

Building a raingarden

A step-by-step guide

Rain impacts on waterways

When rain falls on natural, vegetated areas (such as a forest) it is filtered by soil and plants and allowed to soak back into the ground. When rain falls on hard, impervious surfaces (such as rooftops and roads) it cannot soak into the ground and becomes stormwater runoff.

Stormwater runoff picks up pollution such as mud, chemicals and litter, carries them into stormwater drains and out into our waterways.

These pollutants are harmful to fish and other marine life. Sediment (or mud) can smother seagrass, which is an important source of food and habitat for turtles and dugongs. Stormwater also contains nutrients that can cause algal growth in our waterways. Algae can choke waterways and become toxic to humans, fish and other marine life.



Healthy Waterways

Raingardens are a good alternative to traditional gardens or lawns.



Healthy Waterways

Raingardens can be any size or shape and therefore can be incorporated into any garden.

How can raingardens help?

Raingardens (also known as bioretention systems), are garden beds that use native plants and soil to capture, filter and treat stormwater runoff from your driveway or roof.

Building a raingarden on your property is an easy and inexpensive way to improve local water quality and enhance the beauty of your backyard. By treating pollutants and minimising the disturbance to local creeks and rivers, raingardens help to maintain healthy waterways for future generations to enjoy.

This fact sheet provides an easy, step-by-step guide on how to create your own raingarden.

Creating a raingarden

Location

Here are some tips to help you select a suitable location:

- On flat sites, raised planter boxes make ideal raingardens. On steeper areas with enough depth for drainage, raingardens can be excavated.
- Try to capture and treat stormwater from the greatest impervious area.
- Make sure that the overflow from the raingarden can be connected into your stormwater drainage system. Your plumber will be able to help you locate the drainage system when quoting for the connection work.
- Locate the raingarden as close as possible to the roof downpipe and drainage system to minimise the plumbing work needed.

If your raingarden cannot be built to the recommended size, you can build a smaller raingarden or make up the recommended area with two smaller gardens.

Size

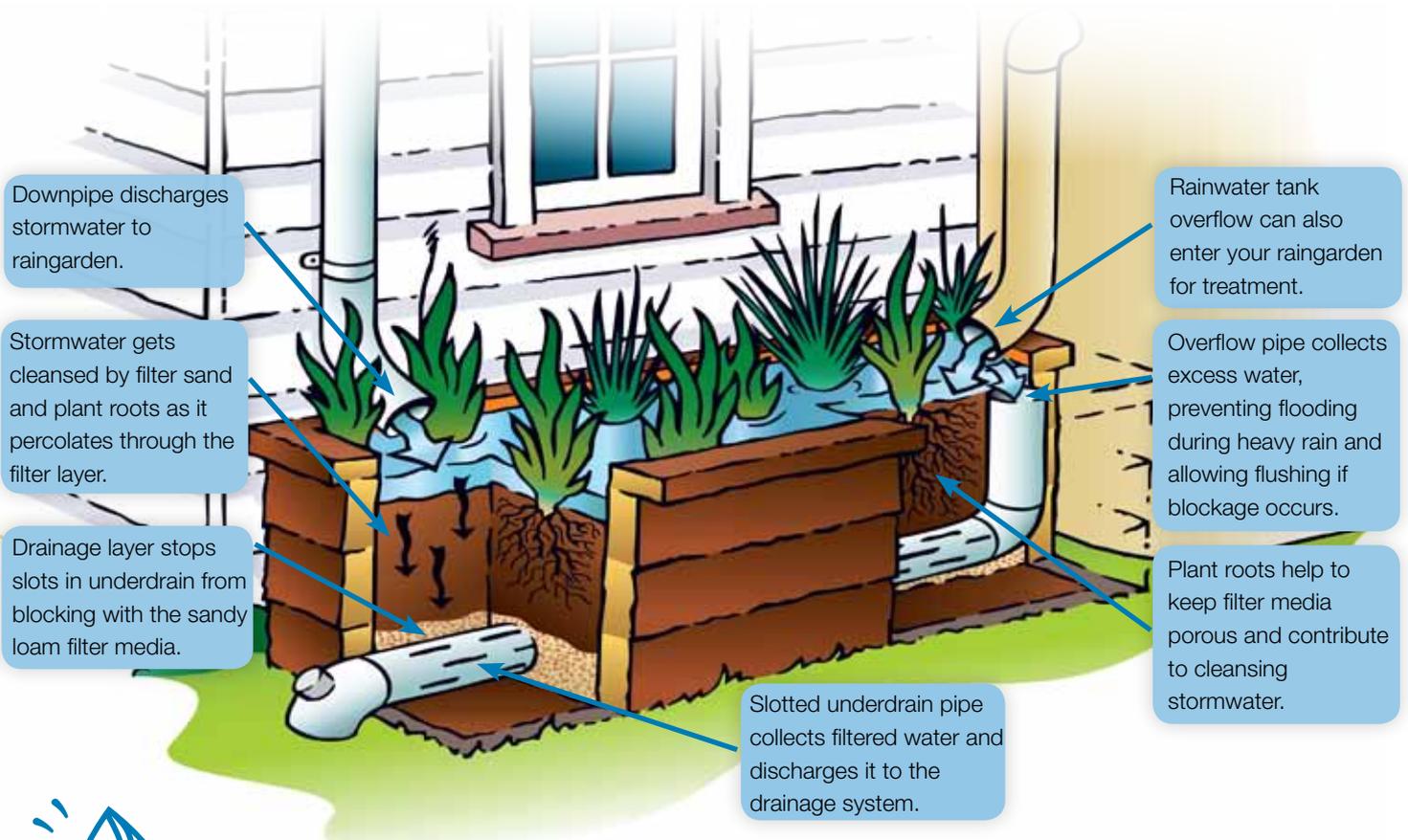
Ideally, your roof and driveway should drain into your raingarden, however, this is not always practical. Regardless of how much area can actually drain to the raingarden, a raingarden should be approximately 2% of the size of area from which runoff will be captured. Our table will help you work out the correct size for your raingarden.

Area from which runoff will be captured	Raingarden size
50 m ²	1 m ²
100 m ²	2 m ²
150 m ²	3 m ²
200 m ²	4 m ²
250 m ²	5 m ²
300 m ²	6 m ²
350 m ²	7 m ²

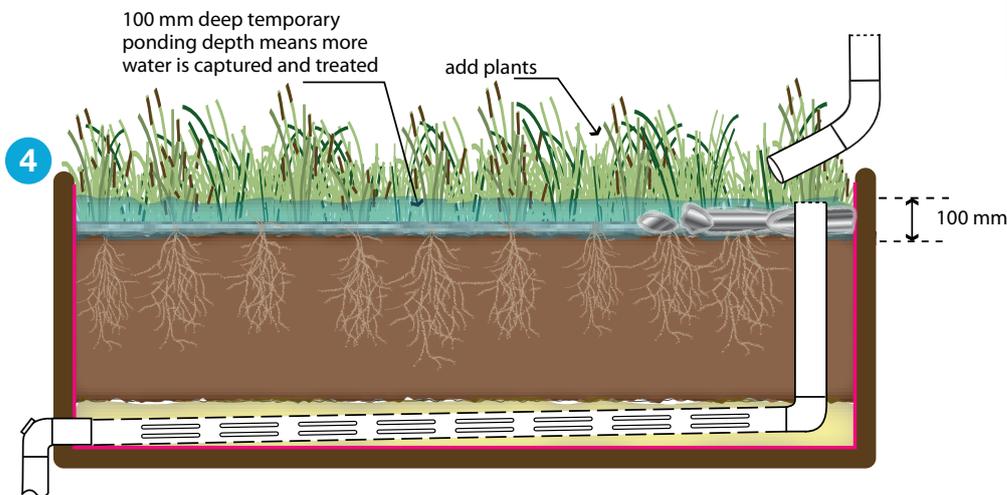
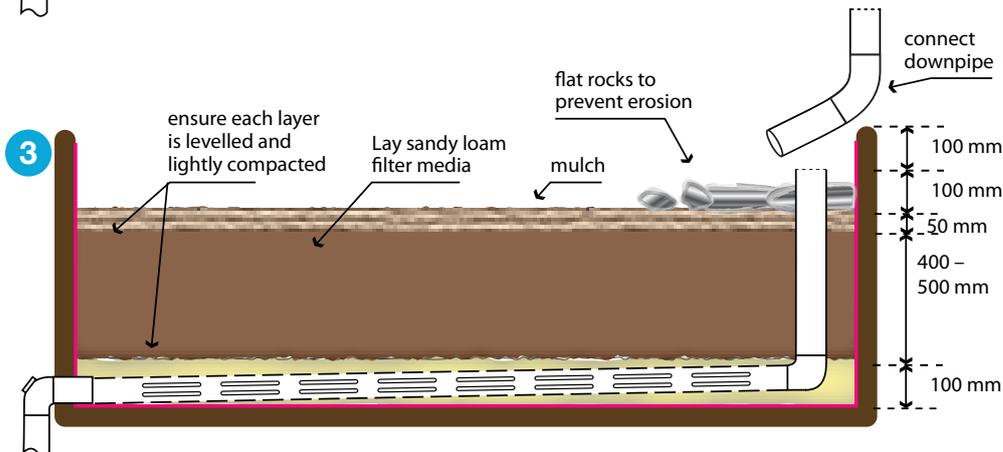
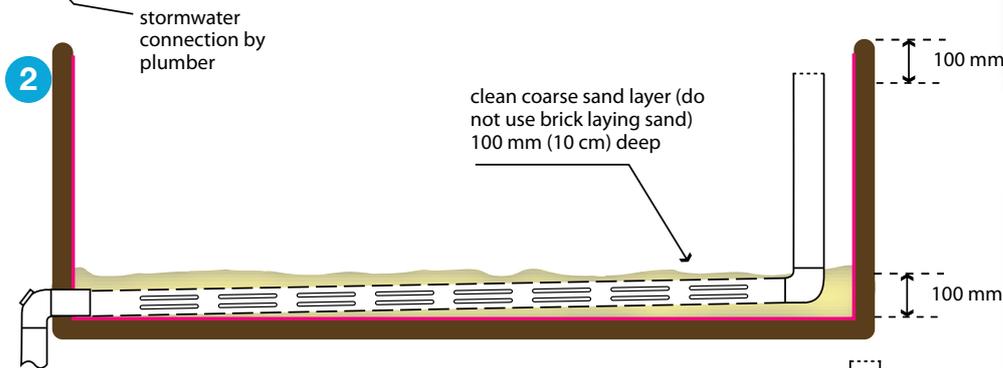
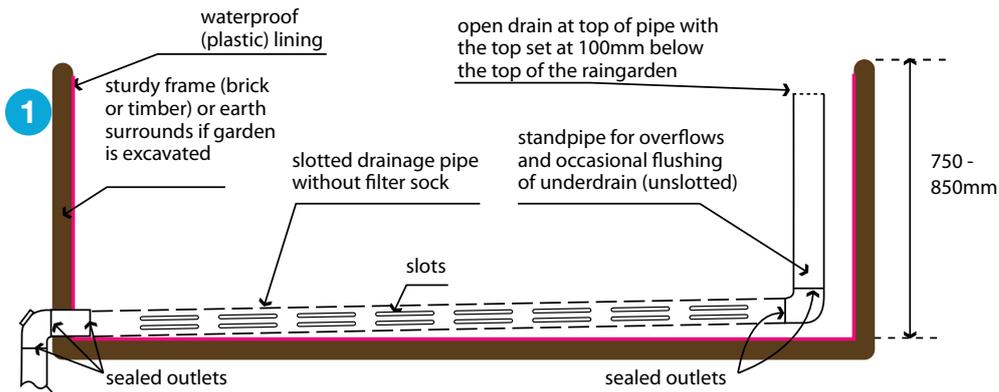
Soil

A typical raingarden is constructed in two layers of soil. The top layer (filter layer) should be a sandy loam with good drainage and very low clay content.

The bottom layer of soil (drainage layer), should be coarse sand. A small amount of sand might wash into drainage pipes when your raingarden is first built. However, the soils will quickly settle and the coarse sand particles will bridge over the drainage holes preventing further loss of soil. Note: Large raingardens should use a third gravel drainage layer.



Step-by-step guide



Note: A licenced plumber should undertake all work to stormwater pipes.

Step 1.

- Either construct a planter box or excavate a trench.
- Seal the raingarden by lining it with plastic.
- Place the slotted drainage pipe along the bottom on a slight angle so that water falls towards the outlet. The pipe should not be covered in any kind of fabric (i.e. a "sock"), as this tends to clog.
- Connect the horizontal drainage pipe to the vertical overflow pipe with the top set at 100mm below the top of the raingarden.
- Contact a licenced plumber to connect the drainage pipe to the stormwater outlet.
- Ensure that the connections and plastic are well sealed (glued).

Step 2.

- Lay a very coarse drainage sand or very fine gravel ensuring that the drainage layer covers the drainage pipe by at least 20 mm. The depth of this layer should be about 100 mm.
- Lightly compact the drainage sand and smooth it out.

Step 3.

- Lay the sandy loam filter media to a depth of 400-500 mm on top of the coarse sand drainage layer.
- Lightly compact the sandy loam filter media and level it out.
- Add about 50 mm of fine mulch to retain moisture and limit weed growth.
- Place some flat rocks where the stormwater will enter the raingarden to help prevent erosion.
- Connect the downpipe and if possible any rainwater tank overflow pipes.

Step 4.

- Add plants and a teaspoon of slow-release fertiliser into the hole for each plant.
- Give the plants a good watering after planting.

Planting

The type of plants used in raingardens is important. Generally, native plants are the most suitable. Ask your local nursery to show you plants that:

- can tolerate short periods of wet conditions, followed by longer dry periods
- are suitable for the amount of sun and shade on your site
- are at least 200-300 mm when planted
- are perennial rather than annual
- have deep fibrous roots to increase the effectiveness of your raingarden.

Regardless of the type of plants you use, it is important to plant densely to cover the filter layer. It is recommended that you use eight plants per square metre to help to keep the filter layer porous and reduce weeding. Planting tubestock rather than more established plants is an easy way to achieve this plant density at low cost.

Suggested Plants

Tall Sedge – (*Carex appressa*)
Knobby Club Rush – (*Isolepis nodosa*)
Red-fruited Sword Sedge – (*Gahnia sieberiana*)
Common Rush – (*Juncus usitatus*)
Variable Sword Sedge – (*Lepidosperma laterale*)
Spiny-headed mat rush – (*Lomandra Longifolia*)
Large tufted mat rush – (*Lomandra Hystrix*)

Maintenance

Once established, raingardens are low maintenance. To help your raingarden function properly and reach maturity, it is important to:

- use rocks or stones to limit erosion from downpipes
- water daily for the first few weeks
- weed as necessary
- avoid using herbicides, pesticides or fungicides
- prevent the soils from being compacted.



Raingardens can capture pollutants and reduce the amount of stormwater runoff.

Frequently asked questions

Do raingardens create a pond?

No. Water will only pond in raingardens for a few hours after rain. Using the correct soils and planting your raingarden densely will allow it to drain quickly.

Do raingardens act as breeding ground for mosquitoes?

No. Because raingardens drain within a few hours of most storms, any mosquito eggs will die before they have a chance to hatch.

Is a raingarden expensive?

Raingardens can be as simple or as extravagant as you like. The main cost is in the materials. Apart from hiring a plumber to connect raingarden pipes into stormwater drains, you can easily construct a raingarden yourself using the information in this fact sheet.



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There are other fact sheets and educational resources available. For more information about the waterways of South East Queensland please visit the Healthy Waterways website.

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