



Roughness Score: 1.5



Roughness Score: 2



Roughness Score: 2



Roughness Score: 3



Roughness Score: 4



Roughness Score: 6



Roughness Score: 7



Roughness Score: 10

Let's work together to reduce the risk of stormwater becoming floodwaters.

The information in this brochure is a guide only, and is not a statutory document

Ruapehu District Council
59-63 Huia Street
Private Bag 1001
Taumarunui 3946
Ph 07 895 8188 (24 hr)
Fax 07 895 3256
Email info@ruapehudc.govt.nz
Website www.ruapehudc.govt.nz



Ohakune Service Centre
Ayr Street, Ohakune
Ph 06 385 8364 (24 hr)

Raetihi Agency
Seddon Street, Raetihi
Ph 06 385 4447 (24 hr)



a guide to

Stormwater and Flood Control

Ohakune is a township with lots of little watercourses and many bridges which must allow lots of stormwater to flow through it quickly to prevent flooding.

As a mountain area, the rainfall events tend to be intense but of short duration. The use of the land is changing, with more housing having more hard-surface areas (concrete drives, larger roofs and sealed roads) resulting in less water soaking into the ground and more flowing into the waterways. **Clear waterways are essential to let the water flow down the channel.**

Heavy rainfalls are one of the major causes of floods. The flood event is made worse by restrictions in the river channel which slows the flow down and reduces the capacity of the channel. The level of water raises above the channel banks causing surrounding land to be flooded. The Science community tell us the *extreme* rainfalls are going to be *more frequent and more intense* over time.

Restrictions include:

- Vegetation in the channel and along the sites.
- Culverts too small, bridges and pipes across the channel.

What we do beside and across a river channel has a significant effect on the channel ability to prevent flooding.

Restricted waterways result in the channel being "rough" and allows less water to flow. An ideal channel with no vegetation impeding flow scores a 10 and will conduct the most water down the channel for the least depth. As the channel is more overgrown with vegetation it becomes rougher it has a lower score of 2. This means that a channel scoring a 2 receiving a flow of 5 cumecs (cubic metres per second) must be much deeper to allow the same volume of water to pass through.

Most of the watercourses in Ohakune fall into the 5 cumecs category with Mangawhero River being a larger channel of 30 cumecs. This is graphically illustrated in Figure 1.

Channel Roughness

A channel scoring a 10 only needs to be 1.07 metres deep to allow 5 cumecs of water to flow through it. A channel with rough sides and overgrown would score a 2 and needs to be 2.23 metres deep to pass the same 5 cumecs of water down the channel. That is **twice the depth**.

Ownership and Responsibilities

The Local Government Act 1974, Section 511, states that free flow of water in any drainage channel or in any watercourse needs to be able to flow freely. Some of this

is on public land and some of it is on private land. Each situation needs to be discussed on its merits and with the adjacent landowner. Please feel free to discuss the situation with Council.

How You Can Help?

- It is important not to plant within the water channel or immediately on the bank where the water moves into during high flows. The planting reduces the channel capacity.
- Clearing of vegetation from the sides of the river bank and maintain the vegetation clearance is important.
- Developing rain gardens and reducing hard surfaces all reduce the impact on the environment.

