

# REGIONAL STATE OF ENVIRONMENT SUMMARY 2020-21

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## THE REGION

The Horizons Region covers a vast area. Making up 8 per cent of the nation's landmass. The region covers a large part of the Central to Lower North Island, stretching from Ruapehu right down to Horowhenua and across to Taranaki. It is home to a wide variety of landscapes from mountains and ranges to fertile coastal floodplains.

The region is home to about 250,000 people with approximately half living in the two largest population centres, Palmerston North and Whanganui. Both straddle lowland reaches of major rivers – the Manawatu and Whanganui respectively with the Rangitikei being the third major river in the region. We also have over 226 lakes, 40 estuaries, the Central Plateau, and are home to the largest hill country area. Many small towns and settlements have established themselves along the region's waterways, which provide an important resource for them.

### REGIONAL WATER QUALITY

The main issues for water quality in the region are:

- High nutrient concentrations;
- Poor clarity and high sediment yields;
- Impacts on aquatic life;
- High bacteria counts.

Overall, water quality in the headwaters of most rivers and streams is good. However, a range of factors causes the quality to decline as it journeys towards the coast. Natural influences on water quality include changes in climate, soil and landscape, while man-made factors include land use and waste discharges. As agriculture has intensified there has been increased deforestation and hill country erosion as well as in the need for more water to be used for irrigation, all of which contribute to changes in water quality.

High levels of nitrogen and phosphorus in waterways can increase algal growth. While naturally occurring, these can become elevated as a result of piped discharges or from the way we use land. A large number of sites in the Horizons Region do not meet the targets set by Council (regional targets). Nitrogen appears to be improving (less in the water) over the last 10 years at half of the sites, whereas phosphorus is largely getting worse (increasing). A measure of algal growth (chlorophyll) is also getting worse over this period.

Water clarity is a measure of how far the eye can see through water. Poor water clarity is usually an indication of too much soil, organic matter, or other material in the water. Low clarity can be an indication that the water is unsafe for swimming, unsuitable for stock to drink, and harmful to plant, insect and fish life. National targets for water clarity are not met at most sites across the region. Over the last 10 years nearly half of the sites are showing indications of declining trends (getting worse).

*E. coli* is a type of bacteria found in the guts of warm-blooded animals. High concentrations can indicate faecal contamination, which can be harmful to humans and affect the suitability for swimming. The targets for *E. coli* are largely not met within the region, and most sites also fall below the national bottom line. Across the region, changes to the way piped discharges are treated and the removal of dairy effluent discharges indicates faecal contamination is primarily associated with rainfall events (either overland or in an urban context via stormwater). Over the 10 year period *E. coli* is generally getting worse (increasing), whereas for sites with a longer record of over a 20 year period *E. coli* is improving at more sites.

Within the Horizons Region there are 19 native freshwater fish species (some rare and threatened). Another measure of water health is the Macroinvertebrate Community Index (MCI). MCI is based on the number and type of macroinvertebrates (aquatic animals such as insects, worms and snails) found at a site, which can tell us a lot about the state of a water body. Compliance with regional targets is mixed across the region, with just over 10% of sites failing to meet the national bottom line (Band D).

A few sites, mainly located in the upper reaches of catchments, in areas dominated by native cover, fall within Band A (excellent). Ten year trends in MCI are largely getting worse (decreasing). There is insufficient data to make statements on native fish trends.

Groundwater quality within the region varies according to both depth and location. Generally, deeper groundwater is of higher quality while shallow groundwater is more likely to show elevated nitrogen levels. These differences come about through complex processes that occur underground due partially to the local geology leading to some areas or depths naturally removing nitrogen from land use than others.

Water quality information is readily available on the LAWA website ([www.lawa.org.nz](http://www.lawa.org.nz)) and more detailed reporting is available in Horizons State of Environment Report 2019 (<http://www.horizons.govt.nz/managing-natural-resources/state-of-our-environment>).

## GROUNDWATER

Groundwater quality is monitored at 37 bores across the Horizons Region on a quarterly basis. Nitrate is a common, naturally occurring compound. However, in high concentrations it can affect drinking water (over 11.3 mg/L). The mean nitrate concentration in monitored bores is 6.80 g/m<sup>3</sup>-N, with a median of 3.27 g/m<sup>3</sup>-N.

Groundwater level is monitored monthly at 125 monthly bores across the Horizons Region. Data as at March 2021.



## LAKES

LAKES OVER 1 HECTARE IN SIZE: 232

Lakes and their associated wetlands are some of our most treasured freshwater systems. They provide a range of ecological, cultural and spiritual values and are often popular areas for water sports, fishing and hunting, and gathering kai.

47 LAKES SURVEYED FOR ECOLOGICAL HEALTH USING LAKESPI

- 11 EXCELLENT HEALTH
- 23 MODERATE HIGH HEALTH
- 13 NON-VEGETATED OR POOR HEALTH

## CLIMATE AND AIR

Climate and air significantly impact the way we live and the environment around us. A changing climate is likely to affect our economy, environment, and way of life.

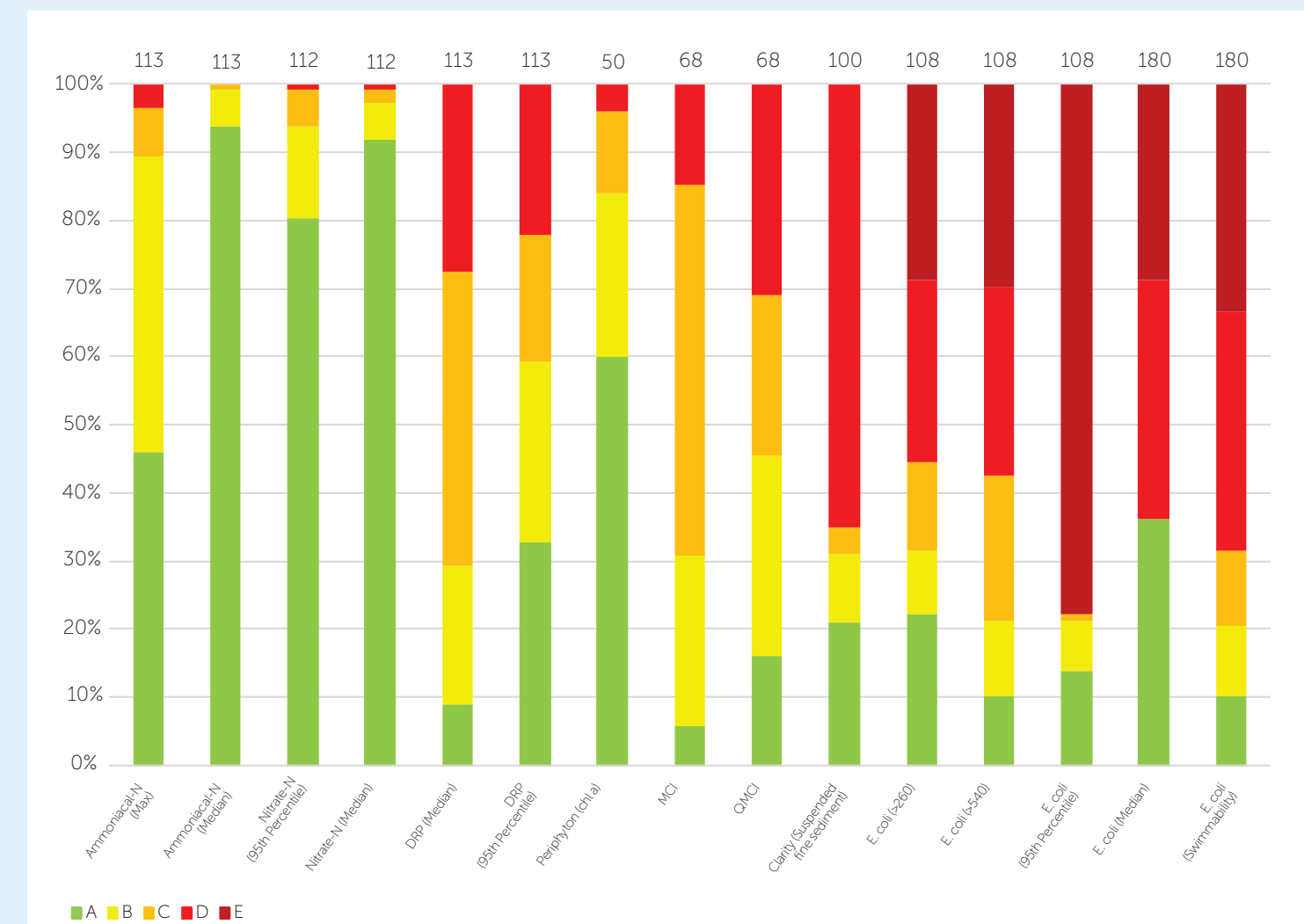
- Mean annual rainfall is less than 900mm around Whanganui, Palmerston North, Levin and Taihape. In contrast, higher elevation areas around the Central Plateau, the Ruahine and Taranaki Ranges, and to the west of Taumarunui, receive more than 2000mm per year. The eastern Manawatu-Whanganui region generally receives less than 1200mm per year, except for the Puketoi Range which experiences about 1500mm per year.
- Potential climate impact:
  - Our region's temperatures are likely to increase by 0.78 – 1.1°C by 2040, and up to 3.1°C by 2090
  - Annual average rainfall is predicted to increase 15-20% in the north of the region, and decrease by 20% in the south east by 2090
  - Predicted regional improvement in river sediment load of 27% by 2034 could reduce to 5-19% due to climate change
- Air quality is monitored in Taumarunui and Taihape, which currently meet national standards, and are expected to improve as homes move to more efficient heating sources.

## RIVER WATER QUALITY

PROPORTION OF SITES SHOWING CONFIDENCE OF IMPROVING TRENDS FOR THE 10 YEAR PERIOD ENDING DECEMBER 2019



## STATE COMPARED TO NOF TARGETS



## ESTUARIES AND COAST

TOTAL NUMBER OF ESTUARIES: 40

Our coast and estuaries provide important habitat for a diverse range of life including plants, birds, fish and other biota. There are also great places for recreational activities such as swimming, kayaking, fishing or bird watching.

NUMBER OF ESTUARIES MONITORED FOR SOE*	7	VULNERABILITY TO NUTRIENTS	LOW-MODERATE 28	MODERATE 10	MODERATE-HIGH 2
NUMBER OF COASTAL SITES MONITORED	4	VULNERABILITY TO SEDIMENTS	LOW-MODERATE 33	MODERATE 5	MODERATE-HIGH 2

\*SOE = State of Environment – this report can be found on Horizons website

## FISH

The Horizons Region is home to numerous aquatic species including fish, insects, kakahi, worms and snails. The Whio (blue duck) is also present in areas of the region, such as the Manawatu and Whangaehu catchments. Whio are a taonga (treasured) species for many Māori, with strong cultural, spiritual and historic connections. There are 19 native freshwater fish species within the region.

Below are nationally rare and threatened fish species found here and their national conservation status. There are some species, such as banded kōkopu, that are not threatened at the national level, but are rare, threatened or at-risk in the Horizons Region.

- KŌARO DECLINING
  - DWARF GALAXIAS DECLINING
  - SHORT JAW KŌKOPU NATIONALLY VULNERABLE
  - BANDED KŌKOPU NOT THREATENED
  - GIANT KŌKOPU DECLINING
  - REDFIN BULLY DECLINING
  - BLUEGILL BULLY DECLINING
  - INANGA DECLINING
  - TORRENTFISH DECLINING
  - LONGFIN EEL DECLINING
  - BROWN MUDFISH DECLINING
  - LAMPREY NATIONALLY VULNERABLE
  - KOURA DECLINING
- Introduced fish such as trout are popular for recreation. Many areas are recognised as regionally significant trout fisheries or as trout spawning habitat. Areas such as the Manawatu, Whangaehu, Whanganui and Rangitikei Catchments.

## LAND

Our diverse landscape provides for a wealth of ecosystems such as forests, lakes, wetlands and oceans, as well as an estimated 80,000 native animals, plants and fungi. Below is a breakdown of land use

CATCHMENT AREA: 2,221,500 ha

HIGHLY ERODIBLE LAND: 360,924 ha

16% OF THE CATCHMENT

VERSATILE SOILS: 223,075 ha

10% OF THE CATCHMENT

LAND USE:

- 44% Sheep, beef and/or deer
- 28% Native forest
- 8% Dairy farming
- 7% Forestry
- 13% Other



Land information as at 2018

## BIODIVERSITY

KNOWN WETLANDS: 9,716 ha

417 SITES

KNOWN BUSH REMNANTS: 58,994 ha

1,056 SITES

## WATER QUANTITY

### 5 COMMERCIAL HYDROELECTRICITY SCHEMES

Hydroelectricity is the largest user of water in the region, accounting for around 77 per cent of the total water allocated. In most cases, hydroelectricity use is non-consumptive, as water abstracted for power generation is eventually returned to the water body it was taken from. In the Horizons Region this isn't always the case, with three of the five commercial hydro schemes diverting water between catchments or to the lower reaches of the catchment.

Agriculture and horticulture are the next largest users accounting for around 17 per cent of consented water takes. Municipal supplies, which include some industrial and commercial use, use around 4 per cent. Industry and abstraction for a range of other purposes, such as the irrigation of parks and sports fields, account for around 2 per cent.

Allocation limits are set to help manage the competing demands for water and balance those demands with the needs of the environment. Allocation limits were designed to maintain instream habitat for aquatic life while allowing for reasonable out of stream water use.

Much of the water allocated in high demand areas was consented before a water allocation framework was in place. This resulted in some areas of the region becoming over-allocated when the framework was introduced. Over time the number of water management zones over-allocated has reduced and Horizons continues to work with consent holders to reduce the impact of water use in over allocated catchments through consenting processes, promoting water use efficiency and monitoring actual water use through a water metering programme.

Abstracting too much groundwater can impact wetlands, rivers and lakes. It also has the potential to draw salt water from the sea into freshwater aquifers.

- 10 GROUND WATER MANAGEMENT ZONES
  - WHANGANUI 60% ALLOCATED
  - TURAKINA 5% ALLOCATED
  - WHANGAHEHU 2% ALLOCATED
  - RANGITIKEI 67% ALLOCATED
  - TARANAKI 1% ALLOCATED
  - MANAWATŪ 47% ALLOCATED
  - HOROWHENUA 13% ALLOCATED
  - NORTHERN WHANGANUI, NORTHERN RANGITIKEI AND EAST COAST UNSPECIFIED
- 44 WATER MANAGEMENT ZONES AND 124 SUB ZONES, OF WHICH:
  - 93 HAVE WATER AVAILABLE
  - 22 ARE WITHIN 95 - 100% OF TOTAL ALLOCATION
  - 9 OVER-ALLOCATED

## SWIM SPOTS

OVERALL SWIMMABILITY AT MONITORED SITES FOR THE 2019-20 SEASON:

64% Rivers and streams 97% Coastal sites 69% Lakes

TOTAL STREAM LENGTH FOR LARGE RIVERS (> ORDER 4): 4,733 km

At the end of each bathing season, weekly results are aggregated into an overall 'suitability for swimming' assessment. This is based on the previous 3 years of data using a methodology recommended by the Ministry for the Environment. The most recent bacteria grade risk shows 63 sites are poor quality for swimming, 5 sites which are fair, 8 sites are good and 3 sites have insufficient data. A further 3 sites in the Kai Iwi area have permanent no swim notices. Sites may be safe to swim some (or even much) of the time, but are not consistently so throughout the bathing season.

For more information about swim spots in the Horizons Region refer to [www.lawa.org.nz](http://www.lawa.org.nz)

## CURRENT INTERVENTIONS

Many actions are already underway to improve the health of waterways in the Horizons Region. These include:

- Regulatory Interventions - through the implementation of Horizons' One Plan policies and rules, along with other national legislation such as Acts, national standards and policy statements.
- Environmental Education - increasing knowledge and awareness of the environment and some of its associated challenges. There are 80 Enviroschools in the Horizons Region, an action-based programme where young people are empowered to design and lead sustainability projects in their schools, neighbourhoods and country.
- Hill-country erosion control (SLUI) - In the Horizons Region, SLUI has so far resulted in:
  - o 859 Whole Farm Plans, covering 619,445 hectares;
  - o 48,870 hectares of erosion mitigation works, including 1,843km of fencing and over 25 million trees.
- Horizons Freshwater Programme supports riparian management and habitat restoration. Local communities and land owners, with support from Horizons Freshwater Programme have:
  - o erected 899km of riparian fencing in the Horizons Region; and
  - o planted over 691,673 plants along stream banks.
- Manawatu River Leader's Forum - a collaborative body that brings hapū and iwi, local government, farming and industry leaders together with academics and environmental and recreational groups.
- Freshwater Improvement Fund projects (Manawatu, Lake Waipu and Whangaehu). These three projects including stream fencing and planting, removal barriers to fish passage, support for community projects, upgrades of wastewater treatment plants for land discharge, support for development of iwi management plans and increased community engagement.
- Lake Horowhenua Accord - A collaboration brings the Lake Horowhenua Trust, Lake Horowhenua Domain Board, Horizons Regional Council, Horowhenua District Council and the Department of Conservation together to restore Lake Horowhenua.
- Jobs for Nature - Projects granted funding will progress the objectives of national freshwater management regulatory reforms and provide an opportunity to strengthen our partnerships with iwi, landowners, and community groups. To date these projects include: additional capacity in the riparian planting and stream fencing programme; fish passage remediation; and water quality interventions in the Lake Horowhenua catchment.

### Focus areas over the next four years include...

- The three jobs for nature projects:
  - Stream Fencing and Riparian Planting. This project builds on our existing stream fencing and riparian planting programme, expanding it to accelerate the achievement of water quality outcomes. The new programme targets 405km of stream fencing and 375,000 riparian plant established over 4 years.
  - Fish Passage Remediation - One of the factors limiting the distribution of native fish in the region are instream barriers to their migration. This project is working to enhance fish populations through fish barrier remediation. The project increases existing capacity to identify and assess barriers to remediation and to remediate high priority barriers.
  - Lake Horowhenua - This project proposes a wetland complex as a major water quality intervention to reduce nitrogen, phosphorus and sediment input to Lake Horowhenua. The project includes a science and monitoring component to inform future freshwater management planning across the Horowhenua Freshwater Management Unit.

### And

- Work to support the implementation of the National Policy Statement for Freshwater Management.

For more information check out Horizons website [www.horizons.govt.nz](http://www.horizons.govt.nz)