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Christchurch waterways – water quality 2022

Improving the quality of the city's waterways is a priority for the community and Christchurch City Council, and is closely linked with the health and wellbeing of the city and its people.

A holistic look at a waterway

Water that is safe for humans to swim in is just one measure of a healthy waterway. Water also needs to be safe for birds, fish and invertebrates, and we need to ensure that aquatic plants and algae don't take over and choke stream channels, which can affect the ecology of waterways and increase flooding risk.

Images below clockwise from top left: tuna-eels, wai kōura-freshwater crayfish, pāpango-scaup.

Our precious waterways

As our city grows, our precious waterways come under pressure from things like increasing traffic, new housing and industrial developments, and industrial waste. Our waterways are also affected by things like waterfowl and dog poo — which are a major source of bacteria in the water and can make it unswimmable.

The earthquakes also damaged waterways and land drainage infrastructure, such as pipes and channels. The Council is working to reduce flood risk by repairing and enhancing infrastructure while also looking to improve water quality where possible.

Poor water quality of urban waterways is an issue facing many regions and cities in New Zealand and overseas.

Waterways management core values

These values are the drivers for improved sustainable management of our waterways:

- ✓ ecology
- ✓ culture
- ✓ landscape
- ✓ drainage
- ✓ heritage
- ✓ recreation

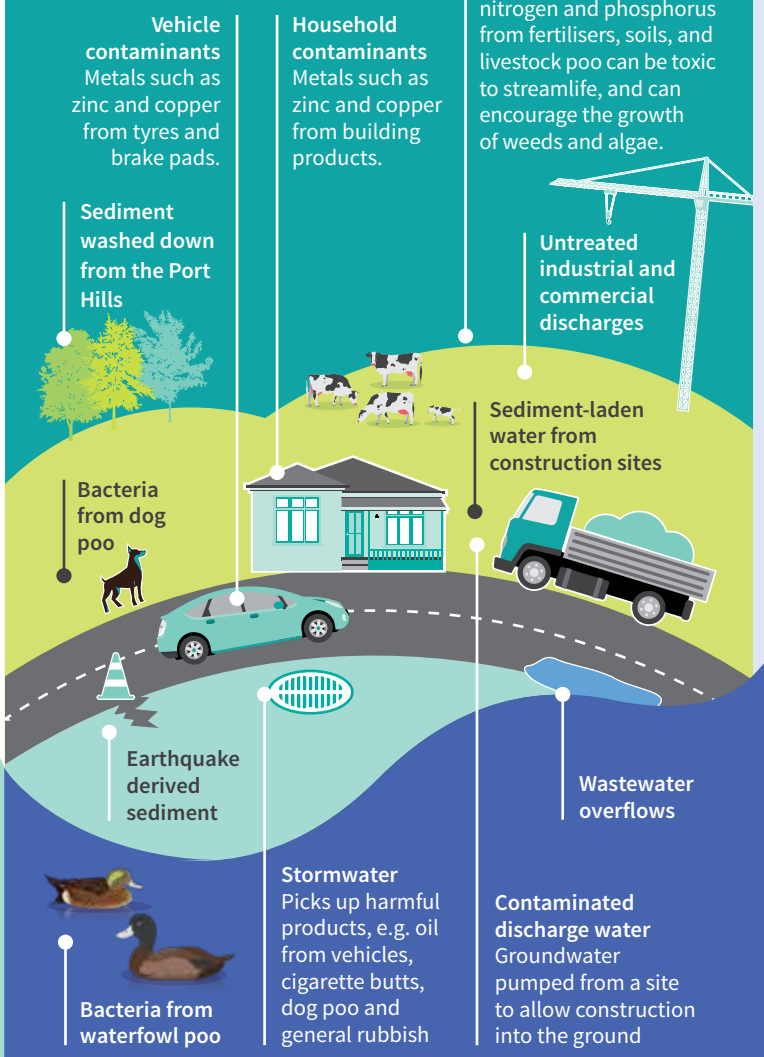
Why is our stormwater network important?

When rainwater falls onto hard, sealed surfaces like roofs, roads and driveways, it cannot soak into the ground. Instead it runs off the surface – this run-off water is called stormwater.

It flows into gutters and drains and into a network of underground pipes and open waterways – our stormwater network.

Key things that can contribute towards poor water quality

These things can have short and long-term adverse effects on the plants and animals that live in our waterways. They can be toxic to streamlife, encourage the growth of unwanted aquatic plants and/or algae, increase the risk to our health from contact through water sports and recreation, and affect water clarity and the appearance of our waterways.



Our urban legacy

Much of Christchurch City is built on a swamp. After more than 100 years of extensive urban development, many of the city's waterways and natural ponding and flooding areas have been built across or altered. This, combined with the legacy of many decades of contaminants going into our waterways, has put them under stress.

The stormwater network was borne out of necessity more than a century ago to transform a swamp into a habitable, healthy city. This network was wrestled from the swamp – it was an immense task over many decades and was the primary focus of work for the Christchurch Land Drainage Board, who managed Christchurch's waterways from 1875 to 1989 when it amalgamated with Christchurch City Council.

Nowadays we focus on a multi-value and multi-agency approach to the management of our waterways with an emphasis on six core values.

Urban Stream Syndrome

This year's water quality results align with the Urban Stream Syndrome, where internationally, lower water quality is recorded in urban (particularly industrial) areas (for example, the Ōtākaro-Avon and Ōpāwaho-Heathcote river catchments) and better water quality is generally recorded in rural areas (for example, the Ōtūkaikino River catchment).

Curlett at Motorway (Ōpāwaho-Heathcote River catchment), and Ōpāwaho-Heathcote River at Tunnel Road and Warren Crescent recorded the poorest water quality of all our waterways. The best water quality was recorded at the Ōtūkaikino River at the Groynes, Wilson Stream (in the Ōtūkaikino River catchment), and Pūharakekenui-Styx River at Gardiners Road.

2022 Christchurch surface water quality assessment

Each year, the Council puts together a surface water quality monitoring report*. This is needed for resource consents, and to assess how we are tracking against the work we are doing to improve waterway health.

During 2021 more than 11,000 samples were analysed from 51 sites. We tested for:

- metals
- pH
- conductivity (how well water conducts electricity can indicate contamination)
- suspended solids
- dissolved oxygen
- turbidity (how murky the water is)
- temperature
- ammonia
- nitrogen
- phosphorus
- *Escherichia coli (E. coli)*

The results

Each site did not meet guideline levels for at least one of the things we tested for. Of particular concern are the high levels of *E. coli*, copper, phosphorus and zinc.

The Ōpāwaho-Heathcote catchment did not meet many of the water quality standards and recorded the poorest water quality. The Ōtūkaikino River catchment met most water quality standards and recorded the best water quality.

Water quality between 2007 and 2021 has remained the same at all sites, except Hayton Stream, where an improvement was recorded.

Basically, we are holding our own. These results are benchmarks that show us the areas we need to improve – it will take time and everyone working together to make a positive difference. The main focus will be reducing sediment, heavy metals, nutrients (nitrogen and phosphorus) and bacteria in waterways.

Surface water quality monitoring map

Kotuku are returning to Christchurch waterways. Wading and diving birds need clear water for feeding.

You can make a difference

Waterways can recover – it will take a sustained effort over many years, but by working together we can improve their health.

When out and about:

- Pick up dog poo – it belongs in the red bin.
- Avoid feeding ducks – poo from ducks and Canada geese is a significant contaminant.
- Feed eels a little raw meat.
- Keep an eye out for native bullies and eels, especially if you are doing works in a waterway. You might see fish even in creeks and drains with intermittent flows.

When you're planning your new build:

- Avoid using building materials made of copper and zinc as these are toxic to streamlife.
- Ensure there are good erosion and sediment control measures in place to stop sediment washing into the storm-water system and ultimately into our waterways. Sediment smothers habitat and food for streamlife. It carries metals that are toxic to streamlife and affects water quality.
- The margins of our waterways (setbacks) often have plants that absorb contaminants in stormwater runoff before they reach the waterway. They also contribute to the overall ecological health of waterways by providing shade, food and habitat. In tidal areas, these setbacks may provide spawning habitat for inanga (white-bait) - their eggs develop out of the water. You may need consent from the Council to build (including decks and sometimes fences) or carry out earthworks (including naturalisation/restoration work) in these setback areas. Any queries, please contact the Council on 03 941 8999 and ask for the Duty Planner.

At home:

- Wash your car on your lawn, not on a paved area, to prevent detergent and oil entering the stormwater network.
- Wash your paint brushes in the laundry tub (which is connected to the wastewater system) to prevent paint entering the stormwater system.
- Use permeable (with holes) paving, rain gardens or rain tanks to help reduce stormwater runoff from your property.
- Periodically remove any leaf litter or other organic material from the street channel in front of your property.
- When your car needs new brakepads, ask for copper-free ones.

We need to manage our waterways wisely for future generations

Our district is characterised by a network of surface water bodies — our waterways. These range from large lakes and rivers, to narrow tributaries and drains with intermittent flows.

What we're doing for waterway health

- Better management of residential, industrial and commercial discharges into our stormwater network.
- Catchment management plans and projects to reduce contaminants at source.
- Erosion and sediment monitoring of building sites.
- Planting of waterway margins.
- Planting of erosion prone gullies on the Port Hills.
- Stream restoration.
- Working collaboratively with Environment Canterbury.

What you're doing for waterway health

- River and estuary rubbish clean-ups.
- Community education.
- Collaborating with the Council on waterway restoration projects, to improve water quality and ecological values.

Our Streamside Planting Guide will help you learn what to grow where

Data is reported in the year following collection.

* This handout is a summary of the report, which is available online at: **ccc.govt.nz/environment/water/waterways/waterway-monitoring**

Christchurch City Council