

# Caring for Urban Streams – Guide 3: Stream water quality

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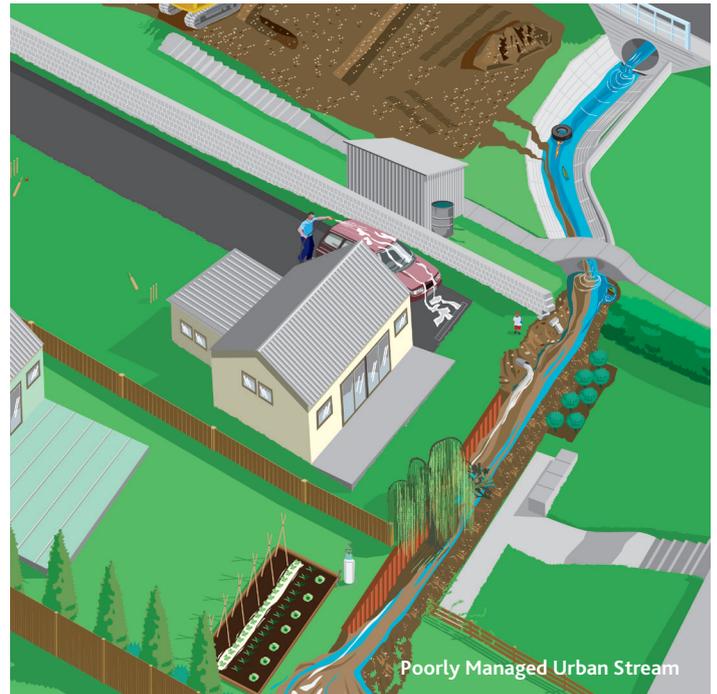


This guide forms part of a larger series of documents under the banner "Caring for Urban Streams". To get an overall understanding of the issues related to stream management it is recommended that people read through the complete set of guides, and as a starting point look at the Quick Reference Guide.

If you have any questions about this information sheet please contact Auckland Council on 09 301 0101



Well Managed Urban Stream



Poorly Managed Urban Stream

The quality of our coastal environment is directly related to the quality of our streams because what enters our streams enters the sea. So if we want clean and safe beaches we need to have clean and safe streams.

All kinds of pollution wash into streams, from building wastes, gardening and cleaning products, to heavy metals, fuel wastes and silt washing off roads and surrounding land. If conditions are right, stream beds and the plants alongside can trap, settle out and absorb pollutants before they flow downstream and into marine areas. Signs of a healthy stream include a natural stream bed, plant cover on stream bank, and a diverse and active ecosystem. This guide describes how to create conditions to improve water quality in urban streams.

## WHAT STREAM FEATURES IMPROVE WATER QUALITY?

- Shallow areas flowing over gravel or rocky areas (riffles) oxygenate water
- Plants within the stream and on its banks help filter flows and shade it to keep water temperatures cool.
- Natural levels of algae.
- Biofilms on surfaces in the stream bed – a thin slime layer on stream banks, rocks, and plants, made up of bacteria and other organisms that trap and break down pollutants in the water.

## STREAM SOLUTIONS

Below are several solutions to help manage stream water quality.

**Filter flows.** Filter water entering the stream. Planting alongside the stream, known as riparian planting, traps pollutants and acts like a sieve, allowing cleaner water through. Even a simple grass strip can act as a screen to reduce pollution getting to the stream from hard surfaces such as driveways.

**Care for stream bed.** Is the stream bed and banks stable, and is stream water usually clear, not muddy? Reducing pollutants (including silt) washing into the water helps improve water quality downstream.

- Monitor and fix erosion using streambank planting and by slowing flows. (See Guide 2: Erosion).
- Check the stream has some rocks, logs and riffles (gravel, pebble and small rocks spread across shallow areas). Rocks and riffles oxygenate the water, make a home for water animals and encourage the growth of native water plants and biofilms.
- Shade the stream bed to reduce water temperatures by planting evergreen native plants near the stream.

Keeping pollutants out. What is polluting the stream?  
Gardening and cleaning products pollute streams and kill stream and marine life, and too much sediment smothers life.

- Do not use herbicides, pesticides or fertilisers within 10 metres of a stream.
- Stop wash-off from building work or cleaning activities (e.g. car washing, water-blasting) from draining to stormwater drains and streams, including cement, paint products, fuel products and car wash detergents.
- Keep pet waste out of streams.
- Never dump waste into stormwater drains or streams – report dumping and stream pollution to Auckland Council Pollution Hotline 09 377 3107.

### Maintenance and monitoring checklist

Regular maintenance and monitoring is important in ensuring that stream water quality is good. Changes made up or down stream can alter the stream quality for the entire length of the stream so monitoring gives us an understanding of what is happening. We may only see the symptoms, but proper maintenance ensures that pollutants are not entering the stream from the land.

#### Maintain

- Remove rubbish that has washed into the stream.
- Replace gravel in shallow areas and reinstate and anchor water plants and rocks that have washed downstream.
- Ask a horticulturist or landscaper for a suitable plant list which grows well on stream bank, results in a dense permanent ground cover, and can live in partial or full shade.
- Reinstall slipped stream bank material by hand in dry season.

#### Monitor

- Observe and record water life passing through and living under gravel, rocks and plants – larval insects, tiny crustaceans, migrating fish, and especially sensitive water creatures, are indicators of stream health
- Look at the stream bed – have rocks washed downstream? Replace and secure in place.
- If riffles are washed away, consider replacement with larger rocks.
- Check stream banks are not being eroded or slumping, and stream bank plants are not falling into the stream.
- Make note of sudden or noticeable new silt accumulation.

- Encourage plant growth alongside stream.
- Aim for shading but keep overflow paths clear of large obstructions.
- Measure stream water temperatures monthly (especially at midday) – ideally should be below 20 degrees Celsius.
- Note signs of pollution and take photographs. Signs include unusually muddy water, discolouration, foams, and oily sheens. Report large-scale fish deaths immediately to Auckland Council.
- Report stream pollution to Auckland Council Pollution Hotline 09 377 3107
- Maintain bankside grasses, sedges and rushes, and keep taller plants with spreading canopies to shade stream – even one row of trees and shrubs helps.

### Links/Further Information

Further information on water quality can be obtained by entering the following search terms on internet search engines:

- Auckland Council
- Streams
- Water quality
- Pollution

**There are more guides available in this series.**  
The complete set includes the following:

Caring for Urban Streams  
Quick Reference Guide  
Guide 1: Flooding  
Guide 2: Erosion  
Guide 3: Stream water quality  
Guide 4: Stream side planting  
Guide 5: Stream life  
Guide 6: Fish passage

*The activities described in this document include some activities that are minor and easy to do, but may also involve significant construction activity such as the use of machinery, moving large volumes of material and extensive changes to the shape and character of a stream. Such activities are likely to require resource consents. Professional advice should always be sought before commencing any work. If in doubt, please contact the Auckland Council stormwater team.*

*Remember, private landowners are responsible for maintaining the streams passing through or adjacent to their property and for ensuring that any work is done in a legal and safe manner.*

For access to this information sheet and to find the other information sheets, search for "Caring for Urban Streams" at [www.aucklandcouncil.govt.nz](http://www.aucklandcouncil.govt.nz)

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