

This report card is one in a series produced to explain the current state of Northland's environment. The cards are based on the 2007 State of the Environment Report and keep you up to date on the work being done to improve our environment.

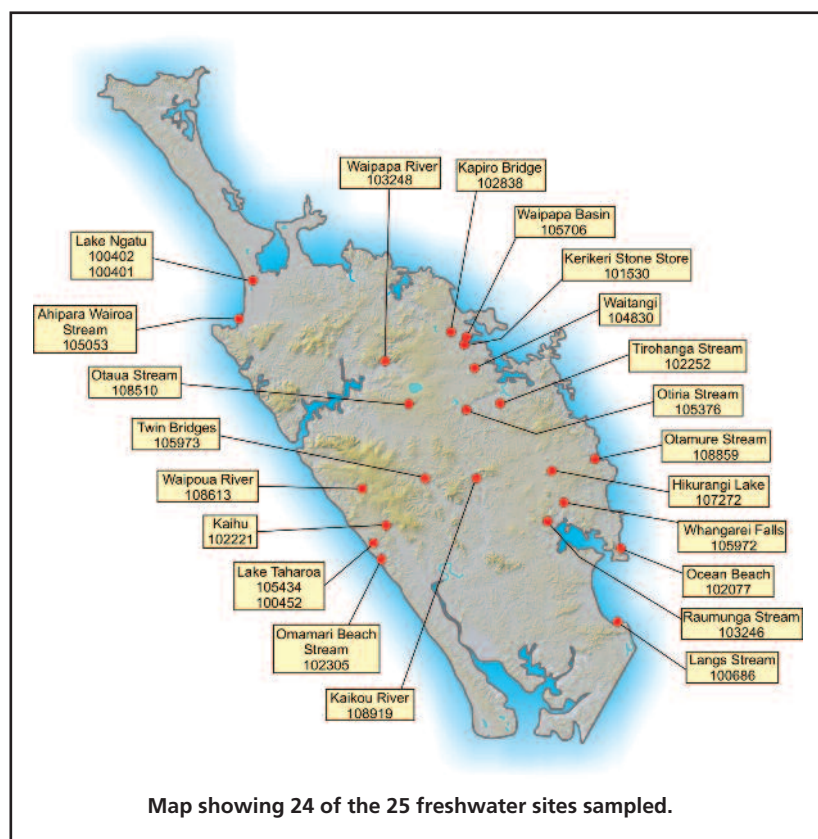
What is the current state of Northland's freshwater?

Rivers and streams

Freshwater sites throughout the region are monitored using a number of programmes and the results are compared to the relevant guidelines.

The **Recreational Bathing Water Quality Programme** is a joint project run by the Northland Regional Council, Northland District Health Board and the three District Councils: Kaipara, Far North and Whangarei.

The programme monitors water quality at a number of the region's most popular coastal and freshwater swimming spots for 12 weeks over the summer months. Samples are taken and analysed for illness-causing bacteria and results are compared to water quality guidelines to work out whether these spots are safe for recreational use.



Of the sites currently in the programme, 21 have been sampled for the past five years. In most summers, 50% of these sites were safe for swimming except after heavy rainfall, when contaminants are washed off the land. 25% were consistently safe for recreational use, while 25% were consistently unsafe.

This compares to 40-50% of the sites sampled nationally which are typically safe and less than 15% that are typically unsafe. Northland's hills mean rural runoff contaminates water quality when it rains heavily.

There are 25 freshwater sites in Northland that now have sufficient data to assess their Suitability for Recreation Grade (SFRG). This gives an overall picture of how "safe" a water body is likely to be for recreational use. Other than two lakes, Ngatu and Taharoa, all freshwater sites in Northland have an interim SFRG of poor or very poor. For coastal sites, please refer to the "Coast" report card.

What are the pressures on Northland's freshwater resource?

- **Point-source discharges** – these include sewage from town and city treatment plants, industrial and stormwater discharges and farm dairy effluent. In 2007, there were resource consents for approximately 1100 discharges to water and 1150 discharges to land.



Leaking septic tanks impact on freshwater quality.

- **Non-point source discharges** – these include rural run-off after rainfall, which can contain sediment, nutrients, animal waste and agrichemical residues; leachate from contaminated sites and leaking wastewater systems.
- **Environmental incidents** – oil or sewage spills, contamination in stormwater, illegal discharges to water and dead stock in waterways all impact on freshwater quality.
- **Weeds and pest fish** – weeds and pests are a major threat to aquatic biodiversity and water quality in Northland. Fast growing weeds can be a problem in shallow lakes where they spread over the entire surface. Pest fish can affect water quality and outcompete native fish species.
- **Nutrient enrichment** – known as "eutrophication". Excessive nutrients cause vigorous aquatic plant growth, including toxic algal species. This can reduce recreational use, stop slower growing native plants and damage aquatic organisms.
- **Land-use practices** – pastoral farming, forestry and urbanisation can all impact on water quality. Stock access to riparian margins destroys bank-side vegetation, which acts as an effective filter for rural runoff and allows for the direct discharge of animal effluent into waterways. Plantation forestry shades waterways – particularly lakes – which stops the water from mixing. Run-off from forestry also contains high amounts of sediment and nutrients.



The River Water Quality Monitoring Network (RWQMN) contains 21 sites that are sampled monthly for a range of parameters relating to water quality, such as bacteria, water clarity and nutrients.

Of these sites, 67% are generally safe for swimming, based on levels of bacteria. 24% also meet the guidelines for water clarity, which can also be used as an indicator of contamination.

Results from monitoring can also be used to assess suitability for human and stock drinking water. Based on the results, there would be no rivers in Northland, including rivers in pristine native forest catchments, which have a microbiological water quality that meets the NZ drinking water standards. However, these are stringent and it is unlikely that any natural freshwater body in New Zealand would meet the given standards. Using the guidelines for stock drinking water, only four of 37 sites monitored would comply with the water quality standards.

Results from monitoring are also used to assess the risk of adverse effects on ecosystems at each site. Results vary throughout the region but in general, sites with predominantly native forest or exotic forest in their upstream catchments are the healthiest. Water quality trends in general over the last decade are positive with the water quality in the worst sites improving.

Lakes

Northland contains many lakes ranked as “outstanding”, which means they are of national importance in terms of their ecology. These lakes require careful monitoring to ensure water quality is maintained and issues which may affect them are identified and remedied.

Lakes are highly susceptible to contamination. Any pollution released into these systems remains for a long time and can build up in the sediment and water. They receive rainfall and run-off – which can contain contaminants – but there is often no other freshwater input or outflow.

The **Northland Lake Water Quality Monitoring Network** was established in 2005 and includes 31 lakes throughout Northland, which are sampled every three months to test water quality.

Based on results from November 2005 to March 2007, 50% of these 31 lakes have too many nutrients, low oxygen levels and are susceptible to toxic algal blooms. 9% of lakes have a low nutrient content and 41% an intermediate nutrient content.

A further 23 lakes have been monitored intermittently over the last five years. It has been estimated that up to 70% of these contain too many nutrients.

Lakes in the region are ranked according to their ecological value based on how many native or endangered species they contain, the absence of pest species and how close the lake is to its natural state. A high proportion of lakes in Northland have a good native plant community with only the odd patch of aquatic weeds.

Aquatic weeds of concern in Northland include bladderwort (*Utricularia gibba*), hornwort (*Ceratophyllum demersum*) and oxygen weed (*Egeria densa*). There are 10 introduced fish species recorded in Northland lakes. Mosquito fish (*Gambusia affinis*) are by far the most widespread and damaging. They are aggressive predators, attack larger fish and they can rapidly out-compete other native fish species.



Oxygen weed (*Egeria densa*).



Lake Te Paki – an isolated, shallow dune lake surrounded by native scrub and dunes has an outstanding array of indigenous vegetation including several endangered plant species.



Bladderwort (*Utricularia gibba*). Inset: Hornwort (*Ceratophyllum demersum*).



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Groundwater quality

The usefulness of groundwater is limited by its quality. The Regional Council monitors 32 groundwater sites in Northland every three months. In general, the majority of sites meet the Drinking Water Standards for New Zealand (2005) for the majority of the time. However E. coli, iron, manganese and chloride can exceed limits at times.

Sources of E. coli in groundwater include leakage from faulty septic tanks or discharges of untreated animal effluent onto land, where it can enter the groundwater. The majority of sites which exceed the standard for E. coli are located in coastal areas where small communities rely on septic tanks for sewage disposal.

Iron and manganese occur naturally in groundwater. Excessive iron and manganese concentrations in groundwater give water a rusty brown appearance and can result in staining and bad taste. Elevated levels of both iron and manganese in groundwater are generally the result of natural processes.

Elevated levels of chloride can indicate the presence of salt water. The majority of monitored coastal bores have higher levels of chloride and sodium compared to inland water sources. Human activity can also increase the potential for salt water contamination, particularly during the summer months when more people are using the water, which lowers the water table.

Trends in water quality data for groundwater aquifers in Northland show that overall, out of a total 45 sites with data:

- 7 can be classified as pristine;
- 15 are subject to minor natural fluctuations;
- 8 are improving in quality;
- 7 are deteriorating; and
- 8 require further investigation.

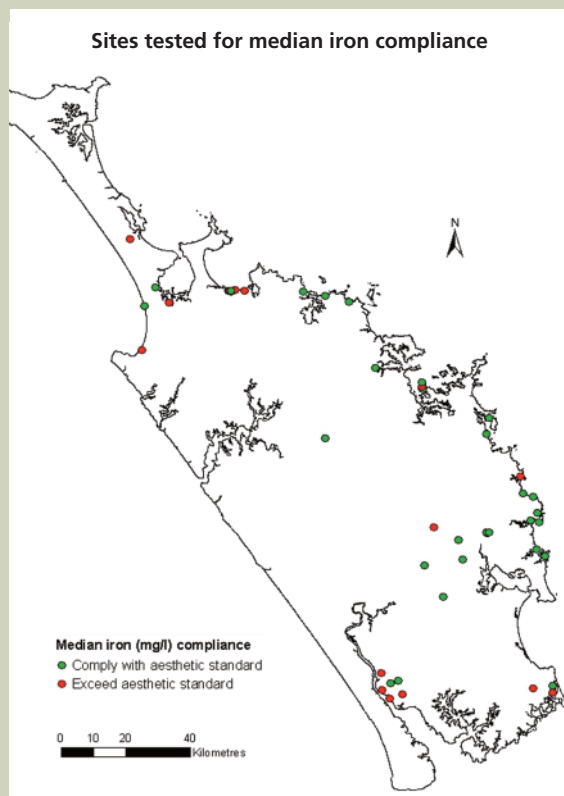
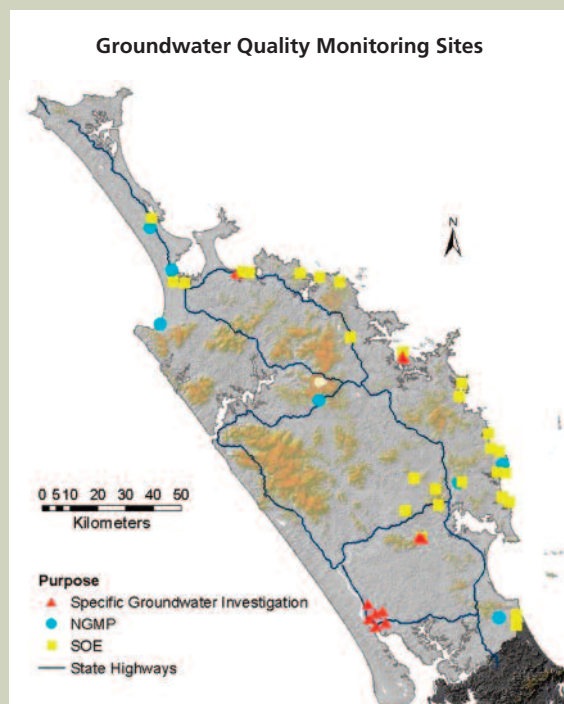
What is the response?

Regulation

The Regional Policy Statement (RPS) for Northland provides an overview of the region's resource management issues and includes objectives to maintain or enhance water quality. The Regional Water and Soil Plan (RWSP) contains rules that govern activities which may impact upon water quality. It includes rules which prohibit the discharge of untreated animal effluent to water – or to land where it may enter water – in addition to rules relating to stormwater, sewage and industrial discharge.

The Sustainable Water Programme of Action was launched by the government in 2006. The purpose of the Programme is to achieve integrated planning for water at a national and regional level. Proposed initiatives include:

- National Environmental Standard for sources of human drinking water;
- National Environmental Standard on ecological flows and water levels;
- National Policy Statement for managing freshwater resources.





Stock effluent pollutes streams and stock destroy stream-side vegetation, which helps filter runoff.

What can you do to help?

At home

- Keep the drain for rain – do not tip anything down stormwater drains.
- Regularly check and maintain your on-site wastewater system.
- Maintain your groundwater bore and ensure the location is registered with the Council so they can consider you as an affected party for activities which may affect groundwater quality in your area.
- Join in a community planting day or start your own environmental care group in your area.

In the countryside

- Prevent the spread of aquatic weeds – make sure your equipment is free of vegetation before entering the water and clean equipment after each use.
- Report any incidents of pollution to the 24/7 Environmental Hotline – 0800 504 639 – and any biosecurity threats to the Northland Regional Council – 0800 002 004.

At work

Prevent nutrient-enrichment of fresh water:

- Fence off waterways, plant riparian margins and keep stock well away from water bodies; and
- Use sediment control features on construction sites to prevent sediment runoff.

Find out more: www.nrc.govt.nz/takeaction

Monitoring

The Council monitors fresh water quality in rivers, lakes and groundwater throughout the region as part of its state of the environment (SoE) monitoring. Sampling is undertaken weekly, monthly or quarterly depending on the programme and results are reported on an annual basis through the Annual Monitoring Report, with a five-yearly summary SoE Report.

The Council also participates in national monitoring programmes, such as the National Groundwater Monitoring Programme, and results from these surveys help inform research and policy at a national level.

Major point-source discharges to water and land require resource consent from the Council. These consents are monitored according to the consent conditions. Any discharges that do not meet the condition of their consent are identified and the Council works with the discharger to rectify the situation.

In serious cases of non-compliance, the Council can issue abatement (stop) or infringement (fine) notices to the person operating under the consent, or can prosecute if the environmental impacts of non compliance are seen to be significant.

Education and community involvement

The Dairy and Clean Streams Accord is a voluntary agreement between the national dairy company Fonterra, the Ministries of Agriculture and the Environment, and Regional Councils. The aim of the Accord is to achieve clean, healthy water, including streams, rivers, lakes, groundwater and wetlands, in dairying areas.

Targets for farmers to work towards include fencing 90% of rivers, streams and lakes by 2012, and 100% of dairy farm effluent discharges are to immediately comply with resource consents and regional plans.

Community Care Groups, such as Lake Care Groups, can be established to enable the community to work towards improving the environment in their local area.

The Council has an Environment Fund available to help with the funding of these groups. The fund provides up to 50% of the costs of projects for protecting the environment, for example, by fencing stock out of waterways and replanting stream sides and lake margins with native vegetation.

Find out more: www.nrc.govt.nz/environmentfund



A Council monitoring officer recording water quality at one of the river water quality monitoring network sites.

24/7 Environmental Hotline
0800 504 639

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