

# The Green Guide



To determine where the shallow water table is, in dry weather dig a small test pit and see if it fills with water. Locating your rain-garden in full sun or partial shade lets you choose the widest selection of plants.

## Size

Your rain-garden will be most effective if you make a fairly accurate estimate of two critical factors — the amount of stormwater that will be captured and how quickly it is absorbed.

## Soil infiltration

Know your soil and its permeability before you choose where to put the rain-garden. Sandy soils (and Kapiti is largely on sand) are very permeable with a minimum water absorption rate of 210 mm per hour. In clay soils, water absorption can be as low as 1 mm/hour. Test the permeability of your soil by digging a small test pit, filling it with a known quantity of water and timing how long it takes for the water to be absorbed.

A general guideline for depth is 7.5 cm in soils with relatively low infiltration rates (for example, loam) and up to 15 cm in soils with high infiltration rates (for example, sandy soil). To determine the size, of the pit for your rain-garden follow these steps:

1. Determine how much water needs to be absorbed

by how long (inflow).

- a. Estimate the area in square metres of the section of your roof that will drain into the downpipe, plus the area in square metres of other hard surfaces, such as driveways or patios, that drain into the rain-garden. Estimate the area of lawn that will drain into the garden and multiply the figure by 20 per cent. The roof area plus other hard surface areas, plus 20 per cent of the lawn area draining into the rain-garden is the total drainage area in square metres.
  - b. Estimate the amount of rain that will fall on your rain-garden over a 24-hour period. Check your area's average and add 20 per cent to get a rain capture target.
  - c. Multiply the drainage area in square metres (a) by the rain capture target in metres (b). A rain-garden that will capture 25 mm of rain over 24 hours from 170 m<sup>2</sup> of drainage area must hold  $170 \times 0.025 = 4.25$  m<sup>3</sup> of water over 24 hours.
2. Determine the soil infiltration rate. For example, if the rate is 15 mm/hour, it will absorb 360 mm of water over 24 hours. Convert the figure to metres (in this case, 0.36 m).
  3. Divide the estimated inflow (a) by the infiltration rate (b). Using the example above, the rain-

garden would need an area of  $4.25 \div 0.36 = 11.8$  m<sup>2</sup>. Your rain-garden design will capture average annual precipitation levels plus 20 per cent to allow for heavy rain events. rflow of your rain-garden will most often simply be accommodated by your own If there is any possibility that overflow could cause drainage problems, include an overflow system. This can be as simple as an in-ground perforated pipe or shallow swale directed towards a less vulnerable area, or an area that drains into the storm water system.

## Determine the Size and Shape

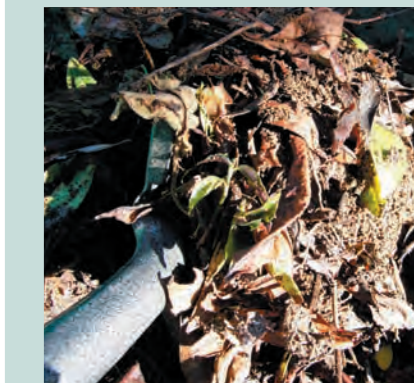
To be most effective, a rain-garden should be at least 1.5 times longer than it is wide. If your site conditions do not allow for the optimum size, there is some flexibility to adjust as needed.

Soft, round edges reflect the natural environment. But create any shape that suits your taste and your environment.

## Planting

Select natives for low maintenance: native grasses and ferns love moisture and can tolerate reasonably dry summers (see *the Kapiti Guide to Native Plants* for more). Perennials work too, flourishing throughout the year and tolerating wet and dry conditions. Choose plants that are adapted to your region and your specific soil and sunlight conditions. Bear in

mind plant heights, colour, texture, and flowering periods. Fruit trees can also suit a rain-garden situation. Check with your local garden centre.



*Mulch, mulch, mulch!*

*Mulch improves soil conditions and texture, and keeps those weeds away. If you like, add a mix of pumice and river stones over the mulch. A large rock, a sculpture or suitable tree adds a focal point - Nikau palms and tree ferns are excellent choices for Kapiti rain-gardens. Put generous quantities of mulch around the edges of the rain-garden and plant some tall grasses to improve soil stability.*