

# How to build a raingarden

Rain water that runs off roofs, driveways and streets is known as stormwater. It washes into kerbside and stormwater drains and is frequently discharged, untreated, directly into rivers and streams and eventually, our harbours. Urban stormwater is often contaminated with litter, oils, sediment and heavy metals (zinc and copper), which impact on marine life.



*Perspective drawing of the raingarden at the Ellerslie International Flower Show 2007.*

A raingarden can be a sustainable and economical way of dealing with rainfall as nature intended. The soil and plants absorb water and filter pollutants. The garden slows down and lowers rainfall runoff before it enters the stormwater system.

# How to build a raingarden - 10 easy steps

It is easy to create a raingarden at home, all it takes is some careful planning. Follow these simple guidelines to create your own raingarden.

## 1 Choose the raingarden site

- Runoff must flow naturally (by gravity) into and out from your garden.
- Avoid areas under large trees, sloping ground and land with retaining walls.

## 2 Assess the soil

- Free-draining soils allow shallow raingardens, with rain flowing into the soil and under the garden.
- Many city soils are poorly drained and soils will need to be replaced and a drain installed under the garden.

## 3 Get runoff to and from the raingarden

- Runoff can enter via a pipe from a house or building or directly from driveways, or paved areas.
- During large storms the raingarden should flow into a stormwater drain or overland.

## 4 Decide on depth of garden and ponding depth

- The typical ponding depth of 100 to 200 mm can include stones or gravel.
- The standard depth of a raingarden is 900 mm, depending on soil type.

## 5 Size and shape your raingarden

- The raingarden should be 4 to 8 per cent of the source area.
- It can be any shape as long as water flows evenly across the garden.

## 6 Source the materials

- See fig 1. A free-draining soil will often be 60 to 90 per cent sand.

## 7 Construct

- Excavate carefully, avoiding underground services.
- If necessary, line the sides of the raingarden with geotextile cloth.
- Install underdrain and overflow drain with their connections to existing drainage or flow paths. See fig 1.
- Install filter sand and soil layers, saturate to help settle before completely filling.

## 8 Select the plants

- Optimum plants include dense groundcovers at least 200 mm high that tolerate temporary ponding and dry periods. Refer to table on next page.

## 9 Plant

- A fast plant cover needs 4 to 10 plants per square metre, depending on plant size.

## 10 Look after your raingarden

- Like other gardens, raingardens need weeding and watering during establishment.
- They also need checks of inflow and overflow areas to ensure free flow is maintained.

For detailed information visit  
[www.arc.govt.nz](http://www.arc.govt.nz)

# Plants used in this design

Botanical name	Common name	Notes
<i>Alocasia gageana</i> 'California Shield'	taro	Exotic, lush green leaves, loves wet or dry conditions
<i>Astelia grandis</i>	swamp astelia	Native, flax-like foliage, endangered species that tolerates wet and dry conditions.
<i>Baumea complanata</i>	shiny sedge	A native sedge that is in gradual decline and extremely rare in the wild.
<i>Baumea rubiginosa</i>	orange nut sedge	Native sedge that is great for erosion and as a water purifier.
<i>Baumea teretifolia</i>	pakihi rush	Native sedge that handles both a watery and scrubland situation. Great in low fertility soils.
<i>Calopsis paniculata</i>	restio	Exotic with plume-like foliage. Sterile seed heads.
<i>Lepidosperma australe</i>	square-stemmed sedge	Native sedge, great on poor soils and tolerant of both wet and dry conditions.
<i>Cyperus haspan</i>	miniature papyrus	Exotic with attractive star-like seed heads.
<i>Elegia Capensis</i>	restio	Exotic with feathery foliage. Sterile seed heads.
<i>Gnatiola sexdentata</i>	-	Native groundcover that lives happily in the water or stream banks. Uncommon.
<i>Halocarpus bidwillii</i>	bog pine	Native conifer-like shrub. Enjoys both wet and dry situations.
<i>Iris sibirica</i> 'Caesars brother'	iris	Exotic iris with blue/purple flowers.
<i>Juncus edgariae</i>	wiwi	Native rush that tolerates extreme wet and dry.
<i>Juncus pallidis</i>	giant rush wiwi	Native rush that is found commonly in barren areas and swampy situations.
<i>Juncus sarophorus</i>	wiwi	Native rush commonly found in pasture that is wet or dry.
<i>Leptinella tenella</i>	-	Critically endangered native groundcover that handles wet and dry conditions.
<i>Machaerina sinclairii</i>	tuhara, pepepe	Native sedge with strappy leaves. Good in wet/dry conditions.
<i>Myriophyllum votschii</i>	-	Native groundcover that is rare. Handles wet and dry situations.
<i>Rhopalostylis sapida</i>	nikau	Native palm. Known to colonize in damp to wet areas as well as dry situations.
<i>Rhodocoma gigantea</i>	restio	Exotic, large plume-like foliage, sterile seedheads.

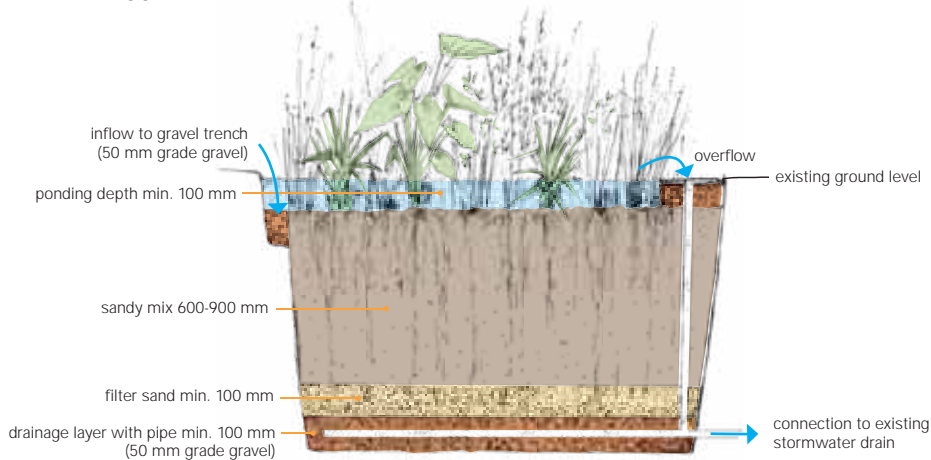


Fig 1 - cross section of a raingarden

## Important facts

- A raingarden can slow down and lower rainfall runoff.
- A raingarden can play a role in decreasing zinc, copper and sediments entering estuaries and harbours.
- Zinc and copper enter the stormwater system from building materials and vehicles.
- Many animals such as shellfish and small invertebrates are affected by zinc and other contaminants. These animals are at the bottom of the food chain and if they are lost other animals higher up the food chain, such as fish, may also suffer.



## Contact Details

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