity.

Table 1: Environmental flow and allocation regime for the Pareora River and Tributaries.

Water resource	Minimum flow site	Minimum flow for A Permits	Minimum flow for takes to storage from the A Permit Allocation Block	Allocation limit for A Permits (litres/sec)	Minimum flow for B Permits (litres/sec)	Allocation limit for B Permits (litres/sec)
Pareora River (including all tributaries).	The huts flow recorder.	<p>Until five years from the date this plan becomes operative</p> <p>When Timaru District Council is not discharging additional water:</p> <p>Oct-Nov 470 L/s – 50% restriction in maximum rate of take. 370 L/s – total cessation of take.</p> <p>Dec-Sep 400 L/s – 50% restriction in maximum rate of take. 300 L/s – Total cessation of take.</p> <p>When Timaru District Council is discharging additional water:</p> <p>Oct-Nov 540 L/s – 50% restriction in maximum rate of take. 440 L/s – total cessation of take.</p> <p>Dec-Sep 400 L/s – 50% restriction in maximum rate of take. 300 L/s – total cessation of take.</p> <p>After five years from the date this plan becomes operative</p> <p>When Timaru District Council is discharging additional water:</p>	1600 L/s Note: Only that portion of the A Block available above the A Permit minimum flow for takes to storage may be abstracted.	30% of seven-day mean annual low flow allocation limit = 198 L/s (see Policy 1.8) Existing consents may be replaced on expiry.	5000 L/s Note: Only that portion of the B Block available above the B Permit minimum flow may be abstracted.	2500 L/s (of which no more than 500 L/s can be allocated upstream of the recorder).

		<p>Oct-Nov</p> <p>540 L/s – 50% restriction in maximum rate of take.</p> <p>440 L/s – total cessation of take.</p> <p>Dec-Sep</p> <p>470 L/s – 50% restriction in maximum rate of take.</p> <p>400 L/s – total cessation of take.</p> <p>When Timaru District Council is not discharging additional water:</p> <p>All months</p> <p>470 L/s – 50% restriction in maximum rate of take.</p> <p>400 L/s – total cessation of take.</p>				
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How to read this table

Water Resource: The environmental flow and allocation regime outlined in Table 1 applies to all surface water bodies within the Pareora River Catchment, as shown in Appendix 1. The environmental flow and allocation regime in Table 1 also applies to any groundwater takes located outside the surface water allocation zones in Appendix 1, and within the groundwater allocation zone in Appendix 2, but which have a direct, high or moderate stream depletion effect on a surface water body within a surface water allocation zone in Appendix 1.

Minimum Flow Site: The minimum flows in this Plan are set at the huts flow recorder (also known as the Mount Horrible flow recorder).

Minimum flow for A Permits: The minimum flow is higher during the months of October and November. There is an automatic increase of 70 L/s which represents a concession from irrigators within the catchment. There is an additional 70 L/s concession from Timaru District Council, as per Policy 1.14, which is conditional on:

1. The flow in the Pareora River being less than 700 L/s (as measured at the huts flow recorder); and
2. The Timaru District Council's Opihi water supply not being restricted.

When both of these conditions are satisfied, the minimum flows for October and November increase to 540 L/s (50% restriction of maximum rate of take) and 440 L/s (total cessation of take). When either of the conditions are not satisfied, the minimum flows for October and November are 470 L/s (50% restriction of maximum rate of take) and 370 L/s (total cessation of take).

Water used for frost protection can be critical for the survival of a given crop, and Policy 1.13 recognises this. For this reason, the minimum flow for A Permits in Table 1 does not apply to existing A Permits when they are used for frost protection. However, there are alternative means of protecting crops against frost, so any new or replacement consents will be subject to the same minimum flows (as shown in Table 1) as A Permit consents used for irrigation.

Minimum flow for takes to storage from the A Allocation

Block: Policy 1.12 provides for existing A Permit holders to take water into storage at a higher minimum flow. This water cannot be taken to storage when the flow at the huts falls below 1600 L/s.

Allocation Limit for A Permits: The draft National Environmental Standard for Ecological Flows and Water Levels says that, for rivers the size of the Pareora, the allocation block should be limited to 30% of the seven-day mean annual low flow. The allocation limit shown in Table 1 (198 L/s) represents 30% of the seven-day mean annual low flow (as calculated for the huts flow recorder site). It must be noted that this allocation limit represents the desired A Permit allocation limit, and that at the time of writing the A Block is considerably larger than 198 L/s. The policy direction for reducing the size of the A Block to 30% of the seven-day mean annual low flow is provided for by Policy 1.8.

Minimum flow for B Permits: The taking of B Permit water from the B Block must cease when the flow as measured at the huts flow recorder site falls below 5000 L/s. Only that portion of the flow above 5000 L/s can be taken (i.e. the full B Block of 2500 L/s could only be taken when the flow at the huts is equal to or greater than 7500 L/s).

Allocation Limit for B Permits: The sum of B Permit takes cannot exceed 2500 L/s in total.

Part 8 – Definitions

The words in this Plan have the same meaning as in the RMA, unless otherwise defined in this Plan or unless the context clearly requires otherwise.

A Block	The allocation block comprised of the sum of the maximum rate of take of A Permits.
A Permits	Water permits which are granted to take water until the sum of the individual takes from a surface water resource equals the allocation limit listed for A Permits for that surface water resource.
Allocation limit	For surface water, this means the total flow rate of water to be allocated via A and B Permits. In the case of abstractions from hydraulically connected groundwater, the allocation limit applies only to the calculated stream depletion flow rate, not to the whole rate of groundwater abstracted from the bore or well.
Augmentation	In relation to water, the storage or addition of water to increase surface flows in a river or stream, to maintain higher groundwater levels in an aquifer, or to improve water availability, separately or in combination.
B Block	The allocation block comprised of the sum of the maximum rate of take of B Permits.
B Permits	Water permits which are granted to take water once the allocation limit for A Permits has been reached until the sum of the individual takes from a surface water resource equals the allocation limit listed for B Permits for that surface water resource.
Canterbury Regional Council	The Canterbury Regional Council (also known as Environment Canterbury and ECan).
Community Water Supply	Water taken primarily for group drinking water supply or community drinking water supply but that may also be used for other purposes such as supply to institutional, industrial, processing, stockwater, or amenity irrigation use and fire-fighting.
Cumecs	Cubic metres per second.
Divert	Means to alter in any way the natural course of water flows, whether over or under the ground. It includes but is not limited to cases where all or some of the flow is returned to the same water body further downstream. Activities such as reclamation, infilling, dumping and drainage are considered to divert water where water is displaced as a consequence of the activity.
Environmental flow and allocation regime	The allocation limits, minimum flows, gaps, levels and flushing flows established by this Plan and set out in Table 1.
Flood	A large event that is sufficient to rework the gravel bed. Floods rework gravel bars and cause branch channels to cut laterally into banks and bars. Floods are needed to maintain the braided characteristic of a river and to remove vegetation growing in the riverbed so that open shingle habitat can be maintained.
Fresh	An increased flow, generally of short duration, which raises water levels and causes discolouration.
Gap	The interval in the flow regime between the top of one allocation block and the bottom of the next allocation block for a water resource identified in Table 1 for which no allocation is to occur.

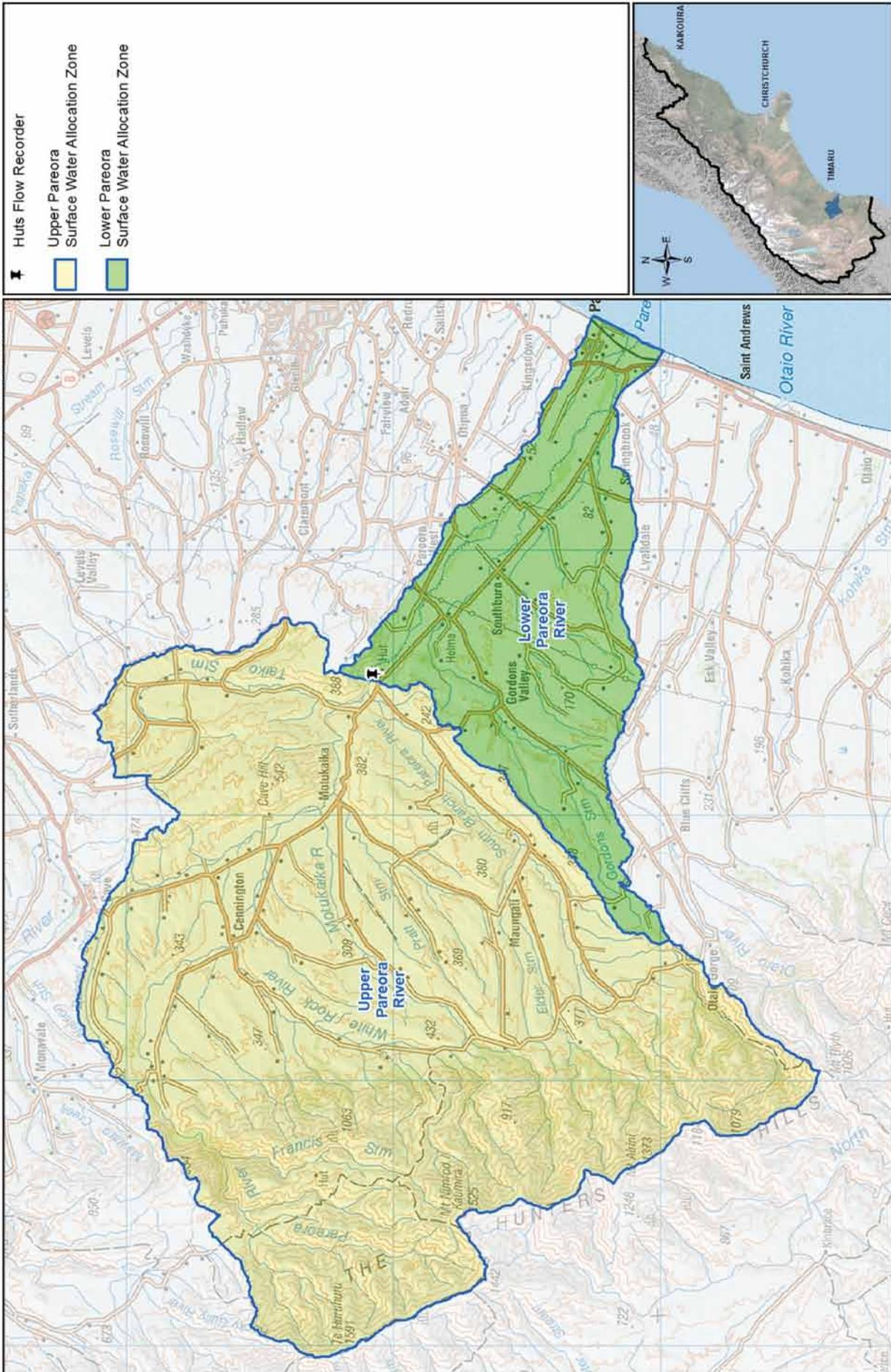
Groundwater	All water beneath the surface of the earth contained within the saturated zone (but excluding the water chemically combined in minerals).
Groundwater allocation zone	The zone as shown in Appendix 2.
Hydraulically connected groundwater	A groundwater take which has a stream depletion effect on a surface water body. Hydraulically connected groundwater takes are to be defined and managed using the relevant provisions of the Canterbury Natural Resources Regional Plan, and such takes must comply with the environmental flow and allocation regime set out in Table 1 where applicable.
Instream Values	Are non-consumptive values associated with a water body and include aquatic ecosystem values, natural character and landscape values, Ngāi Tahu values and amenity and recreational values.
Irrigation application efficiency	A measure of the amount of applied water that is stored in the crop root zone, as a proportion of the average depth of the water applied to the crop.
km	Kilometres.
km²	Square kilometres.
L/s	Litres per second.
m³	Cubic metres.
Mahinga kai	Food and other resources, the gathering of those resources and the areas that they are sourced from.
Mainstem	The main channel of water within the bed of the Pareora River or any other surface water body within the Pareora Catchment, including any part of the bed which could contain the main channel of water.
Mauri	Essential life force or principle; a metaphysical quality inherent in all things, both animate and inanimate.
Meat Processing Facility	The use of a site for the yarding and slaughtering of animals; the associated processing of meat including fish processing, stock finishing, by-product and co-product processing; rendering; fellmongery, tanning, casing and pelt processing; and the associated chilling, freezing, packaging and storage of meat and associated products; and the treatment and disposal of effluent from the above processes.
Minimum flow	The flow at which abstractions from a water body must cease other than for an individual's reasonable domestic needs, the reasonable domestic needs of individuals and animals for drinking water, and for fire fighting.
Minimum flow site	The location on the river of the flow recorder site maintained by Canterbury Regional Council at which the minimum flow is assessed.
Canterbury Natural Resources Regional Plan	Canterbury Natural Resources Regional Plan adopted by the Canterbury Regional Council on 28 March 2002 and publicly notified on 1 June 2002 for submissions, including Variation 1 to that plan, adopted by the Canterbury Regional Council on 27 May 2004 and publicly notified on 3 July 2004 for submissions.

Ngāi Tahu (Kai Tahu, when written in dialect form)	<p>The tribal group holding manawhenua in Te Waipounamu, the area from Kahuraki Point on the West Coast and Te Parinui-o-Whiti (Vernon Bluffs) on the east, and all places south “until the land turns white”.</p> <p>Ngāi Tahu and Ngāi Tahu whānui each means the collective of individuals who descend from the primary hapū of Waitaha, Ngati Mamoe, and Ngāi Tahu, namely Kati Kuri, Kati Irakehu, Kati Huirapa, Ngāi Tuahuriri, and Kai Te Ruahikihiki.</p>
Nohoanga	A customary food gathering or living area. Under the Ngāi Tahu Claims Settlement Act (1998) customary fishing reserves have been established with this same name.
Non-consumptive activity	An activity which does not reduce the quantity and quality of the water used.
Pareora River Catchment	That area shown in Appendix 1.
Property	Any contiguous area of land held in one, or more than one, ownership that is utilised as a single operating unit, and may include one or more titles.
Pumping test	A test made by pumping a well for a period of time and observing the change in water level or pressure in the aquifer. A pumping test may be used to determine the capacity of the well and the hydraulic characteristic of the aquifer.

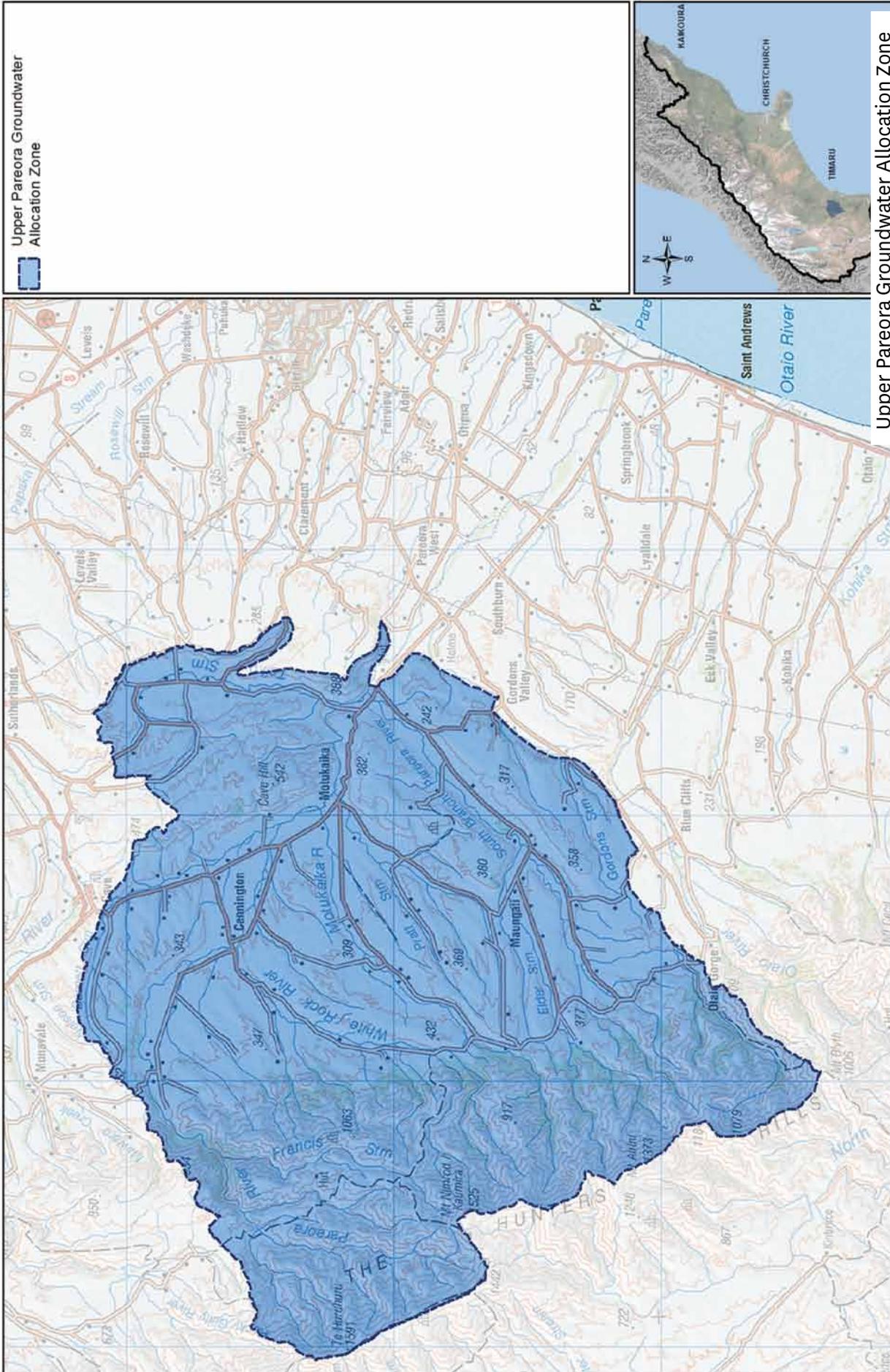
RMA	Resource Management Act 1991.
Seven-day mean annual low flow	Determined by adding the lowest seven day low flow for every year of record and dividing by the number of years of record (In any year the seven-day low flow is the lowest average flow sustained over seven consecutive days for every seven consecutive day period in the year).
Stream Depletion Effect	The calculated rate of impact of groundwater abstraction on surface water flow.
Surface water	Water that is found over the ground, generally in rivers, lakes, wetlands or artificial water courses.
Surface water allocation zone	The zones (Upper and Lower) as shown in Appendix 1.
Surface water body	Fresh water or geothermal water in a river, lake, stream, pond, wetland, or any part thereof.
Tāngata Whenua	The people of the land according to tribal and hapū custom.
Taonga	Treasured possessions, including both tangible and intangible treasures, for example, the Maori language.
Technical efficiency	Using a resource in a way that any given output is produced at least cost, including avoiding waste.

Appendix 1

Pareora Surface Water Allocation Zones



Appendix 2



Pareora Groundwater Allocation Zone

Upper Pareora Groundwater Allocation Zone

