

# Caring for Urban Streams – Guide 1: Flooding

Issued by Auckland Council April 2013



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

It is perfectly natural for streams to overflow as a result of heavy rain, and this is often an important aspect of the local ecosystem. Unfortunately it can become a problem in an urban situation.

Blocking, culverting and filling in streams can make these matters worse, not better, as natural overflow areas are removed and the stream is narrowed. The resulting flooding can be unsafe, damage property and disturb stream and plant life. This guide describes how to manage flood risks in and around urban streams.

## STREAM SOLUTIONS

Below are several solutions to help manage flooding.

Remove obstructions. Is the stream channel littered with old tyres, rubbish, large branches, overgrown wire fencing or other blockages? These block flows. Walls, fences and other barriers across and alongside the stream channel act as dams and contribute to flooding problems.

Avoid removing natural material in the streambed such as rocks and gravel, submerged logs and water plants, as these help control fast flows and are food sources and shelter for stream life.

Plant stream sides carefully. Are plant pests (willows, pampas grass and bamboo etc) damming water flow? Replace with waterside plants (grasses, sedges and rushes) that lay flat and allow water to flow freely during floods, or trees with narrow trunks such as cabbage trees. Though native, flax can be problem if planted too close to the stream, as it can block flows and trap material which causes flooding. Willow trees cause the same problem.

Improve channel shape. Stream banks may be carefully re-shaped to be less narrow and steep, though this would require consents. Suitable waterside plants should be planted to stabilise bank sides.



Flows in stream channel

Check pipe flows. Look at pipes and culverts in the stream path – do they allow for free flow of water during heavy rainfall? If these frequently block and overflow they may be undersized. Seek engineering advice.

Keep flood paths clear. Inspect overflow routes where the stream banks are overtopped during storms. Can water flow freely? These natural pathways should be kept clear of bulky plant varieties (such as flax), fences and other obstructions.

Digging and piping. Before starting works, is a permit or consent needed? Any earthworks, culverts or piping in and alongside the stream may need council permits or consents. Earthworks usually includes removing artificial fill (concrete, rock, soil), piping or putting in culverts in the stream, and digging out the stream channel to increase water storage. Check with Auckland Council Resource Consents before undertaking any stream earthworks. Maintenance works, to reinstate damaged banks or structures, are permitted.

Flood paths next to streams should have plants that can lay flat during flood flows, rather than include rigid bulky plants.

#### MAINTENANCE AND MONITORING CHECKLIST

It is important to maintain and monitor your stream. Maintaining it will mean that it keeps clear of weeds and other problems, while monitoring will improve your understanding of how it behaves, making it easier to manage in the long term.

##### Maintain:

- Check for blockages in streambed after heavy rainfall.
- Keep streambed and overflow areas/floodplain clear of bulky, rigid plants.
- Trim low level streamside plants to keep overflow areas clear, but keep taller plants to shade the stream.

##### Monitor:

- Watch for rising water levels during storms.
- Put a permanent marker post in streambed to record water levels during floods.
- Record and date flooding and property damage (take photos, keep notes, record levels on post) to check if flood area is increasing or water is taking longer to drain away.



### STREAM MONITORING PLAN

Keeping notes and taking photos and simple measurements on site over time helps identify if flooding is becoming more frequent, more widespread, or taking longer to drain away. It can also help identify local obstruction points, risk to property, and upstream or downstream problem areas.

- Use a notebook to record stream overflow information, including dates, measurements and photos. Note weather reports and rainfall measurements. Remember to include photos of the stream and levels when not in flood.
- Sketch a simple property layout showing the dry weather stream path. Outline overflow areas during storms, and highlight unusually high or widespread flood levels.
- Take regular photos of the same stream section to compare flows. Take mid- to late-summer photos to use as a comparison.
- Record maintenance carried out within the property as well as upstream and downstream.
- Refer to these records to see if flooding has changed following maintenance, or to help identify other factors that could be causing increased flooding.
- Use notes to guide long-term management of stream and to support professional advice or work on stream.



### Links/Further Information

Areas prone to flooding are indicated on the Land Information Memorandums (LIMs).

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

- Auckland Council
- Flood risk
- Mitigation
- Stormwater

### 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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