



River and stream health 2008/09

Key points:

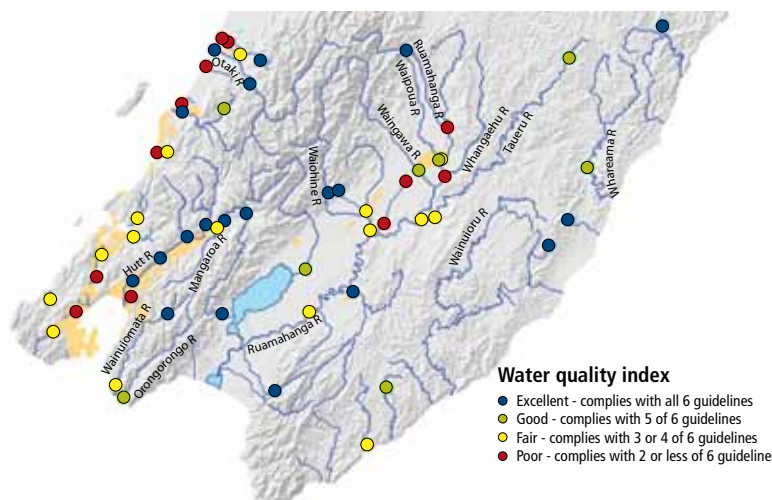
- Half of the 56 river and stream sites monitored over 2008/09 had good or excellent water quality and the other half had fair or poor water quality. The poorest water quality was recorded in urban streams and in the lower reaches of small rivers and streams draining intensive agricultural catchments.
- Elevated concentrations of heavy metals in some urban streams may be impacting on aquatic life.
- Urban streams can provide valuable habitat for native freshwater fish, but numerous instream barriers are stopping many species from migrating into these streams.

What happened in 2008/09?

Water quality

Monthly sampling during 2008/09 showed that 20 of the 56 river and stream sites we monitor had excellent water quality and complied with all six guidelines we use to measure overall stream health. A further eight sites failed just one of the guidelines and are classed as having good water quality. River and stream sites with excellent or good water quality are located in catchment areas where the land cover is predominantly indigenous forest and human influences are minimal. These sites are typically on rivers and streams flowing out of the Aorangi, Tararua and Rimutaka ranges and include the Hutt, Otaki, Waikanae, Waiohine, Waingawa and Tauherenikau rivers and the upper reaches of the Waitohu Stream and Wainuiomata and Ruamahanga rivers.

Half of the river and stream sites monitored exceeded two or more guidelines and were classed as having fair or poor water quality, reflecting the large proportion of their catchments in agricultural or urban land use. The water quality variable that exceeded guidelines at the most sites was water clarity (31 sites), followed by dissolved reactive phosphorus (24 sites), *E. coli* bacteria (19 sites) and nitrate nitrogen (17 sites). Guidelines for ammoniacal nitrogen and dissolved oxygen were exceeded far less frequently. Rivers and streams with poor water quality include the Whangaehu and Kopuranga rivers and the Mangaone, Mangapouri, Porirua and Waiwhetu streams. These waterways have catchments heavily influenced by either intensive agricultural or urban land use, or a combination of the two.



The level of compliance with guidelines for six key water quality variables (water clarity, dissolved oxygen, dissolved reactive phosphorus, nitrite-nitrate nitrogen, ammoniacal nitrogen and *E. coli*) gives us an overall picture of water quality in the region's rivers and streams. The water quality index ratings shown here are based on a comparison of median values from monthly data collected between July 2008 and June 2009 against national guideline values.

Heavy metals in our urban streams

During 2008 water samples from 14 river and stream sites located within urban areas were tested for heavy metals as an indicator of potential stormwater contamination. Dissolved copper, lead and zinc were regularly detected at the majority of these sites with samples from the Porirua, Karori Kaiwharawhara and Waiwhetu streams exceeding toxicity guidelines for at least one metal. Elevated metal concentrations may contribute to the poor aquatic ecosystem health frequently observed in these streams. The contaminant impacts can also extend further into receiving coastal waters such as Porirua Harbour (see the *Harbours, estuaries and beaches* report card).

Native fish in our urban streams

In early 2009 Greater Wellington staff undertook electric fishing and spotlighting surveys to improve our understanding of native freshwater fish communities in the region's urban streams. Many of the surveyed streams were found to contain large populations of banded kokopu, koaro, redfin bullies and eels. Threatened species, such as giant kokopu, were also recorded but far less frequently.

However, in nearly all streams fished the communities only consisted of species that are renowned climbers; some streams contained only a few large (and hence old) fish meaning populations in these streams are not sustainable because there are no young fish to replace the old fish. While habitat destruction and pollution affect all our native fish, it is clear that instream barriers such as extensive piping, large dams, weirs, grade control structures and perched culverts are significantly impacting on fish communities in urban streams. These instream barriers are relatively common in the lower reaches of urban

streams and are a big problem for New Zealand's native fish as the majority need to migrate between freshwater and the sea to complete their lifecycle. Those species that are not good climbers can't negotiate these barriers and therefore aren't able to repopulate our urban streams.

Greater Wellington is committed to ensuring no new instream barriers are created and is working to improve fish passage in streams with known barriers. The recently built fish pass in Hulls Creek, Silverstream (Upper Hutt) has proven to be successful, with inanga, not a notable climber, found above a weir that was once a formidable barrier to upstream fish passage.



Electric fishing in a tributary of the Ngauranga Stream in Wellington City (left). Koaro (middle) and banded kokopu (right) are excellent climbers (this koaro is climbing out of a bucket) and are still present in reasonable numbers in many urban streams. Sadly many native fish species that are not good climbers are rarely found in urban streams due to the high occurrence of instream barriers that prevent them from migrating from the sea.

Aquatic invertebrate monitoring

As well as monitoring water quality at 56 river and stream sites, Greater Wellington also measures ecosystem health through annual sampling of the aquatic invertebrate community. Aquatic invertebrates (small stream animals without backbones) can tell us a lot about the overall health of a river or stream because different species have different sensitivities to water quality and habitat degradation. Rivers and streams with good water and habitat quality, such as many headwater streams, support high numbers of pollution sensitive caddisflies, stoneflies and mayflies. In contrast, degraded streams such as the Mangapouri Stream (Kapiti Coast) contain high numbers of pollution tolerant midge larvae and snails.



Nesameletus is a sensitive type of mayfly restricted to high quality rivers and streams. Our monitoring in 2009 showed *Nesameletus* was present in relatively high numbers in the Akatarawa and Whakatikei rivers (tributaries of the Hutt River).

What is Greater Wellington doing?

- Monitoring stream and river health at 56 sites around the region.
- Investigating poor water quality in the Mangatarere Stream catchment in Carterton and monitoring the ecological benefits of stream riparian planting projects.
- Investigating the effects of flood protection works on the aquatic fauna and habitat in the Waingawa River, south of Masterton.
- Helping Biosecurity NZ monitor selected river sites for the presence of the invasive freshwater alga, didymo (*Didymosphenia geminata*).
- Providing advice to landowners about streamside management. In 12 high quality catchments we provide plants to landowners who have fenced off streams. Email riparian@gw.govt.nz or visit www.gw.govt.nz/streams to learn more.
- Supporting 25 care groups to improve streamside and wetland environments across the region.

What can you do?

- Keep stock, especially cattle and deer, out of rivers and streams.
- Don't pour paint, chemicals or any other waste into stormwater drains, rivers or streams.
- Join Greater Wellington's "Be the Difference" programme and learn some easy steps to help the environment for generations to come, with cleaner streams and less waste. Sign up on-line at www.bethedifference.gw.govt.nz

More information

Some of the information on this card is a summary of the 2008/09 annual freshwater quality monitoring report which is available on our website at www.gw.govt.nz/envreports

If you would like to know more about river or stream health, visit our website or contact:
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