

6

Water

6.1 Scope and Background

6.1.1 Scope

This chapter addresses the management of freshwater in the Manawatu-Wanganui Region. It covers:

- **Water management zones and values** – the establishment of water management zones* and associated water management values for each zone, for the purpose of managing water quality, water quantity and activities in river and lake beds.
- **Surface water quality** – the establishment of water quality standards 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 zones* that meet their water quality standards, and improving water quality over time in those water management zones that do not.
- **Groundwater quality** – the maintenance of existing groundwater quality.
- **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 (GWMZ), identification of 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.

The effects of hillcountry erosion on water quality are addressed in Chapter 5. The ecological impacts of takes, diversions, discharges and drainage on rare and threatened habitats* and at-risk habitats* are addressed in Chapter 7.

6.1.2 Overview

Water is critical for life to exist. People living in the Manawatu-Wanganui 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 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,

raw sewage is no longer discharged directly into waterways, and rivers no longer run red from the 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, some 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 our 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 our Region has grown, we have significantly altered the physical nature of many of our waterways with structures, drainage and flood protection works, particularly in the Manawatu Plains. These changes have lead to a poor and declining state of physical health in our waterways.

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.

6.1.3

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 freshwater sources within the Region - surface water (rivers and lakes) and groundwater - is abstracted for a variety of uses, including drinking water supply, stock watering, 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.

In contrast, other uses have steadily increased over the past few decades in response to towns growing, stock numbers increasing, and the establishment of industrial plants. In recent years there has been a dramatic increase in water demand. From 1997 to 2004, consented groundwater takes almost doubled and consented surface water takes more than doubled (Table 6.1).

Table 6.1 Change in consented water abstraction volumes from 1997 to 2004, excluding hydroelectric power generation

| | | 1997 to 2004 percentage change in consented water takes | | |
|---------------|--------------|---|--------------------------|--------------|
| Source | Sector | 1997 (m ³ /d) | 2004 (m ³ /d) | Increase (%) |
| Groundwater | All Sectors | 287,000 | 425,000 | +45% |
| Surface water | Agriculture | 70,668 | 291,949 | +313% |
| | Industry | 38,835 | 56,003 | +44% |
| | Water supply | 162,024 | 219,088 | +34% |
| | All Sectors | 271,527 | 567,040 | +108% |

The greater the amount of water taken from a waterway, the greater the potential impact on in-stream life, recreational activities (fishing and swimming), cultural/spiritual values and the ability of the waterway to assimilate waste. Even more important than 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 winter generally has little impact, but even small takes during summer low flow conditions can have major impacts. The ever-increasing demand on our surface water resource means that we must manage it to ensure that the water taken is used efficiently, and is therefore 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. Seawater-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 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).

6.1.4

Water Quality

There is significant variation in water quality across the Region. Streams and rivers 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 that flows from the crater lake on Mt Ruapehu. It is naturally acidic and contains high levels of sulphur and heavy metals.

As waterways 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 (dairy shed effluent) discharges. Although considerable improvements have been made to discharges to water, further measures are possible.

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 waterways. The agricultural sector is recognising the impact it is having on the nation's waterways 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. However, the results of these voluntary approaches are not being seen as lower nutrient or faecal levels in the rivers and further improvements are needed.

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 freshwater quality in the Manawatu-Wanganui 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 6.1). Elevated nitrate and phosphate levels promote slime growth. The slime also impacts on fish and in-stream 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.

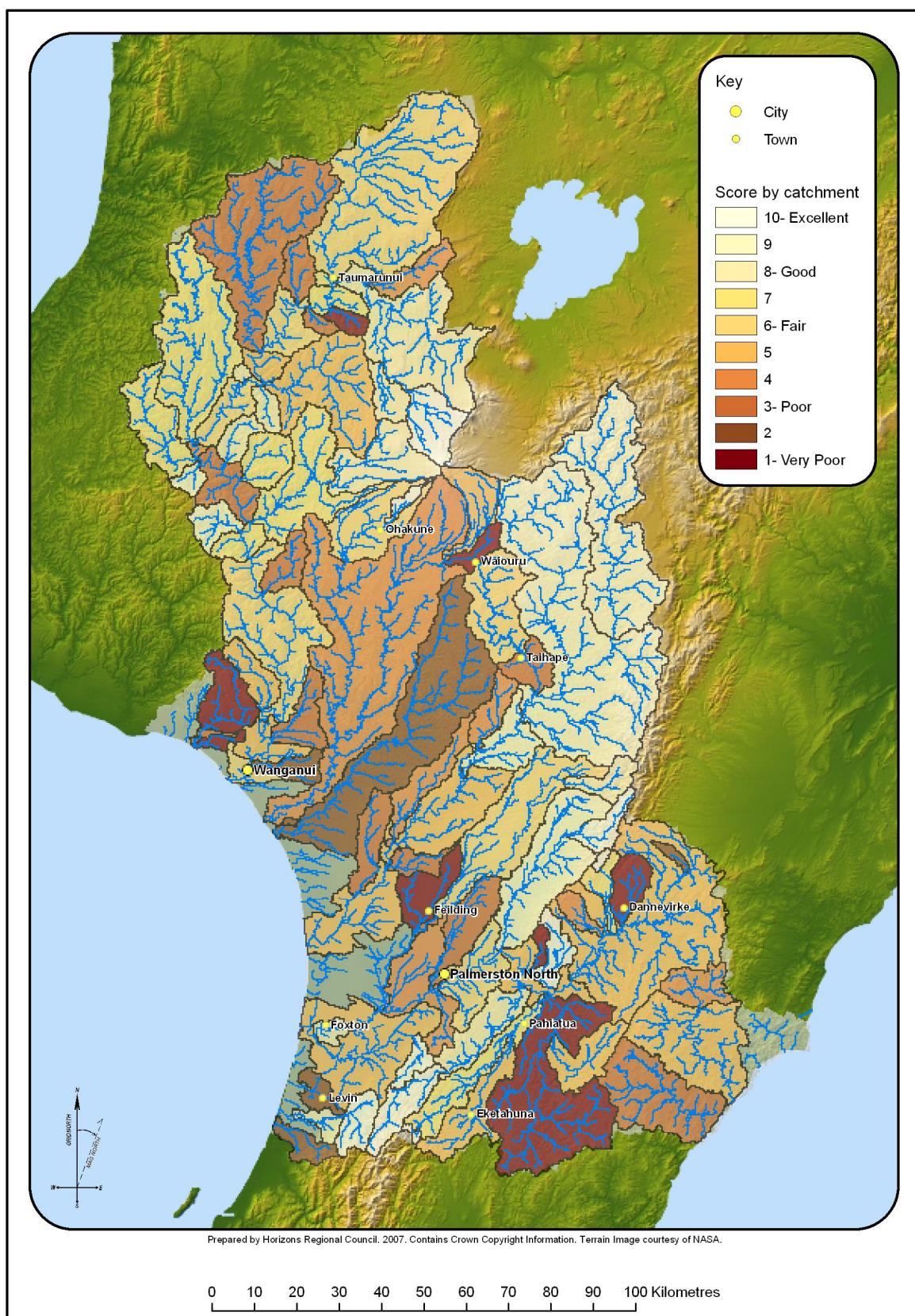


Figure 6.1 Suitability of water quality for contact recreation within the Region

6.1.5

River and Lake Beds

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 waterways 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 our waterways. Smaller-scale changes like river crossings and small dams can have negative cumulative impacts. Urban expansion often alters watercourses. Gravel extraction, when not managed well, can lead to increased flooding and erosion risk.

This modification has contributed to the economic growth and well-being of our Region, but it has also negatively altered the character and ecology of most waterways in the Region, impacting on cultural values attributed to waterways and leading to the loss or fragmentation of indigenous plant and animal populations.

6.2

Significant Resource Management Issues

Issue 6-1: Water quality

The quality of most 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 seepage 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 waterbodies and discharges of agricultural and industrial waste.

Shallow groundwater in areas of intensive rural subdivision and horticulture 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 6-2: 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. 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 and to be vigilant about the risk of saltwater intrusion along the west coast.

Issue 6-3: River and lake beds

The demand for flood and erosion control to protect many types of land use has led to significant modification of the Region's waterways. Structures required to locate within the beds of rivers and lakes, including bridges, culverts, water intake and discharge pipes and hydroelectricity structures, also affect the natural character of waterways. 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 waterways.

6.3

Objectives

Objective 6-1: Water management values

Surface waterbodies are managed in a manner which sustains their life-supporting capacity and recognises and provides for the values set out in Schedule D.

Whāinga 6-1: He ūara whakahaere wai

Ka āta whakahaeretia ngā mata wai i runga i te tikanga tauwhiro hei tiaki oranga, ā, ka whakamanatia, ka taunakitia hoki ngā Ūara kei roto i Schedule D.

Objective 6-2: Water quality

- (a) Surface water quality is managed to ensure that:
 - (i) water quality is maintained in those rivers where the existing water quality is sufficient to support the values of the river
 - (ii) water quality is enhanced in those rivers where the existing water quality is not sufficient to support the values of the river
 - (iii) accelerated eutrophication or sedimentation of lakes in the Region is prevented or minimised
 - (iv) the special values of rivers protected by water conservation orders and local water conservation notices are maintained.
- (b) Groundwater quality is managed to ensure that the existing groundwater quality is maintained.

Whāinga 6-2: 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 he kaha tonu te kounga o te wai hei hāpai i ngā ūara o te awa*
 - (ii) *ka whakapaingia te kounga o te wai kei roto i ngā awa kāore i te kaha te kounga o te wai hei hāpai i ngā ūara o te awa*
 - (iii) *ka āraia, ka whakaitingia rānei te tere parahanga ā-matū whakamōmona rānei, parataiaotanga rānei o ngā roto o te Rohe, ā*
 - (iv) *ka whakamarumarutia ngā ūara motuhake o ngā awa e ngā water conservation orders, ā, ka tiakina ngā local water conservation notices.*
- (b) *Ka whakahaeretia te kounga o te waiopapa kia hua ai ka tiakina te kounga o te waiopapa.*

Objective 6-3: Water quantity and allocation

Water is managed to enable people, industry and agriculture to take and use water to meet their reasonable needs while ensuring that:

- (a) For surface water:
 - (i) minimum flows and allocation regimes are set for the purpose of maintaining the existing life-supporting capacity of rivers and providing for other values of rivers as necessary



- (ii) in times of water shortage, takes are restricted to those that are essential to the health or safety of people, communities or stock, and other takes are ceased
 - (iii) the amount of water taken from lakes does not compromise their existing life-supporting capacity
 - (iv) the requirements of Water Conservation Orders and Local Water Conservation Notices are upheld.
- (b) For groundwater:
- (i) takes do not cause a significant effect on the long-term groundwater yield
 - (ii) groundwater takes that are hydrologically connected to rivers, lakes or wetlands are managed within the minimum flow and allocation regimes established for those waterbodies, or to protect their life-supporting capacity
 - (iii) the effects of a groundwater take on other groundwater takes are managed
 - (iv) saltwater intrusion into coastal aquifers, induced by groundwater takes, is avoided.
- (c) In all cases, water is used efficiently.

Whāinga 6-3: 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 āhua whakatutuki i ō rātou hiahia, kia hua hoki:

- (a) *Mō te mata wai:*
- (i) *ka whakatauria ngā rerenga iti me ngā tikanga whakahaere tūaritanga hei tiaki i te oranga tonutanga o ngā awa, hei taunaki hoki i ngā ūara o ngā awa e tika ana*
 - (ii) *i ngā wā kōpaka wai, ka whakatikina te tangohanga wai hāunga hei tiaki i te hauora, te haumaru rānei o te tangata, ngā hapori, kararehe pāmu rānei, ā, ka katia rawatia te tango mō take kē atu e kore e waimeha te oranga tonutanga mā te tango wai – ahakoa nui, iti rānei – i ngā roto, ā*
 - (iii) *ka hāpaitia ngā whakaritenga o ngā water conservation orders me ngā local water conservation notices.*
 - (iv) *ka hāpaitia ngā whakaritenga o ngā water conservation orders me ngā local water conservation notices.*
- (b) *Mō te waiopapa:*
- (i) *e kore te tangohanga wai e whakapā kaha i te huanga roa o te waiopapa*
 - (ii) *ka whakahaeretia ngā tangohanga waiopapa e pā ana ki ngā awa, roto, papa waiwai rānei i runga i ngā tikanga whakahaere rerenga wai iti, tūaritanga hoki kua whakaritea mō aua wai, hei whakamarumaru rānei i ō rātou oranga tonutanga*
 - (iii) *ka whakahaeretia ngā pānga o ngā tangohanga waiopapa ki tangohanga waiopapa kē, ā*
 - (iv) *ka pare a te urunga o te waitai, nā te tangohanga 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 6-4: River and lake beds

All significant values of river and lake beds are recognised and provided for, including enabling future use and development of river and lake beds, provided other values of the river or lake are not compromised.

Whāinga 6-4: Ngā awa me ngā papa roto

Ka whakamanatia, ka pukumaharatia hoki ngā ūara nui o ngā awa me ngā papa roto ehara tonu ko te whakamahi me te whakarerekē awa, papa roto hoki mea ake nei, me kī, ki te kore e waimeha ērā atu ūara o te awa, roto rānei.

6.4 Policies

6.4.1 Water Management Zones and Values

Policy 6-1: Water management zones and values

For the purposes of managing water quality, water quantity, and activities in the beds of rivers and lakes, the rivers and lakes in the Manawatu-Wanganui Region have been divided into the water management zones* shown in Schedule D. The rivers and lakes shall be managed in a manner which recognises and provides for the values identified in Schedule D for each water management zone*. The values and their associated purposes are set out in Table 6.2.

Table 6.2 Water Management Values and Purposes

| Value Group | Individual values | | | Management Objective |
|---------------------------|-------------------|----------------------------------|---|----------------------|
| Ecosystem | NS | Natural State | The waterbody is maintained in its natural state | |
| | LSC | Life-supporting Capacity | The waterbody supports healthy aquatic life/ecosystems | |
| | SOS-A | Sites of Significance - Aquatic | Sites of significance for native aquatic biodiversity are maintained or improved | |
| | SOS-R | Sites of Significance - Riparian | Sites of significance for native riparian biodiversity are maintained or improved | |
| | NFS | Native Fish Spawning | The waterbody sustains healthy native fish spawning and fry development | |
| Recreational and Cultural | CR | Contact Recreation | The waterbody is suitable for contact recreation | |
| | AM | Amenity | The amenity values of the waterbody and its margins are maintained or improved | |
| | NF | Native Fishery | The waterbody sustains populations of native fish that can be harvested in a sustainable manner | |
| | MAU | Mauri | The mauri of the waterbody is maintained or improved | |
| | SG | Shellfish Gathering | The waterbody is suitable for shellfish harvesting | |
| | SOS-C | Sites of Significance - Cultural | Sites of significance for cultural values are maintained | |
| | TF | Trout Fishery | The waterbody sustains healthy rainbow and/or brown trout fisheries | |
| | TS | Trout Spawning | The waterbody meets the requirements of rainbow and brown trout spawning and larval and fry development | |

| | | | |
|---------------------|-----|----------------------------------|--|
| | AE | Aesthetics | The aesthetic values of the waterbody and its margins are maintained or improved |
| Water Use | WS | Water Supply | The waterbody is suitable as a raw drinking water source for human consumption |
| | IA | Industrial Abstraction | The waterbody is suitable as a water source for industrial abstraction |
| | I | Irrigation | The waterbody is suitable as a water source for irrigation |
| | S | Stockwater | The waterbody is suitable as a supply of drinking water for livestock |
| Social/ Economic | CAP | Capacity to Assimilate Pollution | The capacity of a waterbody to assimilate pollution is not exceeded |
| | FC | Flood Control | The integrity of existing flood and riverbank erosion protection structures is not compromised |
| | D | Drainage | The integrity of existing drainage structures is not compromised |
| | EI | Existing Infrastructure | The integrity of existing infrastructure is not compromised |

6.4.2 Water Quality

6.4.2.1 Surface Water Quality

Policy 6-2: Water quality standards

Water quality standards relating to the values described in Policy 6-1 have been developed for each water management zone*, as shown in Schedule D. The water quality standards in Schedule D shall be used for the management of surface water quality in the manner set out in Policies 6-3, 6-4 and 6-5.

Policy 6-3: Ongoing compliance where water quality standards are met

- (a) In each case where the existing water quality meets the relevant water quality standard within a water management zone*, as shown in Schedule D, activities shall be managed in a manner which ensures that the water quality standard continues to be met.
- (b) For the avoidance of doubt, subsection (a) applies:
 - (i) in circumstances where the existing water quality of a water management zone* meets all of the water quality standards for the zone (in which case subsection (a) applies to every water quality standard for the zone)
 - (ii) in circumstances where the existing water quality of a water management zone* meets some of the water quality standards for the zone (in which case subsection (a) applies only to those standards met).

Policy 6-4: Enhancement where water quality standards are not met

- (a) In each case where the existing water quality does not meet the relevant water quality standard within a water management zone*, as shown in Schedule D, activities shall be managed in a manner which enhances

water quality in order to meet the water quality standard for the water management zone* shown in Schedule D.

- (b) For the avoidance of doubt, subsection (a) applies:
 - (i) in circumstances where the existing water quality of a water management zone* does not meet any of the water quality standards for the zone (in which case subsection (a) applies to every water quality standard for the zone)
 - (ii) in circumstances where the existing water quality of a water management zone* does not meet all of the water quality standards for the zone (in which case subsection (a) applies only to those standards not met).

Policy 6-5: Management of activities in areas where existing water quality is unknown

- (a) In each case where there is insufficient data to enable a comparison of the existing water quality with the relevant water quality standard as shown in Schedule D, activities shall be managed in a manner which:
 - (i) maintains or improves the existing water quality
 - (ii) has regard to the likely effect of the activity on the values identified for the relevant water management zone*
 - (iii) has regard to relevant information about the existing water quality in upstream or downstream water management zones*, where such information exists.
- (b) For the avoidance of doubt, subsection (a) applies:
 - (i) in circumstances where there is insufficient data to enable a comparison of the existing water quality with any of the water quality standards for a water management zone* (in which case subsection (a) applies to every water quality standard for the zone)
 - (ii) in circumstances where there is insufficient data to enable a comparison of the existing water quality with all of the water quality standards for a water management zone* (in which case subsection (a) applies only to those standards with insufficient data).

6.4.2.2 Groundwater Quality

Policy 6-6: Maintenance of groundwater quality

- (a) Discharges and land-use activities shall be managed in a manner which maintains the existing groundwater quality.
- (b) Groundwater takes in the vicinity of the coast shall be managed in a manner which avoids saltwater intrusion.

6.4.2.3 Discharges and Land-use Activities Affecting Water Quality

Policy 6-7: Land-use activities affecting surface water quality

- (a) **Nutrients**
 - (i) Intensive farming land-use activities shall be regulated in targeted water management zones*.
 - (ii) For the purposes of subsection (a)(i), targeted water management zones* shall be those zones where, collectively, intensive farming

- land-use activities are the predominant cause of elevated nutrient levels.
- (iii) Those persons carrying out intensive farming land-use activities in the water management zones* targeted in subsection (a)(i) shall be required, amongst other things, to prepare a nutrient management plan for the purposes of:
- (1) establishing the measures required to achieve the target contaminant loading rates for the relevant water management zone*, as specified in Schedule D
 - (2) identifying best management practices
 - (3) establishing programmes for implementing any required changes.
- (b) **Faecal contamination**
- (i) Intensive farming land-use activities shall be regulated in targeted water management zones*.
 - (ii) For the purposes of subsection (b)(i), targeted water management zones* shall be those zones where, collectively, intensive farming land-use activities are causing elevated faecal contamination levels.
 - (iii) Those persons carrying out intensive farming land-use activities in the water management zones* targeted in subsection (b)(i) shall be required, amongst other things, to
 - (1) prevent stock access to waterbodies
 - (2) mitigate against faecal contamination from other entry points (eg., race run-off)
 - (3) establish programmes for implementing any required changes.
- (c) **Sediment**
- (i) In those water management zones* where agricultural land-use activities are the predominant cause of elevated sediment levels, non-regulatory whole farm business plans* shall be prepared and implemented for the purpose of reducing soil erosion, as described in Chapter 5.

Policy 6-8: Point source discharges to water

- (a) The management of point source discharges into water shall recognise and provide for the strategies for surface water quality management set out in Policies 6-3, 6-4 and 6-5 after reasonable mixing*, while having regard to:
- (i) the degree to which the activity will adversely affect the values identified for the relevant water management zone(s)*
 - (ii) whether the discharge in combination with other discharges will cause the water quality standards set in Schedule D to be breached
 - (iii) the extent to which the activity is consistent with best management practices
 - (iv) the need to allow reasonable time to achieve any required improvements.
- (b) The Regional Council may make an exception to subsection (a) where:
- (i) in the case of discharges, the discharge is of a temporary nature or is associated with necessary maintenance work and the discharge cannot practicably be avoided

- (ii) adverse effects can be fully offset by way of a financial contribution in accordance with Chapter 18
- (iii) it is appropriate to adopt the best practicable option
- (iv) other exceptional circumstances apply

and it is consistent with the purpose of the RMA to do so.

Policy 6-9: Point source discharges to land

Discharges of contaminants onto or into land shall be managed in a manner which:

- (a) ensures that there is no significant degradation of the existing groundwater quality
- (b) does not result in pathogens or other toxic substances accumulating in soil or pasture to levels that would render the soil unsafe for agricultural or domestic use
- (c) recognises and provides for the strategies for surface water quality management set out in Policies 6-3, 6-4 and 6-5, as necessary
- (d) maximises the reuse of nutrients and water contained in the discharge to the extent practicable.

Policy 6-10: Options for discharges to surface water and land

When applying for consents and making decisions on consent applications for discharges of contaminants to water or land, the opportunity to utilise alternative discharge options or a mix of discharge regimes, for the purpose of mitigating adverse effects where practicable, shall be considered, including but not limited to:

- (a) discharging contaminants onto land in preference to discharging contaminants into water
- (b) withholding from discharging contaminants into surface water at times of low flow
- (c) adopting different treatment options for discharges to different receiving environments or at different times (including different flow regimes in surface waterbodies).

Policy 6-11: Human sewage discharges

Notwithstanding targets for water quality and other policies in this chapter:

- (a) all new discharges of treated human sewage shall be applied onto land, or flow overland, or pass through a rock filter or wetland treatment system before entering a surface waterbody
- (b) all existing direct discharges of treated human sewage into a surface waterbody shall change to a treatment system described under subsection (a) by the year 2020.

6.4.3 Water Quantity and Allocation

Policies applying to both Surface Water and Groundwater

Policy 6-12: Reasonable and justifiable need for water

The amount of water taken by resource users shall be reasonable and justifiable for the intended use. In addition, the following specific measures for ensuring

reasonable and justifiable use of water shall be taken into account when considering consent applications to take water for irrigation, public water supply* or industrial use, and during reviews of consent conditions for these activities.

- (a) For irrigation, resource consent applications shall 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 will:
 - (i) consider land use, crop water-use requirements, on-site physical factors such as soil water-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 in consent conditions.
- (b) For industrial uses, water allocation shall be calculated where possible in accordance with best management practices for water efficiency for that particular industry.
- (c) For public water supplies, the following shall 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 efficiency for that particular industry, plus
 - (iv) any allocation necessary to cater for the reasonable needs of livestock or agricultural practices that are connected to the public water supply* system, plus
 - (v) an allocation necessary to cater for growth, where urban growth of the municipality is zoned and is reasonably forecast, plus
 - (vi) an allocation for leakage equal to 15% of the total of subsections (i) to (v) above.

Where the existing allocation for a public water supply* exceeds the allocation calculated in accordance with subsections (i) to (vi) above, the Regional Council will establish, in consultation with the relevant Territorial Authority, a timeframe by which the existing allocation shall be reduced to the calculated amount.

Policy 6-13: Efficient use of water

Water shall be used efficiently, including by the following measures:

- (a) requiring water audits and water budgets to check for leakages and water-use efficiency
- (b) requiring the use of, or progressive upgrade to, infrastructure* for water distribution that minimises use and loss of water
- (c) enabling the transfer of water permits
- (d) raising awareness about water efficiency issues and techniques

- (e) installing water metering and telemetry to monitor water use.

Policy 6-14: Consideration of alternative water sources

When making decisions on consent applications to take surface water, the opportunity to utilise alternative sources such as groundwater or water storage shall be considered.

6.4.3.2 Policies for Surface Water

Policy 6-15: Overall approach for surface water allocation

- (a) The requirements of water conservation orders shall be given effect under this Plan.
- (b) The provisions of this plan will not be inconsistent with the intent of local water conservation notices.
- (c) Core allocations of surface water from rivers shall be determined in accordance with Policies 6-16 and 6-17. Takes that comply with the relevant core allocation, when assessed in combination with all other takes, shall be allowed.
- (d) Supplementary allocations of surface water from rivers shall be determined in accordance with Policy 6-18.
- (e) Takes from rivers shall be apportioned, restricted or suspended in times of low flows in accordance with the provisions of Policy 6-19.
- (f) Takes of water from lakes shall comply with Policy 6-20.

Policy 6-16: Core water allocation and minimum flows

- (a) The taking of surface water shall be managed in accordance with the minimum flows and core allocations set out for each water management zone* in Schedule B.
- (b) The minimum flows and core allocations set out in Schedule B shall be assessed after any takes for hydro electricity generation have been taken. The only exception to this will be the hydro electricity takes from Zone Whau_3c.

Policy 6-17: Approach to setting minimum flows and core allocations

- (a) Where good hydrological information, such as a specific water resource study or a long-term flow record, is available it shall be used to set minimum flows and core allocations in Schedule B.
- (b) Where information described in (a) above is not available, the minimum flows and core allocations set out in Schedule B shall 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 Schedule B.

Policy 6-18: Supplementary water allocation

In addition to the core allocations set out in Policy 6-16, a supplementary allocation from rivers may be provided:

- (a) in circumstances where water is only taken when the river flow is greater than the median flow, and the total amount of water taken by way of a

supplementary allocation does not exceed 10% of the natural flow in the river at the time of abstraction

- (b) in circumstances where it can be shown that the supplementary allocation will not:
- (i) increase the frequency or duration of low flows
 - (ii) cause any adverse effects on the values of the waterbody as set out in Schedule D
 - (iii) limit the ability of anyone to take water under a core allocation.

Policy 6-19: Apportioning, restricting and suspending takes in times of low flow

During times of low flow, takes from rivers shall be managed in the following manner:

- (a) **Permitted takes** – Takes that are permitted by this Plan (surface water and groundwater takes) or are for fire-fighting purposes shall be allowed to continue regardless of river flow.
- (b) **Essential takes** – The following core water allocation takes shall be deemed essential and shall be managed in the manner described.
- (iv) takes greater than permitted by this Plan (and therefore subject to resource consent) that are required to meet an individual's reasonable domestic needs or the reasonable needs of an individual's animals for drinking water shall be allowed to continue regardless of river flow
 - (v) takes required to meet the reasonable needs of hospitals, other facilities providing medical treatment, marae, schools or other education facilities, or correction facilities shall be allowed to continue regardless of river flow
 - (vi) takes required for the operation of industries which, if their take were to cease, would significantly compromise a community's ability to provide for its social, economic or cultural well-being or for its health or safety shall be allowed to continue regardless of river flow, but shall be required to minimise the amount of water taken to the extent reasonable
 - (vii) public water supply* takes shall be restricted to a total public water 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 subsections (b)(ii) and (b)(iii) where such facilities and industries are connected to the public water supply* system, plus
 - (D) any allocation necessary to cater for the reasonable needs of livestock that are connected to the public water supply* system, plus
 - (E) an allocation for leakage equal to 15% of the total of subsections (A) to (D) above.
- (c) **Non-essential takes** – Other core water allocation takes, including irrigation takes but excluding the essential takes described under subsection (b), shall be managed in the following manner:
- (i) water takes shall be required to cease when the river drops below its minimum flow, as set out in Policy 6-16

- (ii) water takes shall be allowed to recommence once the river flow has risen above its minimum flow.
- (d) **Meaning of 'core water allocation take'** – For the purposes of this policy, a core water allocation take means a take that has been granted consent in accordance with a core water allocation made under Policy 6-16, or in accordance with a previous core water allocation regime.

Policy 6-20: Surface water allocation – lakes

Decisions on resource consent applications to take water from a lake shall ensure that there are no significant adverse effects on the values of the lake, as shown in Schedule D.

6.4.3.3 Policies for Bores and Groundwater

Policy 6-21: Overall approach for bore management and groundwater allocation

- (a) New bores* shall be constructed and managed in accordance with Policy 6-22.
- (b) Total groundwater allocations shall comply with the annual allocable volumes for groundwater management zones set out in Policy 6-23.
- (c) The measured and/or modelled effects of a proposed groundwater take on other groundwater users, surface waterbodies and saltwater intrusion shall be managed in accordance with Policies 6-24, 6-25 and 6-26.

Policy 6-22: Bore development and management

- (a) New bores* shall be sited to ensure adequate separation from existing bores*, and to avoid an over-concentration of bores* in a particular area, wherever practicable.
- (b) New bores* shall generally be constructed, and bore* logs and other records prepared, in accordance with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock.
- (c) New bores* shall be designed to ensure a high degree of efficiency with respect to bore development, bore* depth and diameter, and screen depth and length.
- (d) New bores* shall be sited, constructed and used in a manner that prevents:
 - (i) contaminants from entering the bore* from the land surface
 - (ii) the wastage of water in artesian conditions.
- (e) Bores* that are no longer required shall be decommissioned in general accordance with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock.

Policy 6-23: Groundwater Management Zones

The total amount of groundwater taken from each groundwater management zone mapped in Schedule C shall comply with the annual allocable volume specified in Schedule C.

Policy 6-24: Effects of groundwater takes on other groundwater takes

- (a) Consent applicants wishing to take groundwater shall generally be required to undertake pumping tests and hydrogeological assessments in order to determine likely impact on existing groundwater takes in the vicinity.
- (b) Consent conditions restricting the rate and/or duration of pumping shall be imposed on new takes of groundwater where this is necessary to avoid significant drawdown impacts on existing groundwater takes from good quality bores* in the vicinity. A groundwater take is considered to be from a good quality bore* in circumstances where the bore* penetrates the aquifer from which water is being drawn at a depth sufficient to enable water to be drawn all year (ie., the bore* depth is below the range of seasonal fluctuations in groundwater level), the bore* is adequately maintained, the bore* is of sufficient diameter and is screened to reasonably minimise drawdown, and the bore* has a pump capable of drawing water from its base to the land surface.
- (c) Consent conditions specifying short-term restrictions on the rate and/or duration of pumping may also be imposed on new takes of groundwater where this is necessary to avoid significant drawdown impacts on existing bores* that are not of a good quality, in order to allow sufficient time for such bores* to be upgraded or replaced.
- (d) The Regional Council may encourage consent applicants to consider the option of providing water to neighbouring properties in circumstances where this would be more practical than meeting the requirements of subsections (b) or (c).

Policy 6-25: Effects of groundwater takes on surface waterbodies

The effects of groundwater takes on surface waterbodies, including wetlands, shall be managed in the following manner:

- (a) An appropriate scientific method shall be used to calculate the likely degree of connection between the groundwater and surface water at the location of the groundwater take.
- (b) To the extent justified by the calculation under subsection (a), the groundwater take shall be assessed and managed as if it were a surface take from the water management zone(s) to which it is connected.

Policy 6-26: Saltwater intrusion

Saltwater intrusion along the coastal margins of the Region arising from groundwater takes shall be managed by the following measures:

- (a) Consent applicants wishing to take groundwater within 5 km of the coastal mean high water spring line shall be required to carry out pumping tests and hydrogeological assessments in order to determine the level of drawdown at the coast and the likelihood of inducing saltwater intrusion.
- (b) In cases where saltwater intrusion might occur, the consent application may be declined or the amount of water that can be taken shall be limited to an amount that restricts the likelihood of saltwater intrusion.
- (c) In addition, consents to take groundwater within 5 km of the coast shall contain conditions relating to the monitoring of electrical conductivity and the restriction or suspension of takes if specified electrical conductivity thresholds are reached or exceeded. These monitoring requirements and

electrical conductivity thresholds will be determined on a case by case basis.

6.4.4

River and Lake Beds

Policy 6-27: General management of river and lake beds

Activities in, on, under or over the beds of rivers and lakes shall generally be managed in a manner which:

- (a) recognises and provides for the values identified in Schedule D for the water management zone(s)* in which the activity takes place, in the manner described in Policies 6-28, 6-29 and 6-30
- (b) avoids any significant reduction in ability of a waterbody to convey flood flows, or significant impedance to the passage of floating debris
- (c) avoids any significant adverse effects on the stability and function of existing structures including flood and erosion control structures
- (d) avoids any significant reduction in the habitat diversity, including the morphological diversity, of the waterbody
- (e) manages effects on natural character and public access in accordance with the relevant policies in Chapter 7
- (f) provides for the safe passage of fish both upstream and downstream
- (g) ensures that the existing nature and extent of navigation of the waterbody are not obstructed
- (h) ensures that access required for the maintenance of essential works and services is not obstructed.

Policy 6-28: Activities in waterbodies with a value of Natural State, Sites of Significance - Cultural, or Sites of Significance - Aquatic

In those water management zones* with a value of Natural State, Sites of Significance - Cultural, or Sites of Significance - Aquatic, as shown in Schedule D, activities in, on, under or over the beds of rivers and lakes shall be managed in a manner which:

- (a) avoids adverse effects on these values
- (b) maintains the habitat and spawning requirements of the species identified in Schedule D as being significant within the subject water management zones*.

Policy 6-29: Activities in waterbodies within a flood control or drainage scheme

In those water management zones* within a flood control or drainage scheme as shown in Schedule I, activities in, on, under or over the beds of rivers and lakes shall be managed in a manner which:

- (a) enables the level of flood hazard and erosion control existing at the time of notification of this plan to be maintained within river and drainage schemes
- (b) maintains other values associated with the waterbody, unless functional constraints make this impractical in which case adverse effects on other



values shall be mitigated or offset or compensated by way of a financial contribution in accordance with the policies in Chapter 18.

Policy 6-30: Activities in waterbodies with other values

In those water management zones* not valued for Natural State, Sites of Significance - Cultural, Sites of Significance - Aquatic, or within a flood control or drainage scheme as shown in Schedule I, activities in, on, under or over the beds of rivers and lakes shall be managed in a manner which:

- (a) avoids, remedies or mitigates significant adverse effects on these other values, or
- (b) provides consent applicants with the option of making a financial contribution to offset or compensate for adverse effects in accordance with the policies in Chapter 18.

Policy 6-31: Essential and beneficial activities

Notwithstanding Policies 6-27 to 6-30, activities in, on, under or over the beds of rivers and lakes that are essential or result in an environmental benefit shall generally be allowed, including:

- (a) the use and maintenance of existing structures, including works designed to maintain or improve the stability and functionality of existing structures
- (b) the removal of derelict, unlawful or non-functional structures
- (c) the restoration or enhancement of natural habitats.

Policy 6-32: Gravel extraction

- (a) The annual volume of gravel available for extraction from those rivers and reaches with certain allocations, listed in Table 6.3, shall be limited to the quantities stated in the table.
- (b) The annual volume of gravel available for extraction from those rivers and reaches with estimated allocations, listed in Table 6.4, shall generally be limited to the quantities stated in the table, unless better information is available.
- (c) In other rivers or reaches, where there is no annual extraction limit, gravel extraction shall not exceed the natural rate of replenishment except where extraction is necessary to decrease the risk of flooding or damage to structures.

Table 6.3 Annual allocable volumes of gravel – certain allocations

| River or Reach | Volume (m ³) |
|---|--------------------------|
| Lower Manawatu River | |
| • Manawatu Gorge to Karere Rd | 10,000 |
| • Karere Rd to Hamiltons Line | 10,000 |
| • Hamiltons Line to Oroua confluence (Yrs 2007-2009) | 200,000 |
| • Hamiltons Line to Oroua confluence (Yrs 2009 onwards) | 20,000 |
| Oroua River upstream of Boness Rd | 5,000 |
| Oroua River downstream of Boness Rd | 50,000 |
| Makino from confluence with Oroua River to the bend 800m upstream of Reids Line | 3,000 |



| River or Reach | Volume (m ³) |
|---|--------------------------|
| Mangahao River confluence to Tararua Rd bridge | 10,000 |
| Mangatainoka River | 55,000 |
| South East Ruahine Streams | |
| • Mangapapa | 2,000 |
| • Mangaatua | 5,000 |
| • Raparapawai | 15,000 |
| • Oruakeretaki | 15,000 |
| • Otmarahu | 1,000 |
| • Kumeti | 3,000 |
| • Otamaraho | 2,000 |
| • Rokaiwhana | 15,000 |
| • Tamaki | 30,000 |
| • Mangatewaiiti | 2,000 |
| • Mangatewainui | 6,000 |
| • Mangatera | 500 |
| Upper Manawatu River | |
| • From 1km upstream of Ngawapurua bridge to source | 20,000 |
| • 1 km upstream to 2.5 km downstream of Ngawapurua bridge | no extraction |
| • 2.5 km downstream of Ngawapurua Bridge to Ballance bridge | 15,000 |

Table 6.4 Annual allocable volumes of gravel - estimated allocations

| River or Reach | Volume (m ³) |
|---|--------------------------|
| Kawhatau River | 35,000 |
| Makuriiti Stream | 6,000 |
| Manganuioteao River | |
| • Waimarino River confluence to Whanganui River | 5,000 |
| Mangatainoka River | 55,000 |
| Ohau River | |
| • Upstream of a point 1 km above SH 1 bridge | 2,000 |
| • Downstream of a point 1 km above SH 1 bridge | 10,000 |
| Pohangina River | 30,000 |
| Rangitikei River | |
| • Makahikatoa Stream to Mangarere Road bridge | 15,000 |
| • Mangarere Road bridge to Rewa | 25,000 |
| • Rewa to 7 km downstream of SH 1 bridge | 50,000 |
| • 7 km downstream of SH 1 bridge to mouth | 100,000 |
| Turakina River | 3,000 |
| Whangaehu River | 8,000 |
| Whanganui River | |
| • Whakapapa Island to Pipiriki | 4,000 |
| • Pipiriki to mouth | 2,750 |

6.5

Methods

The taking of surface water and groundwater, discharging to surface water and to land, and the undertaking of activities that disturb the beds of rivers or lakes, are largely regulatory activities. Part II: Regional Plan contains rules relating to the activities described in this chapter.

| Project Name | Large Water Abstractors |
|----------------------------|---|
| Project Description | <p>The aim of this project is to provide assistance to large water abstractors to identify options for improving the water abstraction, distribution and use components of their operations. It is expected this project 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> |
| Who | Horizons Regional Council, District Councils, industry and large irrigators will work together to develop, fund and implement this programme. |
| Links to Policy | This project links to Policies 6-12, 6-13 and 6-14. |
| Target | All major abstractors in the Region have been contacted and assistance provided where requested by 2016. |

| Project Name | Sewage Treatment Plant Upgrades |
|----------------------------|---|
| Project Description | <p>The aim of this project is to work with Territorial Authorities to seek central Government funding for sewage treatment plant upgrades, given that they are a significant contributor of contaminants to waterways during low flows. Horizons 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.</p> <p>An ongoing project. Horizons Regional Council extended an invitation to all Territorial Authorities to actively engage with the Regional Council as part of this method in 2006.</p> |
| Who | Horizons Regional Council, district councils, Ministry of Health and local health agencies (eg., MidCentral Health). |
| Links to Policy | This project links to Policies 6-2, 6-8, 6-10 and 6-11. |
| Targets | <ul style="list-style-type: none"> • Horizons Regional Council to extend an invitation in 2008 to all Territorial Authorities to actively engage with the Regional Council on this matter, and • central Government funding applications completed for upgrade of sewage treatment plants as required. |

| Project Name | On-site Wastewater System Forum |
|----------------------------|--|
| Project Description | The aim of this project is to facilitate implementation of the Regional Council's Manual for On-site Wastewater Systems – Design and Management. |

| Project Name | On-site Wastewater System Forum |
|------------------------|---|
| | Horizons 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. |
| Who | The forum will comprise, as a minimum, representatives from the Regional Council, Territorial Authorities, consulting engineers and system installers. |
| Links to Policy | This project links to Policies 6-2 and 6-9. |
| Target | Two meetings per year. |

| Project Name | Human Sewage Discharges to Water |
|----------------------------|---|
| Project Description | The Regional Council will provide assistance to district councils to upgrade existing sewage treatment systems that directly discharge treated human sewage to the Region's waterways. Horizons Regional Council to work with Territorial Authorities to reduce water volume, explore land-use disposal options and assist with funding opportunities. |
| Who | Horizons Regional Council and Territorial Authorities. |
| Links to Policy | This project links to Policies 6-2 and 6-11. |
| Target | To stop direct human sewage discharges to water by 2020. |

| Project Name | Stormwater System Discharge Upgrades |
|----------------------------|---|
| Project Description | The Regional Council will provide assistance to district councils wanting to upgrade the treatment of their existing urban stormwater system discharges, where these are into waterways. Horizons Regional Council to work with Territorial Authorities to reduce water volume, explore land-use disposal options and assist with funding opportunities. |
| Who | Horizons Regional Council and Territorial Authorities. |
| Links to Policy | This project links to Policies 6-2 and 6-8. |
| Target | To reduce the number, and improve the quality, of urban stormwater discharges by 2016. |

| Project Name | Trout Spawning Habitat |
|----------------------------|---|
| Project Description | The Regional Council and other agencies will work with landowners to protect and enhance waterways and parts of waterways that serve as spawning sites for brown and rainbow trout. Resources will be directed towards the most significant sites. Waterway owners will be provided with advice and financial/project management assistance to carry out enhancement and protection measures including fencing, planting, replacement of perched culverts and pest (plant and animal) control. The Regional Council will seek funding from third parties to assist with this project. The effectiveness of the protection and enhancement works will be monitored. The project will include publicity to increase public awareness about the |

| Project Name | Trout Spawning Habitat |
|---------------------|--|
| Project Description | importance of trout. |
| Who | Regional Council, Territorial Authorities, Fish and Game and funding agencies including He Tini Awa Trust . |
| Links to Policy | This project links to Policies 6-2, 6-27 and 6-30. |
| Target | The top 30 trout spawning habitat sites are actively managed, including protection and/or enhancement measures, within 10 years of this Plan becoming operative. |

| Project Name | Water Quality Improvement |
|---------------------|---|
| Project Description | The Regional Council and other agencies will work with landowners to protect and enhance the water quality of the Region's waterways. Landowners in those water management zones where the nutrient management (non-point source discharge) control rules are to be introduced will receive the highest priority for assistance. This project represents an expansion of Horizons' 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. Waterway owners 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 project. The effectiveness of the protection and enhancement works will be monitored. |
| Who | Regional Council, Dexcel, Fonterra and Territorial Authorities and funding agencies including the He Tini Awa Trust and Nga Whenua Rahui. |
| Links to Policy | This project links to Policies 6-2, 6-4 and 6-7. |
| Targets | <ul style="list-style-type: none"> The targets of the Dairying and Clean Streams Regional Action Plan for Manawatu-Wanganui Region are achieved by the due dates Advice and assistance is offered to all landowners affected by the nutrient management (non-point source discharge) control rules All landowner requests for advice and assistance regarding water quality improvement are responded to promptly. |

| Project Name | Education in Schools – Water |
|---------------------|---|
| Project Description | The aim of this project is to raise awareness amongst the youth of the Region of the significance of our 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. |
| Who | Horizons Regional Council and various national and local environmental education providers. |
| Links to Policy | This project links to Policy 6-2. |
| Targets | The Regional Council develops and delivers a water-related environmental education programme. |

| | |
|----------------------------|---|
| Project Name | Water (Fluvial Resources, Quality and Quantity) Research, Monitoring and Reporting |
| Project Description | The aim of this project is to develop an integrated research, monitoring and reporting programme that supports delivery and refinement of existing policies and methods, guides implementation planning and allows implementation effectiveness to be assessed. |
| Who | Predominantly Horizons Regional Council, with assistance from research institutes, universities and non-Government agencies and community groups as required. |
| Links to Policy | This project links to Policies 6-2, 6-15, 6-17 and 6-32. |
| Targets | A research, monitoring and reporting programme that supports delivery and refinement of existing policies and methods and guides and assesses implementation. |

6.6 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 water management zones:</p> <ul style="list-style-type: none"> • where water quality standards are met prior to this plan becoming operative, they continue to be met • where water quality standards are not met prior to this plan becoming operative they are either met where targeted for action or, where not targeted for action, they are no worse than prior to this plan becoming operative. | <p>Water Policies: 6-1, 6-2, 6-3, 6-4, 6-5, 6-7, 6-8, 6-9, 6-10, 6-11, 6-12, 6-13, 6-14, 6-15, 6-16, 6-18, 6-20, 6-21, 6-25, 6-29, 6-30, 6-31, 6-32</p> <p>Land Policies: 5-1, 5-2, 5-3, 5-4 and 5-5</p> <p>Living Heritage Policies: 7-1, 7-2, 7-3, 7-4, 7-5 and 7.8</p> | <ul style="list-style-type: none"> • Measured water quality compared to water management zone standards, especially measures for "muddy waterways", "safe swimming", "safe food gathering", and "aquatic ecosystem health" in priority catchments • Incidents where surface water quality is confirmed as unfit for use | <ul style="list-style-type: none"> • Horizons' state of environment water quality monitoring programme • Horizons' incidents database • Ministry of Health raw water monitoring |
| By 2017, the natural, physical and cultural qualities of the beds and banks of river management zones are suitable for specified water management zone values at all times. | Water Policies: 6-1, 6-29, 6-30, 6-31, 6-32 | <ul style="list-style-type: none"> • Confirmed incidents of damage to the beds and banks of river management zones • Consents granted for activities in rivers and lake beds | <ul style="list-style-type: none"> • Horizons' incidents database • Horizons' consents database |
| By 2017, 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. | Water Policies: 6-6, 6-9, 6-12, 6-13, 6-21, 6-22, 6-23, 6-24 and 6-26 | <ul style="list-style-type: none"> • Groundwater levels region-wide, but with a focus on Opiki and Himatangi areas • Groundwater quality region-wide, but with a focus on nitrates in Horowhenua and Tararua districts and conductivity along the Foxton-Tangimaoa coast • Confirmed incidents where ground water sources become unavailable (i.e., dry up) or water quality is unfit for use | <ul style="list-style-type: none"> • Horizons' state of environment ground water monitoring programme • Horizons' compliance monitoring programme • Horizons' incidents database • Ministry of Health raw water monitoring |

6.7

Explanations and Principal Reasons

The Horizons Region has been divided into water management zones for the purpose of managing water quality and quantity. Water bodies within these water management zones have been assigned values which represent the ecosystem, recreational, cultural and social and economic values of the waterbody (Objective 6-1, Policy 6-1). Standards have been assigned to protect these values (Policies 6-2 to 6-5).

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 ground and surface water quality if not managed well. Four 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 6-1, 6-2, Policies 6-2 – 6-5), including discharges to land (6-9).

Agricultural land uses contribute to our waterways not meeting our standards for nutrients, faecal contamination and sediment levels. These need to be targeted for control in problem catchments and through our Sustainable Land Use Initiative (Policy 6-7). Control will centre around using best practice management techniques and requiring nutrient management plans.

Point source discharges to water need to be managed to achieve water quality standards (Policy 6-8). Sometimes this may mean that it is appropriate to consider alternatives to discharging to water to meet these water quality standards. This may include considering alternative treatment options for all or part of the year, to achieve water quality standards at critical times of the year (Policy 6-10). 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 treatment before discharge (Policy 6-11).

Surface Water Quantity

Water will be used and allocated in a way which enables water to be used for peoples and community wellbeing, while providing for other values to be maintained (Objective 6-3, Policy 6-15). Water allocation limits are set for each water management zone and water will be managed to maintain these limits (Policy 6-16, 6-17, 6-20). When water use needs to be restricted, life sustaining and essential water takes have first priority (6-19). Water harvesting and alternative sources of water to surface water are also encouraged and provided for (Policy 6-18 and 6-18). Efficiency of use is an important consideration, and will ensure that water is available to the maximum number of users and is not wasted (Policy 6-12 and 6-13).

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 of good quality and do not lead to contamination of groundwater, wastage of water or unnecessary effects on other bores or surface waterbodies (Policy 6-22, 6-24, 6-25). Groundwater management zones have been established and sustainable allocations set, groundwater takes will be managed within these allocations (6-24). Groundwater quality within the Region is good and is not declining, but maintaining this good quality will be a consideration when managing discharges (Policy 6-9).

Beds of Rivers and Lakes

The physical nature of our rivers and lakes 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 6-27 Policy 6-31). 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 6-28). 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 6-29). While recognising the values, we also need to recognise that some activities such as river restoration are beneficial and should be allowed to occur (Policy 6-31).

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 our river values. Gravel extraction needs to be managed to ensure that extraction volumes are sustainable (Policy 6-32).



Water
