

## 5 Water

### 5.1 Scope and Background

#### 5.1.1 Scope

This chapter addresses the management of fresh water in the Region. It covers:

- **Water Management Zones\* and Sub-zones\* and Values** - the establishment of *Water Management Zones\** and *Sub-zones\** and associated water management Values for each *Sub-zone\**, for the purpose of managing water quality, water quantity and activities in the beds of rivers and lakes.
- **Surface water quality** - the establishment of *water quality targets\** for rivers and lakes, in order to give effect to the Values, together with a policy regime of maintaining water quality in those *Water Management Sub-zones\** that meet their *water quality targets\**, and improving water quality over time in those *Water Management Sub-zones\** that do not.
- **Groundwater quality** - the maintenance of existing groundwater quality and its improvement where it is degraded.
- **Discharges and land use activities affecting water quality** - the management of discharges into surface water, discharges onto or into land, and diffuse run-off and other land use activities affecting surface water and groundwater quality.
- **Surface water quantity and allocation** - the establishment of minimum flows and allocation regimes for rivers, and the management of water takes and other activities affecting surface water quantity.
- **Groundwater quantity and allocation, and bores\*** - the establishment of *Groundwater Management Zones\**, identification of the respective allocable volumes and the active management of groundwater takes.
- **Beds of rivers and lakes** - the management of activities that disturb the beds of rivers and lakes, the management of existing and new structures in the beds of rivers and lakes, and the establishment of sustainable gravel extraction limits for rivers.
- **Land adjacent to the beds of rivers and lakes** - the management of some activities in relation to flood control or drainage purposes.

The effects of hill country erosion on water quality are addressed in Chapter 4. The ecological impacts of takes, diversions, discharges and drainage on *rare habitats\**, *threatened habitats\** and *at-risk habitats\** are addressed in Chapter 6.

#### 5.1.2 Overview

Water is critical for life to exist. People living in the Region enjoy a temperate climate, a large number of rivers, streams and lakes and an extensive groundwater system. The Region does not experience the severity of droughts that impact on some other parts of New Zealand and generally there is enough water to meet everyone's needs. People have grown up with an expectation of access to clean, safe water. But ready access means that water has not always been valued highly. The health of the surface water resource has steadily declined in most catchments as a result.



Despite this decline, there has been a revolution around water in the past few decades. In response to public concerns, significant improvements have been made to the quality of discharges from towns and industrial sites\*. For example, untreated sewage is no longer discharged directly into water bodies, and rivers no longer receive blood discharged from freezing works. Many former discharges to water, particularly discharges of dairy shed effluent, are now discharged to land. New large water takes, such as those associated with hydroelectric development, are carefully managed to ensure that the downstream needs of people and ecosystems are catered for. Although there have been substantial improvements in the quality of point source discharges to water, improvement is still possible and is necessary.

There has been a substantial intensification within the agricultural sector in recent years. This has contributed to a vibrant and booming regional economy but has also increased pressure on the Region’s water resources. There has been a significant increase in irrigation demand and the amount of nutrients leaching to surface water and groundwater. Although the impacts of agricultural intensification are less obvious than those caused by the major point source discharges and abstractions mentioned above, they have increased progressively over time.

As the Region has grown, we have significantly altered the physical nature of many of its water bodies and their beds with structures, drainage and flood protection works, particularly in the Manawatu Plains. These changes have led to a poor and declining state of physical health in the Region’s water bodies and their beds.

The impact of discharges and run-off on water quality and the increasing demand for water abstraction are two of the four most critical issues addressed in this Plan.

### 5.1.3 Water Quantity

The demand on surface water and groundwater resources is one of the most critical issues addressed in this Plan.

Water from the two main fresh water sources within the Region - surface water (rivers and lakes) and groundwater - is abstracted for a variety of uses, including drinking water supply, stock water supply, irrigation, electricity generation and industrial use.

The single largest user of water in the Region is the energy sector. Hydroelectric power generation takes are concentrated around Mount Ruapehu and on the Mangahao River. The amount of water used for power generation has not changed significantly in the past decade, although there is potential for more hydroelectricity generation in the future.

In contrast, with the exception of consented water supply abstraction from surface water, other uses have steadily increased over the past few decades in response to stock numbers increasing and the establishment of industrial plants. In recent years there has been a dramatic increase in water demand. From 1997 to 2009, consented groundwater takes almost doubled and consented surface water takes more than doubled (Table 5.1).

**Table 5.1** Change in Consented Water Abstraction Volumes from 1997 to 2009 (excluding hydroelectric power generation)

		1997 to 2009 Percentage Change in Consented Water Takes		
Source	Sector	1997 (m <sup>3</sup> /d)	2009 (m <sup>3</sup> /d)	Increase (%)
Groundwater	All Sectors	287,000	537,179	+85%



		1997 to 2009 Percentage Change in Consented Water Takes		
Source	Sector	1997 (m <sup>3</sup> /d)	2009 (m <sup>3</sup> /d)	Increase (%)
Surface water	Agriculture	70,668	385,579	+446%
	Industry	38,835	97,782	+152%
	Water supply	162,024	133,259	-18%
	<b>All Sectors</b>	<b>271,527</b>	<b>616,620</b>	<b>+127%</b>

The greater the amount of water taken from a water body, the greater the potential impact on instream life, recreational activities (including fishing, swimming and boating), cultural/spiritual values and the ability of the water body and its bed to assimilate waste\*. As important as the volume of water abstracted is the timing of abstraction. Rivers in the Region experience natural low flows during summer, which coincides with the period of greatest demand. The taking of water during higher flows generally has little impact, but even small takes during summer low flow conditions can have adverse effects. Measures which avoid those effects during the more critical summer low flow conditions should be encouraged. Maintaining natural flow variability is important for the habitat requirements of fish species, natural character and water quality. The ever-increasing demand on the Region's surface water resource means that it must be used efficiently, so that the amount of water allocated for abstraction is available to as many users as possible.

Groundwater monitoring indicates that groundwater levels are stable and research indicates that there is sufficient water for all users at a regional scale. A recent increase in large groundwater takes along the west coast has raised the potential for saltwater intrusion. This occurs when enough water is removed from an aquifer to allow seawater to migrate inland. Groundwater contaminated with saltwater is no longer suitable for irrigation or as stock water. Saltwater-contaminated groundwater will clear with time, but the timescale is measured in centuries.

The high density of bores\* in some areas has caused localised problems. These include:

- (a) impacts on other groundwater users. Allowing too many new users to access the groundwater resource will impact on the amount that is available to existing users and can affect the ability of existing bores\* to draw water.
- (b) impacts on groundwater-fed streams, lakes and wetlands. Many of the streams, lakes and wetlands along the west coast of the Region (eg., Lakes Papaitonga and Horowhenua) are dependent upon groundwater. Groundwater is particularly important during summer, as it may be the only source of inflow.

Bores\* are the main means of accessing groundwater resources. They provide the principal way of studying the subsurface environment by enabling sampling of subsurface geology, allowing direct measurement of groundwater levels and quality and allowing testing of aquifer yields. This Plan adopts the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock in its entirety for the management of bores\* (design, drilling, completion, development, testing, maintenance\*, cleaning/disinfection, record keeping and decommissioning).



#### 5.1.4

### Water Quality

There is significant variation in water quality across the Region. Rivers (including streams) emerging from the mountains or areas that have retained their original vegetation cover tend to have very good water quality. The one exception to this is the Whangaehu River, which flows from the crater lake on Mt Ruapehu. It is naturally acidic and contains high levels of sulphur and heavy metals.

As rivers flow towards the sea, they pick up sediment and nutrients from the surrounding land. As would be expected, water quality in the lower reaches of rivers and streams is poorer than in the headwaters.

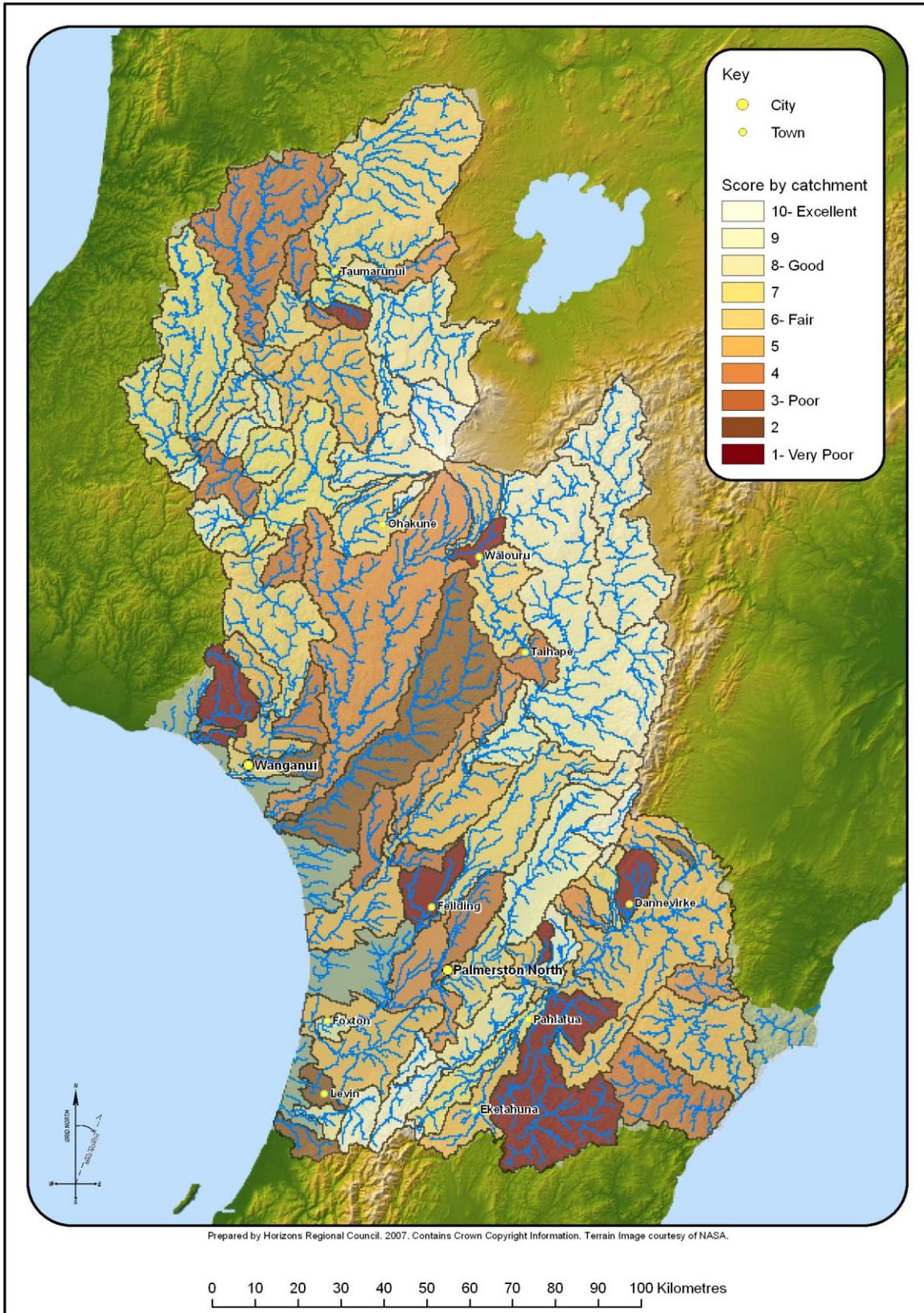
In the past, the biggest threats to water quality were municipal (eg., sewage), industrial (eg., meat works and fellmongers) and agricultural (eg., dairy shed effluent) discharges. Although considerable improvements have been made to discharges to water, further improvement is still possible and necessary.

The intensification in agriculture during the past 10 to 15 years has been especially marked in the dairy sector. Raising stock numbers increases the quantity of dairy shed effluent requiring disposal, the quantity of stock urine produced (a concentrated source of nutrients), and the opportunities for stock to access water bodies and their beds. The agricultural sector is recognising the impact it is having on the nation's water bodies and has started to act. The dairy sector was the first to respond, with the Dairying and Clean Streams Accord (an agreement between Fonterra, the Ministry for the Environment, Regional Councils and others on an approach to enhance water quality). Such voluntary approaches are one way of lowering nutrient and faecal levels in the Region's water bodies and the Regional Council supports them, although further improvements are needed. Further improvements will require a mix of regulatory and non-regulatory approaches that may alter over time.

Groundwater quality within the Region varies according to both depth and location. Generally, deeper groundwater is of higher quality. For example, shallow groundwater within the Horowhenua District near Levin has high concentrations of nitrates, which are believed to be the result of septic tank discharges and *fertiliser*\* use on market gardens. There have been no significant changes in groundwater quality over the length of the Regional Council's monitoring record (more than 15 years). There is no evidence that groundwater quality is deteriorating.

The overall state of fresh water quality in the Region is as follows:

- (a) The middle reaches of many rivers are unsafe to swim in because of bacterial contamination, or are unpleasant to swim in because of slime (periphyton) growth (Figure 5.1). Elevated nitrate and phosphate levels promote slime growth. The slime also impacts on fish and instream invertebrate communities.
- (b) The lower reaches of many rivers have high concentrations of bacteria, nitrates, phosphates and sediments, and these levels are increasing.
- (c) There is minimal contamination of surface water from heavy metals, hydrocarbons and other toxic substances.
- (d) The quality of groundwater in the Region is generally suitable for stock needs and irrigation, with a low sodium hazard and a low-medium salinity hazard.
- (e) Nitrate levels are high in shallow groundwater in parts of the Region, but the levels have not changed during the period of monitoring.
- (f) Groundwater is free of herbicides and pesticides.



**Figure 5.1** Suitability of water quality for contact recreation within the Region

### 5.1.5 Beds of Rivers and Lakes

People have always been attracted to rivers and lakes to live, work and play. Despite the economic, cultural, social and environmental importance of rivers and lakes, many of the rivers and lakes in the Region have been highly modified over the years. Works to control flooding and erosion, dams, and diversions for hydroelectricity generation can be large scale and have significant effects on the physical nature of the Region's rivers and lakes. Smaller-scale changes like river crossings and small dams can have negative cumulative impacts. Urban expansion often alters rivers. Utilisation of the Region's gravel resource provides an economic benefit and there may be flood protection benefits from having it removed from rivers. However, gravel extraction, when not managed well, can lead to increased flooding and erosion risk.

This modification has contributed to the economic growth and wellbeing of the Region, but it has also negatively altered the character and ecology of most rivers and lakes in the Region, impacting on cultural values attributed to them and leading to the loss or fragmentation of indigenous plant and animal populations.

## 5.2 Significant Resource Management Issues

### Issue 5-1: Water quality

The quality of many rivers and lakes in the Region has declined to the point that ecological values are compromised and contact recreation such as swimming is considered unsafe. The principal causes of this degradation are:

- (a) nutrient enrichment caused by run-off and leaching from agricultural land, discharges of treated wastewater, and septic tanks
- (b) high turbidity and sediment loads caused by land erosion, river channel erosion, run-off from agricultural land and discharges of stormwater
- (c) pathogens from agricultural run-off, urban run-off, discharges of sewage, direct stock access to water bodies and their beds and discharges of agricultural and industrial waste\*.

Shallow groundwater in areas of intensive land use in the Horowhenua and Tararua Districts has elevated nitrate levels in excess of the New Zealand drinking water standard. However, the quality of groundwater in the Region is generally suitable for stock needs and irrigation, and there has been no evidence of deteriorating groundwater quality during the past 15 years.

### Issue 5-2: Water quantity and allocation

The use of both surface water and groundwater has increased dramatically during the last decade. The demand for surface water in the Ohau, Oroua and parts of the upper Manawatu catchments already exceeds supply, and other catchments are experiencing marked increases. This increased demand has the potential to adversely affect both instream values and the natural character of rivers, wetlands and lakes, if not managed. The amount of groundwater is generally capable of meeting demand within the Region, although there is a need to actively manage effects between bores\* at a local level, the effects of groundwater takes on surface water, and to be vigilant about the risk of saltwater intrusion along the west coast.

### Issue 5-3: Beds of rivers and lakes

The demand for flood and erosion control to protect many types of land use has led to significant modification of the Region's rivers and lakes and their margins. Structures required to be located within the beds of rivers and lakes, including



bridges, culverts, water intake and discharge pipes and hydroelectricity structures, also affect the natural character of rivers and lakes and their margins. These types of uses and developments, in conjunction with gravel extraction, have modified, and continue to modify the physical characteristics and ecology of many of the Region's rivers and lakes.

## 5.3

### Objectives

#### Objective 5-1: *Water*<sup>^</sup> management Values

Surface *water bodies*<sup>^</sup> and their *beds*<sup>^</sup> are managed in a manner which safe guards their life supporting capacity and recognises and provides for the Values in Schedule B<sup>1</sup>.

#### *Whāinga 5-1: He ūara whakahaere wai*

*Ka āta whakahaeretia ngā mata wai me ngā papa o ērā kia whakamaru ai i te āheinga toko ora o ērā, ā, ka mōhiotia, ka pukumaharatia hoki ngā Uara kei roto i Pukapuka Āpiti B.*

#### Objective 5-2: *Water*<sup>^</sup> quality

- (a) Surface *water*<sup>^</sup> quality is managed to ensure that:
- (i) *water*<sup>^</sup> quality is maintained in those *rivers*<sup>^</sup> and *lakes*<sup>^</sup> where the existing *water*<sup>^</sup> quality is at a level sufficient to support the Values in Schedule B
  - (ii) *water*<sup>^</sup> quality is enhanced in those *rivers*<sup>^</sup> and *lakes*<sup>^</sup> where the existing *water*<sup>^</sup> quality is not at a level sufficient to support the Values in Schedule B
  - (iii) accelerated eutrophication and sedimentation of *lakes*<sup>^</sup> in the Region is prevented or minimised
  - (iv) the special values of *rivers*<sup>^</sup> protected by *water conservation orders*<sup>^</sup> are maintained.
- (b) Groundwater quality is managed to ensure that existing groundwater quality is maintained or where it is degraded/over allocated as a result of human activity, groundwater quality is enhanced.

#### *Whāinga 5-2: Te kounga o te wai*

- (a) *Ka whakahaeretia te kounga o te mata wai kia hua ai:*
- (i) *ka tiakina te kounga o te wai kei roto i ngā awa me ngā roto he kaha tonu te kounga o te wai hei hāpai i ngā Uara kei roto i Pukapuka Āpiti B*
  - (ii) *ka whakapaingia te kounga o te wai kei roto i ngā awa me ngā roto kāore i te kaha te kounga o te wai hei hāpai i ngā Uara kei roto i Pukapuka Āpiti B*
  - (iii) *ka āraia, ka whakaitingia rānei te tere parahanga ā-matū whakamōmona, te parakiwai hoki o ngā roto o te Rohe, ā,*
  - (iv) *ka tiakina ngā uara motuhake o ngā awa e whakamarumarutia e ngā whakahau whakauka wai, arā, ko ngā water conservation orders.*
- (b) *Ka whakahaeretia te kounga o te waiopapa kia hua ai ka tiakina tonutia te kounga o te waiopapa kei reira kē; ka whakarākaitia rānei te kounga o te*

<sup>1</sup> Schedule B is not a component of Part I - the Regional Policy Statement. It is a component of Part II - the Regional Plan.

*waiopapa, ka whakaparungia rānei, ka tuhenetia te tuaritanga rānei nā te mahi a te tangata.*

### **Objective 5-3: Water<sup>^</sup> quantity and allocation**

Water<sup>^</sup> quantity is managed to enable people, industry and agriculture to take and use water<sup>^</sup> to meet their reasonable needs while ensuring that:

- (a) For surface water<sup>^</sup>:
- (i) minimum flows and allocation regimes are set for the purpose of maintaining or enhancing (where degraded) the existing life-supporting capacity of rivers<sup>^</sup> and their beds<sup>^</sup> and providing for the other Values in Schedule B as appropriate
  - (ii) takes and flow regimes for existing hydroelectricity are provided for before setting minimum flow and allocation regimes for other uses
  - (iii) in times of water<sup>^</sup> shortage, takes are restricted to those that are essential to the health or safety of people and communities, or drinking water<sup>^</sup> for animals, and other takes are ceased
  - (iv) the amount of water<sup>^</sup> taken from lakes<sup>^</sup> does not compromise their existing life-supporting capacity
  - (v) the requirements of water conservation orders<sup>^</sup> are upheld
  - (vi) the instream geomorphological components of natural character are provided for.

For the avoidance of doubt this list is not hierarchical.

- (b) For groundwater:
- (i) takes do not cause a significant adverse effect<sup>^</sup> on the long-term groundwater yield
  - (ii) groundwater takes that are hydrologically connected to rivers<sup>^</sup>, are managed within the minimum flow and allocation regimes established for rivers<sup>^</sup>
  - (iii) groundwater takes that are hydrologically connected to lakes<sup>^</sup> or wetlands<sup>^</sup> are managed to protect the life-supporting capacity of the lakes<sup>^</sup> or wetlands<sup>^</sup>
  - (iv) the significant adverse effects<sup>^</sup> of a groundwater take on other groundwater and surface water<sup>^</sup> takes are avoided
  - (v) saltwater intrusion into coastal aquifers, induced by groundwater takes, is avoided.
- (c) In all cases, water<sup>^</sup> is used efficiently.

### **Whāinga 5-3: Te nui o te wai me tōna tūaritanga**

*Ka whakahaeretia te wai kia āhei ai te tangata, ngā ahumahi, me te hunga ahuwhenua te tango me te whakamahi i te wai hei whakatutuki i ō rātou hiahia, kia hua ai hoki:*

- (a) Mō te mata wai:
- (i) *ka whakatauria ngā rerenga iti me ngā tikanga whakahaere tuaritanga hei tiaki rānei, hei whakarākai ake rānei i te oranga tonutanga o ngā awa me ngā papa o ērā (mehemea kua paru) hei taunaki hoki i ngā Uara e tika ana kei roto i Pukapuka Āpiti B*
  - (ii) *ko ngā tikanga tango, tikanga rere hoki mō te hikowai kua pukumaharatia i mua i te whakatau i ngā rerenga iti me ngā tikanga whakahaere tuaritanga mō whakamahinga kē atu anō*



- (iii) *i ngā wā kōpaka wai, ka whakatīkina te tango wai hāunga rā hei tiaki i te hauora, te haumarū rānei o te tangata, ngā hapori, hei wai inu mō ētahi kararehe rānei, ā, ka katia rawatia te tango mō take kē atu*
  - (iv) *e kore e waimeha te oranga tonutanga mā te tango wai i ngā roto*
  - (v) *ka hāpaitia ngā whakaritenga o ngā tauākī whakauka wai me ngā pānui ā-takiwā mō te whakauka wai, arā, ko ngā Water Conservation Orders*
  - (vi) *ko ngā wāhanga tinipapa roto-wai o te āhua māori ka pukumaharatia.*
- Hei papare i te rangirua, ehara tēnei i te rārangi aroākapa.*
- (b) *Mō te waiopapa:*
    - (i) *e kore te tango wai e pā kaha atu ki te huanga roa o te waiopapa*
    - (ii) *ka whakahaeretia te tango waiopapa e pā ana ki ngā awa i runga i ngā tikanga whakahaere rerenga wai iti, tūaritanga hoki kua whakaritea*
    - (iii) *ka whakahaeretia te tango waiopapa e pā ana ki ngā roto, ngā papa waiwai rānei hei whakamarumarū i te oranga tonutanga o ngā roto, ngā papa waiwai rānei*
    - (iv) *ka pareā ngā pānga kino o te tango waiopapa ki te mahi tango i waiopapa kē, tango mata wai rānei*
    - (v) *ka pareā te urunga o te waitai, nā te tango waiopapa, ki roto i ngā kahupapa takutai moana, ā.*
  - (c) *I ngā wā katoa ka whakamahia te wai i runga i te tikanga whakamau.*

#### **Objective 5-4: Beds<sup>^</sup> of rivers<sup>^</sup> and lakes<sup>^</sup>**

*The beds<sup>^</sup> of rivers<sup>^</sup> and lakes<sup>^</sup> will be managed in a manner which:*

- (a) *sustains their life supporting capacity*
- (b) *provides for the instream morphological components of natural character*
- (c) *recognises and provides for the Schedule B Values*
- (d) *provides for infrastructure<sup>^</sup> and flood mitigation purposes.*

*The land<sup>^</sup> adjacent to the bed<sup>^</sup> of reaches with a Schedule B Value of Flood Control and Drainage will be managed in a manner which provides for flood mitigation purposes.*

#### **Whāinga 5-4: Ngā papa awa me ngā papa roto**

*Ka whakahaeretia ngā papa awa me ngā papa roto ka:*

- (a) *whakauka tonu i te oranga tonutanga o ērā*
- (b) *pukumahara mō ngā wāhanga tinipapa roto-wai ka whai āhuatanga māori*
- (c) *āhukahuka, ka pukumahara hoki mō ngā Ūaratanga o Pukapuka Āpiti B*
- (d) *pukumahara mō te kaupapa kei raro me ngā koronga whakamāmā waipuke.*

*Ko te whenua ka āpiti atu ki te papa o ngā toronga me te Ūaratanga Whakahaere Waipuke, Rerenga hoki o te Pukapuka Āpiti B ka whakahaeretia kia pukumahara ai mō ngā koronga whakamāmā waipuke.*

## 5.4 Policies

### 5.4.1 Water Management Framework

#### Policy 5-1: *Water Management Zones\** and Values

For the purposes of managing *water*<sup>^</sup> quality, *water*<sup>^</sup> quantity, and activities in the *beds*<sup>^</sup> of *rivers*<sup>^</sup> and *lakes*<sup>^</sup>, the catchments in the Region have been divided into *Water Management Zones\** and *Water Management Sub-zones\** in Schedule A.<sup>2</sup> Groundwater has been divided into *Groundwater Management Zones\** in Schedule D.<sup>3</sup>

The *rivers*<sup>^</sup> and *lakes*<sup>^</sup> and their *beds*<sup>^</sup> must be managed in a manner which safeguards their life supporting capacity and recognises and provides for the Schedule B Values when decisions are made on avoiding, remedying or mitigating the adverse *effects*<sup>^</sup> of activities or in relation to any other function under the Resource Management Act 1991 exercised by the Regional Council or Territorial Authorities. The individual Values and their associated management objectives are set out in the Schedule B Surface *Water*<sup>^</sup> Management Values Key and repeated in Table 5.2.

**Table 5.2** Surface *Water*<sup>^</sup> Management Values and Management Objectives

Value Group	Individual Values		Management Objective
Ecosystem Values	NS	Natural State	The <i>river</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> are maintained in their natural state
	LSC	Life-supporting Capacity	The <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> support healthy aquatic life / ecosystems
	SOS-A	Sites of Significance – Aquatic	Sites of significance for indigenous aquatic biodiversity are maintained or enhanced
	SOS-R	Sites of Significance – Riparian	Sites of significance for indigenous riparian biodiversity are maintained or enhanced
	IS	Inanga Spawning	The <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> sustain healthy inanga spawning and egg development
	WM	<i>Whitebait</i> <sup>*</sup> Migration	The <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> are maintained or enhanced to provide safe passage of inwardly migrating juvenile native fish known collectively as <i>whitebait</i> <sup>*</sup>
Recreational and Cultural Values	CR	Contact Recreation	The <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> are suitable for contact recreation
	AM	Amenity	The amenity values of the <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> (and its margins where in public ownership) are maintained or enhanced
	MAU	<i>Mauri</i> <sup>*</sup>	The <i>mauri</i> <sup>*</sup> of the <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> is maintained or enhanced
	SOS-C	Sites of Significance - Cultural	Sites of significance for cultural values are maintained

<sup>2</sup> Schedule A is not a component of Part I - the Regional Policy Statement. It is a component of Part II - the Regional Plan.

<sup>3</sup> Schedule D is not a component of Part I - the Regional Policy Statement. It is a component of Part II - the Regional Plan.



Value Group	Individual Values		Management Objective
	TF	Trout Fishery	The <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> sustain healthy rainbow or brown trout fisheries
	TS	Trout Spawning	The <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> meet the requirements of rainbow and brown trout spawning and larval and fry development
	AE	Aesthetics	The aesthetic values of the <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> are maintained or enhanced
<b>Water<sup>^</sup> Use</b>	WS	<i>Water<sup>^</sup> Supply</i>	The <i>water<sup>^</sup></i> is suitable, after treatment, as a drinking <i>water<sup>^</sup></i> source for human consumption
	IA	Industrial Abstraction	The <i>water<sup>^</sup></i> is suitable as a <i>water<sup>^</sup></i> source for industrial abstraction or use, including for hydroelectricity generation <sup>+</sup>
	I	Irrigation	The <i>water<sup>^</sup></i> is suitable as a <i>water<sup>^</sup></i> source for irrigation
	SW	Stockwater	The <i>water<sup>^</sup></i> is suitable as a supply of drinking <i>water<sup>^</sup></i> for livestock
	DFS	<i>Domestic Food Supply</i> <sup>*</sup>	The <i>water<sup>^</sup></i> is suitable for domestic food production
<b>Social/ Economic Values</b>	CAP	Capacity to Assimilate Pollution	The capacity of a <i>water body</i> <sup>^</sup> and its <i>bed</i> <sup>^</sup> to assimilate pollution is not exceeded
	FC/D	Flood Control and Drainage	The integrity of existing flood and <i>river</i> <sup>^</sup> bank erosion protection <i>structures</i> <sup>^</sup> and existing drainage <i>structures</i> <sup>^</sup> is not compromised and the risks associated with flooding and erosion are managed sustainably
	EI	Existing <i>Infrastructure</i> <sup>^</sup>	The integrity of existing <i>infrastructure</i> <sup>^</sup> is not compromised

<sup>+</sup> *Water Management Zones*<sup>\*</sup> and *Water Management Sub-zones*<sup>\*</sup> throughout the Region (and particularly those with good head and flow available) may have potential for hydroelectricity generation. Further *site*<sup>\*</sup>-specific assessment will be needed to establish the locations where such potential may be realised while having regard to the Schedule B Values of the relevant *water bodies*<sup>^</sup> and their *beds*<sup>^</sup>.

## 5.4.2 Water Quality

### 5.4.2.1 Surface Water Quality

#### **Policy 5-2: *Water quality targets*<sup>\*</sup>**

In Schedule E<sup>4</sup>, *water quality targets*<sup>\*</sup> relating to the Schedule B Values (repeated in Table 5.2) are identified for each *Water Management Sub-Zone*<sup>\*</sup>. Other than where they are incorporated into *permitted activity*<sup>^</sup> rules as *conditions*<sup>^</sup> to be met, the *water quality targets*<sup>\*</sup> in Schedule E must be used to inform the management of surface *water*<sup>^</sup> quality in the manner set out in Policies 5-3, 5-4 and 5-5.

<sup>4</sup> Schedule E is not a component of Part I - the Regional Policy Statement. It is a component of Part II - the Regional Plan.

**Policy 5-3: Ongoing compliance where *water quality targets\** are met**

- (a) Where the existing *water*<sup>^</sup> quality meets the relevant Schedule E *water quality targets\** within a *Water Management Sub-zone\**, *water*<sup>^</sup> quality must be managed in a manner which ensures that the *water quality targets\** continue to be met beyond the zone of reasonable mixing (where mixing is applicable).
- (b) For the avoidance of doubt:
  - (i) in circumstances where the existing *water*<sup>^</sup> quality of a *Water Management Sub-zone\** meets all of the *water quality targets\** for the *Sub-zone\** (a) applies to every *water quality target\** for the *Sub-zone\**
  - (ii) in circumstances where the existing *water*<sup>^</sup> quality of a *Water Management Sub-zone\** meets some of the *water quality targets\** for the *Sub-zone\** (a) applies only to those *water quality targets\** that are met
  - (iii) for the purpose of (a) reasonable mixing is only applicable to a *discharge*<sup>^</sup> from an identifiable location.

**Policy 5-4: Enhancement where *water quality targets\** are not met**

- (a) Where the existing *water*<sup>^</sup> quality does not meet the relevant Schedule E *water quality targets\** within a *Water Management Sub-zone\**, *water*<sup>^</sup> quality within that sub-zone must be managed in a manner that enhances existing *water*<sup>^</sup> quality in order to meet:
  - (i) the *water quality target\** for the *Water Management Zone\** in Schedule E, and/or
  - (ii) the relevant Schedule B Values and management objectives that the *water quality target\** is designed to safeguard.
- (b) For the avoidance of doubt:
  - (i) in circumstances where the existing *water*<sup>^</sup> quality of a *Water Management Sub-zone\** does not meet all of the *water quality targets\** for the *Sub-zone\**, (a) applies to every *water quality target\** for the *Sub-zone*
  - (ii) in circumstances where the existing *water*<sup>^</sup> quality of a *Water Management Sub-zone\** does not meet some of the *water quality targets\** for the *Sub-zone\**, (a) applies only to those *water quality targets\** not met.

**Policy 5-5: Management of *water*<sup>^</sup> quality in areas where existing *water*<sup>^</sup> quality is unknown**

- (a) Where there is insufficient data to enable a comparison of the existing *water*<sup>^</sup> quality with the relevant Schedule E *water quality targets\**, *water*<sup>^</sup> quality within the *Water Management Sub-Zone*<sup>^</sup> must be managed in a manner which, beyond the zone of reasonable mixing (where reasonable mixing is applicable):
  - (i) maintains or enhances the existing *water*<sup>^</sup> quality
  - (ii) has regard to the likely effect of the activity on the relevant Schedule B Values that the *water quality target\** is designed to safeguard
  - (iii) has regard to relevant information about the existing *water*<sup>^</sup> quality in upstream or downstream *Water Management Sub-zones\**, where such information exists.



- (b) For the avoidance of doubt:
  - (i) in circumstances where there is insufficient data to enable a comparison of the existing *water*<sup>^</sup> quality with all of the *water quality targets*<sup>\*</sup> for a *Water Management Sub-zone*<sup>\*</sup> (a) applies to every *water quality target*<sup>\*</sup> for the *Sub-zone*<sup>\*</sup>
  - (ii) in circumstances where there is insufficient data to enable a comparison of the existing *water*<sup>^</sup> quality with some of the *water quality targets*<sup>\*</sup> for a *Water Management Sub-zone*<sup>\*</sup> (a) applies only to those *water quality targets*<sup>\*</sup> with insufficient data
  - (iii) for the purpose of (a) reasonable mixing is only applicable to a *discharge*<sup>^</sup> from an identifiable location.

#### 5.4.2.2

### Groundwater Quality

#### Policy 5-6: Maintenance of groundwater quality

- (a) *Discharges*<sup>^</sup> and *land*<sup>^</sup> use activities must be managed in a manner which maintains the existing groundwater quality, or where groundwater quality is degraded/over allocated as a result of human activity, it is enhanced.
- (b) An exception may be made under (a) where a *discharge*<sup>^</sup> onto or into *land*<sup>^</sup> better meets the purpose of the RMA than a *discharge*<sup>^</sup> to *water*<sup>^</sup>, provided that the best practicable *option*<sup>^</sup> is adopted for the treatment and *discharge*<sup>^</sup> system.
- (c) Groundwater takes in the vicinity of the coast must be managed in a manner which avoids saltwater intrusion.

#### 5.4.2.3

### *Discharges*<sup>^</sup> and *Land*<sup>^</sup> use Activities Affecting *Water*<sup>^</sup> Quality

#### Policy 5-7: *Land*<sup>^</sup> use activities affecting groundwater and surface *water*<sup>^</sup> quality

The management of *land*<sup>^</sup> use activities affecting groundwater and surface *water*<sup>^</sup> must give effect to the strategy for surface *water*<sup>^</sup> quality set out in Policies 5-2, 5-3, 5-4 and 5-5, and the strategy for groundwater quality in Policy 5-6, by managing diffuse *discharges*<sup>^</sup> of contaminants in the following manner:

- (a) identifying in the regional plan targeted *Water Management Sub-zones*<sup>\*</sup>. Targeted *Water Management Sub-zones*<sup>\*</sup> are those subzones where, collectively, *land*<sup>^</sup> use activities are significant contributors to elevated contaminant levels in groundwater or surface *water*<sup>^</sup>
- (b) identifying in the regional plan intensive farming *land*<sup>^</sup> use activities. Intensive farming *land*<sup>^</sup> use activities are rural *land*<sup>^</sup> use activities that (either individually or collectively) make a significant contribution to elevated contaminant levels in the targeted *Water Management Sub-zones*<sup>\*</sup> identified in (a) above
- (c) actively managing the intensive farming *land*<sup>^</sup> use activities identified in (b) including through regulation in the regional plan, in the manner specified in Policy 5-8

- (d) the Regional Council must continue to monitor ground and surface *water*<sup>^</sup> quality in *Water Management Sub-zones*<sup>\*</sup> not identified in (a) and rural *land*<sup>^</sup> uses not identified in (b). Where monitoring shows the thresholds in (a) and (b) are met then the regional plan must be amended so that those further *Water Management Sub-zones*<sup>\*</sup> and rural *land*<sup>^</sup> uses are included in the management regime set out in (c).

**Policy 5-8: Regulation of intensive farming *land*<sup>^</sup> use activities affecting groundwater and surface *water*<sup>^</sup> quality**

(a) **Nutrients**

- (i) Nitrogen leaching maximums must be established in the regional plan which:
- (A) take into account all the non-point sources of nitrogen in the catchment
  - (B) will achieve the strategies for surface *water*<sup>^</sup> quality set out in Policies 5-2, 5-3, 5-4 and 5-5, and the strategy for groundwater quality in Policy 5-6
  - (C) recognise the productive capability of *land*<sup>^</sup> in the *Water Management Sub-zone*<sup>\*</sup>
  - (D) are achievable on most farms using good management practices
  - (E) provide for appropriate timeframes for achievement where large changes to management practices or high levels of investment are required to achieve the nitrogen leaching maximums.
- (ii) Existing intensive farming *land*<sup>^</sup> use activities must be regulated in targeted *Water Management Sub-zones*<sup>\*</sup> to achieve the nitrogen leaching maximums specified in (i).
- (iii) New intensive farming *land*<sup>^</sup> use activities must be regulated throughout the Region to achieve the nitrogen leaching maximums specified in (i).

(b) **Faecal contamination**

- (i) Those persons carrying out existing intensive farming *land*<sup>^</sup> use activities in the targeted *Water Management Sub-zones*<sup>\*</sup> listed in Table 14.1 or new conversions to intensive farming *land*<sup>^</sup> use activities anywhere in the Region must be required, amongst other things, to:
- (A) prevent cattle access to some surface *water bodies*<sup>^</sup> and their *beds*<sup>^</sup>
  - (B) mitigate faecal contamination of surface *water*<sup>^</sup> from other entry points (eg., race run-off)
  - (C) establish programmes for implementing any required changes.

(c) **Sediment**

- (i) In those *Water Management Sub-zones*<sup>\*</sup> where agricultural *land*<sup>^</sup> use activities are the predominant cause of elevated sediment levels in surface *water*<sup>^</sup>, the Regional Council will promote the preparation of voluntary management plans under the Council's Sustainable Land Use Initiative or Whanganui Catchment Strategy for the purpose of reducing the risk of *accelerated erosion*<sup>\*</sup>, as described in Chapter 4.



### Policy 5-9: Point source *discharges*<sup>^</sup> to *water*<sup>^</sup>

The management of point source *discharges*<sup>^</sup> into surface *water*<sup>^</sup> must have regard to the strategies for surface *water*<sup>^</sup> quality management set out in Policies 5-3, 5-4 and 5-5, while having regard to:

- (a) the degree to which the activity will adversely affect the Schedule B Values for the relevant *Water Management Sub-zone*<sup>\*</sup>
- (b) whether the *discharge*<sup>^</sup>, in combination with other *discharges*<sup>^</sup>, including non-point source *discharges*<sup>^</sup> will cause the Schedule E *water quality targets*<sup>\*</sup> to be breached
- (c) the extent to which the activity is consistent with *contaminant*<sup>t</sup> treatment and *discharge*<sup>^</sup> best management practices
- (d) the need to allow reasonable time to achieve any required improvements to the quality of the *discharge*<sup>^</sup>
- (e) whether the *discharge*<sup>^</sup> is of a temporary nature or is associated with necessary *maintenance*<sup>^</sup> or *upgrade*<sup>\*</sup> work and the *discharge*<sup>^</sup> cannot practicably be avoided
- (f) whether adverse *effects*<sup>^</sup> resulting from the *discharge*<sup>^</sup> can be offset by way of a financial contribution set in accordance with Chapter 19
- (g) whether it is appropriate to adopt the *best practicable option*<sup>^</sup>.

### Policy 5-10: Point source *discharges*<sup>^</sup> to *land*<sup>^</sup>

*Discharges*<sup>^</sup> of *contaminants*<sup>^</sup> onto or into *land*<sup>^</sup> must be managed in a manner which:

- (a) does not result in pathogens or other toxic substances accumulating in soil or pasture to levels that would render the soil unsafe for agricultural, domestic or recreational use
- (b) has regard to the strategies for surface *water*<sup>^</sup> quality management set out in Policies 5-3, 5-4 and 5-5, and the strategy for groundwater management set out in Policy 5-6
- (c) maximises the reuse of nutrients and *water*<sup>^</sup> contained in the *discharge*<sup>^</sup> to the extent reasonably practicable
- (d) results in any *discharge*<sup>^</sup> of liquid to *land*<sup>^</sup> generally not exceeding the available *water*<sup>^</sup> storage capacity of the soil (deferred irrigation)
- (e) ensures that adverse *effects*<sup>^</sup> on *rare habitats*<sup>\*</sup>, *threatened habitats*<sup>\*</sup> and *at-risk habitats*<sup>\*</sup> are avoided, remedied or mitigated.

### Policy 5-11: Human sewage *discharges*<sup>^</sup>

Notwithstanding other policies in this chapter:

- (a) before entering a surface *water body*<sup>^</sup> all new *discharges*<sup>^</sup> of treated human sewage must:
  - (i) be applied onto or into *land*<sup>^</sup>, or
  - (ii) flow overland, or
  - (iii) pass through an alternative system that mitigates the adverse *effects*<sup>^</sup> on the *mauri*<sup>\*</sup> of the receiving *water body*<sup>^</sup>, and
- (b) all existing direct *discharges*<sup>^</sup> of treated human sewage into a surface *water body*<sup>^</sup> must change to a treatment system described under (a) by

the year 2020 or on renewal of an existing consent, whichever is the earlier date.

### 5.4.3 Water Quantity and Allocation

#### 5.4.3.1 Policies applying to both Surface Water and Groundwater

##### Policy 5-12: Reasonable and justifiable need for *water*<sup>^</sup>

Subject to Policy 5-18, the amount of *water*<sup>^</sup> taken by resource users must be reasonable and justifiable for the intended use. In addition, the following specific measures for ensuring reasonable and justifiable use of *water*<sup>^</sup> must be taken into account when considering consent applications to take *water*<sup>^</sup> for irrigation, *public water supply*<sup>\*</sup>, animal drinking *water*<sup>^</sup>, dairy shed washdown or industrial use, and during reviews of consent *conditions*<sup>^</sup> for these activities.

- (a) For irrigation, *resource consent*<sup>^</sup> applications must be required to meet a reasonable use test in relation to the maximum daily rate of abstraction, the irrigation return period and the seasonal or annual volume of the proposed take. When making decisions on the reasonableness of the rate and volume of take sought, the Regional Council must:
  - (i) consider *land*<sup>^</sup> use, crop *water*<sup>^</sup> use requirements, on-site physical factors such as soil *water*<sup>^</sup>-holding capacity, and climatic factors such as rainfall variability and potential evapo-transpiration
  - (ii) assess applications either on the basis of an irrigation application efficiency of 80% (even if the actual system being used has a lower application efficiency), or on the basis of a higher efficiency where an application is for an irrigation system with a higher efficiency
  - (iii) link actual irrigation use to soil moisture measurements or daily soil moisture budgets in consent *conditions*<sup>^</sup>.
- (b) For domestic use, animal drinking *water*<sup>^</sup> and dairy shed washdown *water*<sup>^</sup>, reasonable needs must be calculated as:
  - (i) up to 300 litres per person per day for domestic needs
  - (ii) up to 70 litres per animal per day for drinking *water*<sup>^</sup>
  - (iii) up to 70 litres per animal per day for dairy shed washdown.
- (c) For industrial uses, *water*<sup>^</sup> allocation must be calculated where possible in accordance with best management practices for *water*<sup>^</sup> efficiency for that particular industry.
- (d) For *public water supplies*<sup>\*</sup>, the following must generally be considered to be reasonable:
  - (i) an allocation of 300 litres per person per day for domestic needs, plus
  - (ii) an allocation for commercial use equal to 20% of the total allocation for domestic needs, plus
  - (iii) an allocation for industrial use calculated, where possible, in accordance with best management practices for *water*<sup>^</sup> efficiency for that particular industry, plus
  - (iv) an allocation necessary for hospitals, other facilities providing medical treatment, marae, schools or other education facilities, New Zealand Defence Force facilities or correction facilities, plus
  - (v) an allocation necessary for public amenity and recreational facilities such as gardens, parks, sports fields and swimming pools, plus



- (vi) an allocation necessary to cater for the reasonable needs of animals or agricultural uses that are supplied by the *public water supply*<sup>\*</sup> system, plus
  - (vii) an allocation necessary to cater for growth, where urban growth of the municipality is provided for in an operative *district plan*<sup>^</sup> for the area and is reasonably forecast, plus
  - (viii) an allocation for leakage equal to 15% of the total of (i) to (vii) above.
- (e) When making decisions on consent applications where the existing allocation for a *public water supply*<sup>\*</sup> exceeds the allocation determined in accordance with (d)(i) to (d)(vi) above:
- (i) consideration must be given to imposing a timeframe within which it is reasonably practicable for the existing allocation to be reduced to the determined amount, or
  - (ii) if (i) is not imposed, an alternative allocation must be determined based on the particular social and economic circumstances of the community serviced by the *public water supply*<sup>\*</sup> and the actual and potential *effects*<sup>^</sup> of the abstraction on the relevant Schedule B Values for the reach of *river*<sup>^</sup> or its *bed*<sup>^</sup> affected by the take.

#### **Policy 5-13: Efficient use of water<sup>^</sup>**

*Water*<sup>^</sup> must be used efficiently, including by the following measures:

- (a) requiring *water*<sup>^</sup> audits and *water*<sup>^</sup> budgets to check for leakages and *water*<sup>^</sup>-use efficiency as appropriate
- (b) requiring the use of, or progressive *upgrade*<sup>\*</sup> to, *infrastructure*<sup>^</sup> for *water*<sup>^</sup> distribution that minimises the loss of *water*<sup>^</sup> and restricts the use of *water*<sup>^</sup> to the amounts determined in accordance with Policy 5-12
- (c) enabling the transfer of *water permits*<sup>^</sup>
- (d) promoting *water*<sup>^</sup> storage
- (e) raising awareness about *water*<sup>^</sup> efficiency issues and techniques
- (f) requiring monitoring of *water*<sup>^</sup> takes, including by installing *water*<sup>^</sup> metering and telemetry.

### **5.4.3.2**

#### **Policies for Surface Water**

#### **Policy 5-14: Overall approach for surface *water*<sup>^</sup> allocation**

- (a) The requirements of *water conservation orders*<sup>^</sup> must be given effect under this Plan.
- (b) Takes and flow regimes lawfully established for hydroelectricity generation as at 31 May 2007 must be provided for prior to implementing (c) and (d) below.
- (c) Core allocations of surface *water*<sup>^</sup> from *rivers*<sup>^</sup> must be determined in accordance with Policies 5-15 and 5-16. Takes that comply with the relevant core allocation, when assessed in combination with all other takes, must be allowed.
- (d) Supplementary allocations of surface *water*<sup>^</sup> from *rivers*<sup>^</sup> must be determined in accordance with Policy 5-17.

- (e) Takes from *rivers*<sup>^</sup> must be apportioned, restricted or suspended when *river*<sup>^</sup> flows are at or below their minimum flows in accordance with the provisions of Policy 5-18.
- (f) Takes of *water*<sup>^</sup> from *lakes*<sup>^</sup> must comply with Policy 5-19.

#### **Policy 5-15: Core allocations and minimum flows**

- (a) The taking of *water*<sup>^</sup> from *rivers*<sup>^</sup> must be managed in accordance with the minimum flows and cumulative core allocations set out in Schedule C.
- (b) The minimum flows and cumulative core allocations set out in Schedule C must be set after providing for any takes and flow regimes lawfully established for hydroelectricity generation as at 31 May 2007.

#### **Policy 5-16: Approach to setting minimum flows and core allocations**

- (a) Where good hydrological information, such as a specific *water*<sup>^</sup> resource study or a long-term flow record, is available it must be used to set minimum flows and core allocations in Schedule C.
- (b) Where information described in (a) above is not available, the minimum flows and core allocations set out in Schedule C must generally be a minimum flow equal to the estimated or calculated one-day mean annual low flow, and a core allocation equal to a percentage of the minimum as specified in Schedule C.
- (c) The setting of a revised minimum flow or core allocation that is an alternative to that set in Schedule C must occur through a plan change process.

#### **Policy 5-17: Supplementary *water*<sup>^</sup> allocation**

In addition to the core allocations set out in Policy 5-15, a supplementary allocation from *rivers*<sup>^</sup> may be provided:

- (a) in circumstances where *water*<sup>^</sup> is only taken when the *river*<sup>^</sup> flow is greater than the median flow, and the total amount of *water*<sup>^</sup> taken by way of a supplementary allocation does not exceed 10% of the actual flow in the *river*<sup>^</sup> at the time of abstraction, and
- (b) in circumstances where it can be shown that the supplementary allocation will not:
  - (i) increase the frequency or duration of minimum flows
  - (ii) lead to a significant departure from the natural flow regime, including the magnitude of the median flow and the frequency of flushing flows
  - (iii) cause any adverse *effects*<sup>^</sup> that are more than minor on the Schedule B Values of the *water body*<sup>^</sup> or its *bed*<sup>^</sup>
  - (iv) limit the ability of anyone to take *water*<sup>^</sup> under a core allocation
  - (v) derogate from *water*<sup>^</sup> allocated to hydroelectricity generation.

#### **Policy 5-18: Apportioning, restricting and suspending takes in times of minimum flow**

When a *river*<sup>^</sup> is at or below its minimum flow, takes from it must be managed in the following manner:

- (a) **Permitted takes** - Takes that are permitted by this Plan (surface *water*<sup>^</sup> and groundwater takes) or are for fire-fighting purposes must be allowed to continue regardless of *river*<sup>^</sup> flow.



- (b) **Existing hydroelectricity generation takes** - must be allowed to continue subject only to any minimum flow restrictions specified in their consent *conditions*<sup>^</sup>.
- (c) **Supplementary takes** - must cease at a flow specified in their consent *conditions*<sup>^</sup> and that cessation flow must be higher than the Schedule C minimum flow such that the requirements of Policy 5-17(b)(i) are met.
- (d) **Essential takes** - The following core *water*<sup>^</sup> allocation takes are deemed essential and must be managed in the manner described:
- (i) takes greater than permitted by this Plan (and therefore subject to *resource consent*<sup>^</sup>) that are required for reasonable domestic needs, reasonable needs of animals for drinking *water*<sup>^</sup>, and reasonable dairy shed washdown *water*<sup>^</sup> must be allowed to continue regardless of *river*<sup>^</sup> flow, but must not exceed:
    - (A) up to 250 litres per person per day for domestic needs
    - (B) up to 70 litres per animal per day for drinking *water*<sup>^</sup>
    - (C) up to 70 litres per animal per day for dairy shed washdown
  - (ii) takes required to meet the reasonable needs of hospitals, other facilities providing medical treatment, marae, schools or other education facilities, New Zealand Defence Force facilities or correction facilities must be allowed to continue regardless of *river*<sup>^</sup> flow, but must be required to minimise the amount of *water*<sup>^</sup> taken to the extent reasonably practicable
  - (iii) takes which were lawfully established at the time of Plan notification (31 May 2007) required for industries which, if their take were to cease, would significantly compromise a community's ability to provide for its social, economic or cultural wellbeing or for its health or safety (including the hygienic production and processing of perishable food), must be allowed to continue regardless of *river*<sup>^</sup> flow, but must be required to minimise the amount of *water*<sup>^</sup> taken to the extent reasonably practicable
  - (iv) *public water supply*<sup>\*</sup> takes must be restricted to a total public *water*<sup>^</sup> consumption calculated as follows:
    - (A) an allocation of 250 litres per person per day for domestic needs, plus
    - (B) an allocation for commercial use equal to 20% of the total allocation for domestic needs, plus
    - (C) an allocation which meets the reasonable needs of those facilities and industries listed under (d)(ii) and (d)(iii) where such facilities and industries are connected to the *public water supply*<sup>\*</sup> system, plus
    - (D) any allocation necessary to cater for the reasonable needs of animals that are supplied by the *public water supply*<sup>\*</sup> system, plus
    - (E) an allocation for leakage equal to 15% of the total of (A) to (D) above.
- (e) **Non-essential takes** - Other core *water*<sup>^</sup> allocation takes, including irrigation takes but excluding the essential takes described under (d), must be managed in the following manner:
- (i) *water*<sup>^</sup> takes must be required to cease when the *river*<sup>^</sup> is at or below its minimum flow, as set out in Policy 5-15
  - (ii) *water*<sup>^</sup> takes must be allowed to recommence once the *river*<sup>^</sup> flow has risen above its minimum flow.

- (f) **Meaning of “core water<sup>^</sup> allocation take”** - For the purposes of this policy, a core water<sup>^</sup> allocation take means a take that has been granted consent in accordance with a core allocation made under Policy 5-15, or in accordance with a previous core allocation regime.

#### **Policy 5-19: Surface water<sup>^</sup> allocation - lakes<sup>^</sup>**

Decisions on *resource consent<sup>^</sup>* applications to take water<sup>^</sup> from a lake<sup>^</sup> must ensure that there are no significant adverse *effects<sup>^</sup>* on the Schedule B Values of the lake<sup>^</sup> and have regard to the policies for indigenous *biological diversity<sup>^</sup>* in Chapter 13.

### **5.4.3.3**

#### **Policies for Bores\* and Groundwater**

##### **Policy 5-20: Overall approach for bore\* management and groundwater allocation**

- (a) New bores\* must be constructed and managed in accordance with Policy 16-4.
- (b) *Groundwater Management Zones\** are mapped in Schedule D.
- (c) Total groundwater allocations must comply with the annual allocable volumes for *Groundwater Management Zones\** set out in Policy 5-21.
- (d) The measured or modelled *effects<sup>^</sup>* of a proposed groundwater take on other groundwater users, surface water bodies<sup>^</sup> and saltwater intrusion must be managed in accordance with Policies 16-1, 16-5, 16-6 and 16-7.

##### **Policy 5-21: Groundwater Management Zones**

The total amount of consented groundwater allocated from each *Groundwater Management Zone\** mapped in Schedule D must not exceed the annual allocable volume for the *GWMZ\** specified in Schedule D.

### **5.4.4**

#### **Beds of Rivers and Lakes**

##### **Policy 5-22: General management of the beds<sup>^</sup> of rivers<sup>^</sup> and lakes<sup>^</sup>**

Activities in, on, under or over the beds<sup>^</sup> of rivers<sup>^</sup> and lakes<sup>^</sup> must generally be managed in a manner which:

- (a) recognises and provides for the Schedule B Values for the *Water Management Sub-zone(s)\** in which the activity takes place, in the manner described in Policies 5-23, 5-24 and 5-25
- (b) avoids any significant reduction in the ability of a river<sup>^</sup> and its bed<sup>^</sup> to convey flood flows, or significant impedance to the passage of floating debris
- (c) avoids, remedies or mitigates any significant adverse *effects<sup>^</sup>* on the stability and function of the beds<sup>^</sup> of rivers<sup>^</sup> and lakes<sup>^</sup>, and existing *structures<sup>^</sup>* including flood and erosion control *structures<sup>^</sup>*
- (d) avoids, remedies or mitigates any significant reduction in the habitat diversity, including the morphological diversity, of the river<sup>^</sup> or lake<sup>^</sup> or its bed<sup>^</sup>
- (e) manages *effects<sup>^</sup>* on natural character and public access in accordance with the relevant policies in Chapter 6. Natural character can include the



natural style and dynamic processes of the *river*<sup>^</sup>, such as *bed*<sup>^</sup> style and width and the quality and quantity of *bed*<sup>^</sup> habitat

- (f) provides for the safe passage of fish both upstream and downstream
- (g) ensures that the existing nature and extent of navigation of the *river*<sup>^</sup> or *lake*<sup>^</sup> are not obstructed
- (h) ensures that access required for the *operation*<sup>\*</sup>, *maintenance*<sup>\*</sup>, and *upgrade*<sup>\*</sup> of *infrastructure*<sup>^</sup> and other physical resources of regional or national importance is not obstructed
- (i) provides for continued public access in accordance with Policy 6-10.

**Policy 5-23: Activities in *sites*<sup>\*</sup> with a Value of Natural State, Sites of Significance - Cultural, or Sites of Significance - Aquatic**

In *sites*<sup>\*</sup> with a Schedule B Value of Natural State, Sites of Significance - Cultural or Sites of Significance - Aquatic, activities in, on, under or over the *beds*<sup>^</sup> of *rivers*<sup>^</sup> and *lakes*<sup>^</sup> must be managed in a manner which:

- (a) avoids adverse *effects*<sup>^</sup> on these Values in the first instance, or
- (b) for *infrastructure*<sup>^</sup> and other resources of regional and national importance, or activities that result in an environmental benefit, remedies or mitigates those *effects*<sup>^</sup> where it is not practicable to avoid them, and
- (c) maintains the habitat and spawning requirements of the species identified.

**Policy 5-24: Activities in *rivers*<sup>^</sup> or *lakes*<sup>^</sup> and their *beds*<sup>^</sup> with a Value of Flood Control and Drainage**

In reaches of *rivers*<sup>^</sup> or *lakes*<sup>^</sup> and their *beds*<sup>^</sup> with a Schedule B Value of Flood Control and Drainage, activities in, on, under or over the *beds*<sup>^</sup> of *rivers*<sup>^</sup> and *lakes*<sup>^</sup> and on *land*<sup>^</sup> adjacent to the *bed*<sup>^</sup> where the Value is located must be managed in a manner which:

- (a) enables the degree of flood hazard and erosion protection existing at the time of Plan notification (31 May 2007) to be maintained or enhanced
- (b) addresses adverse effects by:
  - (i) in the first instance, avoiding, remedying or mitigating adverse *effects*<sup>^</sup> on the instream morphological components of natural character and other Schedule B Values
  - (ii) providing consent applicants with the option of making an offset
  - (iii) allowing compensation by way of a financial contribution in accordance with the policies in Chapter 19.

**Policy 5-25: Activities in *rivers*<sup>^</sup> or *lakes*<sup>^</sup> and their *beds*<sup>^</sup> with other Schedule B Values**

In *sites*<sup>\*</sup> with Schedule B Values other than Natural State, Sites of Significance - Cultural, Sites of Significance - Aquatic, or Flood Control and Drainage, activities in, on, under or over the *beds*<sup>^</sup> of *rivers*<sup>^</sup> and *lakes*<sup>^</sup> must be managed in a manner which:

- (a) in the first instance avoids, remedies or mitigates significant adverse *effects*<sup>^</sup> on the instream morphological components of natural character and Schedule B Values
- (b) provides consent applicants with the option of making an offset

- (c) allows compensation by way of a financial contribution in accordance with the policies in Chapter 19.

### Policy 5-26: Essential and beneficial activities

Activities in, on, under or over the *beds*^ of *rivers*^ and *lakes*^ that are essential or result in an environmental benefit must generally be allowed, including:

- (a) the use, *maintenance*\* and *upgrading*\* of existing *infrastructure*^ and other existing physical resources of regional or national importance
- (b) works designed to maintain or improve the stability and functionality of existing *structures*^
- (c) the removal of derelict, unlawful or non-functional *structures*^
- (d) the restoration or enhancement of natural habitats.

### Policy 5-27: Gravel extraction

Subject to Policies 5-22 to 5-26 and the need to ensure that gravel extraction volumes are sustainable, the benefit the gravel resource provides for use and development and the flood protection benefit of having it managed will be recognised.

## 5.5

### Methods

The taking of surface water and groundwater, discharging contaminants to surface water and to land, and the undertaking of activities that disturb the beds of rivers or lakes, are largely regulated activities. Part II: Regional Plan contains rules relating to the activities described in this chapter. The key non-regulatory methods the Regional Council will pursue are outlined below.

Method 5-1	Large Water Abstractors
<b>Description</b>	<p>The aim of this method is to provide assistance to large water abstractors to identify options for improving the water abstraction, distribution and use components of their activities. It is expected this method will reduce the abstraction pressure on the groundwater and surface water resources, while providing abstractors with financial benefits and their business/customers with greater certainty of supply.</p> <p>The emphasis will be on working with large abstractors to identify and implement opportunities for increasing water use efficiency, reducing distribution network leakages, agreeing priority of use within distribution networks, and consideration of alternative water supply and storage options.</p>
<b>Who</b>	The Regional Council, Territorial Authorities, industry (including hydroelectricity generators) and large irrigators will work together to develop, fund and implement this programme.
<b>Links to Policy</b>	This method implements Policies 5-12 and 5-13.
<b>Target</b>	All major abstractors in the Region have been contacted and assistance provided where requested by 2016.



Method 5-2	Sewage Treatment Plant Upgrades
<b>Description</b>	The aim of this method is to assist Territorial Authorities to seek central Government funding for sewage treatment plant upgrades, given that the plants make a significant contribution to contaminants to water bodies during low flows. The Regional Council will work with Territorial Authorities to analyse their treatment and disposal options and to develop a package to present to Government with the aim of securing capital works funding to reduce the environmental impact of these discharges.
<b>Who</b>	Regional Council, Territorial Authorities, Ministry of Health, local health agencies (eg., MidCentral Health) and iwi authorities.
<b>Links to Policy</b>	This method implements Policies 5-2, 5-6, 5-9 and 5-11.
<b>Targets</b>	Central Government funding applications completed for upgrade of sewage treatment plants as required.

Method 5-3	On-site Wastewater System Forum
<b>Description</b>	<p>The aim of this method is to facilitate implementation of the Regional Council's Manual for On-Site Wastewater Systems Design and Management.</p> <p>The Regional Council will establish a forum to aid understanding and implementation of the manual and will undertake regular reviews of new types of on-site treatment and disposal systems.</p>
<b>Who</b>	The forum will comprise, as a minimum, representatives from the Regional Council, Territorial Authorities, consulting engineers and system installers.
<b>Links to Policy</b>	This method implements Policies 5-2, 5-6 and 5-10.
<b>Target</b>	Two meetings per year.

Method 5-4	Human Sewage Discharges to Water
<b>Description</b>	<p>The Regional Council will provide assistance to Territorial Authorities to upgrade existing sewage treatment systems that directly discharge treated human sewage to the Region's water bodies.</p> <p>The Regional Council to work with Territorial Authorities to reduce water volume, explore land application options and assist with funding opportunities.</p>
<b>Who</b>	Regional Council, Territorial Authorities and iwi authorities.
<b>Links to Policy</b>	This method implements Policies 5-2 and 5-11.
<b>Target</b>	To stop direct human sewage discharges to water by 2020.



<b>Method 5-5</b>	<b>Stormwater System Discharge Upgrades</b>
<b>Description</b>	<p>The Regional Council will provide assistance to Territorial Authorities wanting to upgrade the treatment of their existing urban stormwater system discharges, where these are into water bodies.</p> <p>The Regional Council to work with Territorial Authorities to reduce water volume, explore land disposal options and assist with funding opportunities.</p>
<b>Who</b>	Regional Council, Territorial Authorities and iwi authorities.
<b>Links to Policy</b>	This method implements Policies 5-2, 5-6, 5-9 and 5-10.
<b>Target</b>	To reduce the number, and improve the quality, of urban stormwater discharges by 2016.

<b>Method 5-6</b>	<b>Lake Horowhenua and Other Coastal Lakes</b>
<b>Description</b>	<p>The Regional Council and other agencies will work with all agencies to protect and enhance Lake Horowhenua and other coastal lakes.</p> <p>Landowners and other agencies will be provided with advice and project management assistance to carry out enhancement and protection measures including fencing, planting, sediment control, wastewater/stormwater management and fertiliser application management. The Regional Council will seek funding from third parties to assist with this method.</p> <p>The effectiveness of the protection and enhancement works in achieving improved water quality within Lake Horowhenua and other Coastal Lakes will be monitored.</p> <p>The method will include publicity to increase public awareness about the importance of the lakes. The method will include utilising industry codes of practice as a means of enhancing and protecting water quality eg., the Code of Practice for Commercial Vegetable Growing in the Horizons Region.</p>
<b>Who</b>	Regional Council, Territorial Authorities, Fish & Game New Zealand, Department of Conservation, iwi, Horticulture NZ, landowners and other agencies.
<b>Links to Policy</b>	This method implements Policy 5-7.
<b>Target</b>	The Lake is actively managed, including protection and enhancement measures, within 5 years of this Plan becoming operative.

<b>Method 5-7</b>	<b>Lake Quality Research, Monitoring and Reporting</b>
<b>Description</b>	The aim of this method is to develop an integrated research, monitoring and reporting programme. The focus will be to define the current state of the quality of the Region's lakes, particularly the Region's coastal lakes. The method will seek to assess the state and quality of the lakes to better understand the influences on water



Method 5-7	Lake Quality Research, Monitoring and Reporting
	quality in those lakes. The outcomes will link into work to refine existing policies, objectives and methods in terms of the need to add rural land uses and <i>Water Management Sub-zones*</i> in managing nutrient management and effects on water quality. The outcomes will also guide implementation planning and allow implementation effectiveness is to be assessed.
<b>Who</b>	Regional Council, Department of Conservation, Fish & Game New Zealand, Horticulture New Zealand, DairyLink, research institutes, universities, non-Government agencies, community groups and iwi authorities as required.
<b>Links to Policy</b>	This method implements Policies 5-3, 5-4, 5-7 and 5-8.
<b>Targets</b>	A research, monitoring and reporting programme that defines the current state of water quality of the Region's lakes (particularly coastal lakes) and measure changes in water quality.

Method 5-8	Trout and Native Fish Spawning Habitat
<b>Description</b>	<p>The Regional Council and other agencies will work with landowners to protect and enhance water bodies and their beds that serve as spawning <i>sites*</i> for brown and rainbow trout and native fish. Resources will be directed towards the most significant <i>sites*</i>.</p> <p>Landowners will be provided with advice and financial/project management assistance to carry out enhancement and protection measures including fencing, planting, providing fish passage and pest plant and pest animal control. The Regional Council will seek funding from third parties to assist with this method.</p> <p>The effectiveness of the protection and enhancement works will be monitored.</p> <p>The method will include publicity to increase public awareness about the importance of trout and native fish.</p>
<b>Who</b>	Regional Council, Territorial Authorities, Fish & Game New Zealand, Department of Conservation, landowners and funding agencies including He Tini Awa Trust.
<b>Links to Policy</b>	This method implements Policies 5-2, 5-22 and 5-25.
<b>Target</b>	30 of the top trout spawning habitat <i>sites*</i> and native fish habitat spawning <i>sites*</i> are actively managed, including protection and enhancement measures, within 10 years of this Plan becoming operative.



Method 5-9	Water Quality Improvement
<p><b>Description</b></p>	<p>The Regional Council and other agencies will work with landowners to protect and enhance the water quality of the Region's water bodies. Landowners in those <i>Water Management Sub-zones*</i> where the nutrient management (non-point source discharge) control rules are to be introduced will receive the highest priority for assistance. This method represents an expansion of the Regional Council's existing water quality improvement programme, which focuses almost entirely on dairy farmers as part of the Dairying and Clean Streams Regional Action Plan for Manawatu-Wanganui Region.</p> <p>Landowners will be provided with advice and financial/project management assistance to carry out enhancement and protection measures including fencing and planting of riparian margins. The Regional Council will seek funding from third parties to assist with this method.</p> <p>The effectiveness of the protection and enhancement works will be monitored.</p>
<p><b>Who</b></p>	<p>Regional Council, Dairy NZ, Fonterra, Horticulture NZ, Territorial Authorities and funding agencies including the He Tini Awa Trust and Nga Whenua Rahui.</p>
<p><b>Links to Policy</b></p>	<p>This method implements Policies 5-2, 5-4 and 5-8.</p>
<p><b>Targets</b></p>	<ul style="list-style-type: none"> <li>• The targets of the Dairying and Clean Streams Regional Action Plan for Manawatu-Wanganui Region are achieved by the due dates.</li> <li>• Advice and assistance is offered to all landowners affected by the nutrient management rules.</li> <li>• All landowner requests for advice and assistance regarding water quality improvement are responded to promptly.</li> </ul>

Method 5-10	Education in Schools - Water
<p><b>Description</b></p>	<p>The aim of this method is to raise awareness amongst the youth of the Region of the significance of the water (quantity and quality) resource, the threats to it, and what they can do to protect/restore it. This will be achieved through various environmental education programmes/initiatives - for example, Green RIG, Enviroschools and Trees for Survival.</p>
<p><b>Who</b></p>	<p>Regional Council, various national and local environmental education providers and the Youth Environment Forum.</p>
<p><b>Links to Policy</b></p>	<p>This method implements Policy 5-2.</p>
<p><b>Targets</b></p>	<p>The Regional Council develops and delivers a water-related environmental education programme.</p>



Method 5-11	Water (Fluvial Resources, Quality and Quantity) Research, Monitoring and Reporting
<b>Description</b>	The aim of this method is to develop an integrated research, monitoring and reporting programme. The focus will be to define the current state of the natural character of the Region's rivers by analysing their habitat and morphological diversity through assessments of historical and current data. This may include: planform/ channel morphology classification; fairway width; sinuosity; barforms; percentage of pool, riffle, run, habitat; gravel resources, level of entrenchment, and location and extent of riparian and wetland areas. The method will also seek to measure changes in natural character, including habitat and morphological diversity. The outcomes will link into monitoring undertaken by the River Works Environmental Code of Practice and support delivery and refinement of existing policies, objectives and methods. The outcomes will be reported in the Council State of the Environment Report and also guide implementation planning and allow implementation effectiveness to be assessed.
<b>Who</b>	Regional Council, Department of Conservation, Fish & Game New Zealand, research institutes, universities, non-Government agencies, community groups and iwi authorities as required.
<b>Links to Policy</b>	This method implements Policies 5-2, 5-14, 5-16, 5-22, 5-23, 5-24, 5-25, 5-26 and 6-8.
<b>Targets</b>	A research, monitoring and reporting programme that defines the current state of the natural character of the Region's rivers and measure changes in natural character, including habitat and morphological diversity.

## 5.6 Anticipated Environmental Results

Anticipated Environmental Result	Link to Policy	Indicator	Data Source
<p>During the life of this Plan, water quality and quantity maintain the Values set in this Plan.</p> <p>In <i>Water Management Sub-zones</i>*: <ul style="list-style-type: none"> <li>where <i>water quality targets</i>* are met prior to this Plan becoming operative, they continue to be met</li> <li>where <i>water quality targets</i>* are not met prior to this Plan becoming operative, they are either met or improved from the current state where targeted for action or, where not targeted for action, they are no worse than prior to this Plan becoming operative.</li> </ul> </p>	<p>Water Policies: 5-1, 5-2, 5-3, 5-4, 5-5, 5-8, 5-9, 5-10, 5-11, 5-12, 5-13, 5-14, 5-15, 5-17, 5-19, 5-22, 5-23, 5-24, 5-25 and 5-26</p> <p>Land Policies: 4-1, 4-2 and 4-3</p> <p>Living Heritage Policies: 6-1, 6-2, 6-3, 6-4 and 6-8</p>	<ul style="list-style-type: none"> <li>Measured water quality compared to <i>water quality targets</i>*, especially measures for "muddy waterways", "safe swimming", "safe food gathering", and "aquatic ecosystem health" in priority catchments</li> <li>Incidents where surface water quality is confirmed as unfit for use</li> <li>Measured flows of surface water compared to the allocation and minimum flow regime outlined in this Plan</li> </ul>	<ul style="list-style-type: none"> <li>The Regional Council's State of Environment water quality and quantity monitoring programme</li> <li>The Regional Council's incidents database</li> <li>Ministry of Health raw water monitoring</li> </ul>
By 2017, the natural, physical and cultural qualities of the beds of rivers are suitable for specified <i>Water</i>	Water Policies: 5-1, 5-22, 5-23, 5-24, 5-25 and	<ul style="list-style-type: none"> <li>Confirmed incidents of damage to the beds of rivers</li> <li>Consents granted for activities</li> </ul>	<ul style="list-style-type: none"> <li>The Regional Council's incidents database</li> </ul>



Anticipated Environmental Result	Link to Policy	Indicator	Data Source
<i>Management Sub-zone*</i> Values.	5-26	in beds of rivers and lakes	<ul style="list-style-type: none"> <li>The Regional Council's consents database</li> </ul>
The amount of groundwater used does not exceed replenishment rates and its quality is the same as or better than that measured prior to this Plan becoming operative, other than where discharges to land are a permitted activity or are allowed by resource consent.	Water Policies: 5-6, 5-10, 5-12, 5-13, 5-20 and 5-21	<ul style="list-style-type: none"> <li>Groundwater levels Region-wide, but with a focus on Opiki and Himatangi areas</li> <li>Groundwater quality Region-wide, but with a focus on nitrates in Horowhenua and Tararua districts and conductivity along the Foxton-Tangimoana coast</li> <li>Confirmed incidents where groundwater sources become unavailable (ie., dry up) or water quality is unfit for use</li> </ul>	<ul style="list-style-type: none"> <li>The Regional Council's State of Environment groundwater monitoring programme</li> <li>The Regional Council's compliance monitoring programme</li> <li>The Regional Council's incidents database</li> <li>Ministry of Health raw water monitoring</li> </ul>

## 5.7 Explanations and Principal Reasons

The Region has been divided into *Water Management Sub-zones\** for the purpose of managing water quality and quantity. Water bodies and their beds within these *Water Management Sub-zones\** have been assigned Values which represent the ecosystem, recreational, cultural and social and economic attributes of the water body and its bed (Objective 5-1, Policy 5-1). *Water quality targets\** have been assigned to protect these Values (Policies 5-2 to 5-5).

### Discharges to water and land

The water chapter deals with discharges to land and water holistically. This is because discharges to land have the potential to adversely affect groundwater and surface water quality if not managed well. Three types of discharges of concern have been identified: point source discharges to land (including *domestic wastewater\**), point source discharges to water (including industrial discharges and treated sewage) and non-point source discharges to land (from agricultural land uses). All these types of discharges will be managed to meet the objectives and policies for water quality (Objective 5-1, 5-2, Policies 5-2 - 5-5), including discharges to land (Policy 5-10).

Agricultural land uses contribute to water bodies not meeting the Region's *water quality targets\** for nutrients, faecal contamination and sediment levels. These need to be targeted for control in problem catchments and through the Regional Council's Sustainable Land Use Initiative (SLUI) and Whanganui Catchment Strategy and the regulation of intensive farming (Policy 5-8).

Point source discharges to water need to be managed to achieve *water quality targets\** (Policy 5-9). This may mean that it is appropriate to consider alternatives to discharging to water. This may include considering alternative treatment options for all or part of the year, to achieve or move closer to *water quality targets\** at critical times of the year. In all cases, point source discharges to water of untreated human sewage are culturally unacceptable, and direct discharges of



treated human sewage should be changed to involve land application before discharge (Policy 5-11).

### **Surface Water Quantity**

Water will be used and allocated in a way which enables water to be used for the wellbeing of people and the community, while providing for other Values (Objective 5-3, Policy 5-14). Water allocation limits are set for each *Water Management Sub-zone\** and water will be managed to maintain these limits (Policies 5-15 and 5-16). When water use needs to be restricted, life sustaining and essential water takes have first priority (Policy 5-18). Water harvesting and alternative sources of water to surface water are also encouraged and provided for (Policy 5-17). Efficiency of use is an important consideration, and will ensure that water is available to the maximum number of users and is not wasted (Policies 5-12 and 5-13).

### **Groundwater**

Groundwater quality and quantity is connected to that of surface water and this is recognised in this chapter, while providing for its management separately. *Bores\** will be managed to ensure that they are properly constructed, efficient and fully functioning and do not lead to contamination of groundwater, wastage of water or unnecessary effects on other *bores\** or surface water bodies (Policy 5-20). *Groundwater Management Zones\** have been established and sustainable allocations set; groundwater takes will be managed within these allocations (Policy 5-21). Groundwater quality within the Region is generally good and is not declining, but maintaining this good quality will be a consideration when managing discharges (Policy 5-10).

### **Beds of Rivers and Lakes**

The physical nature of the Region's rivers and lakes and their beds is important to maintaining the Values assigned to them. Management of activities in the beds of rivers and lakes will be undertaken in order to maintain these Values, and other important physical attributes (Objective 5-4, Policies 5-22 and 5-26). Some Values are treated differently. Important aquatic biodiversity *sites\**, cultural *sites\** and natural state areas would be negatively and potentially permanently harmed by some activities and consequently are given a high level of protection (Policy 5-23). Flood control and drainage schemes have damaged water Values in some areas, but also provide valuable protection services to the community. Maintaining this level of service is important, while ensuring that other Values are not further compromised (Policy 5-24). While recognising the Values, acknowledgement is also needed that some activities, such as river restoration, are beneficial and should be allowed to occur (Policy 5-26).

Gravel extraction is an important activity in river beds, both for the benefit the gravel resource provides and the flood protection benefit of having it removed from the river. However, if not well managed, too much extraction or extraction in an inappropriate manner can damage river Values. Gravel extraction needs to be managed to ensure that extraction volumes are sustainable (Policy 5-27).

