

## Building a raingarden



### Why build a raingarden?

Building a raingarden is an easy and inexpensive way to **improve local water quality**.

By treating pollutants and minimising the disturbance to local creeks and rivers, raingardens help to maintain healthy waterways for you and future generations to enjoy.

### What are they?

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.

**Raingardens are a good alternative to traditional gardens or lawns.**



### Rain impacts on waterways

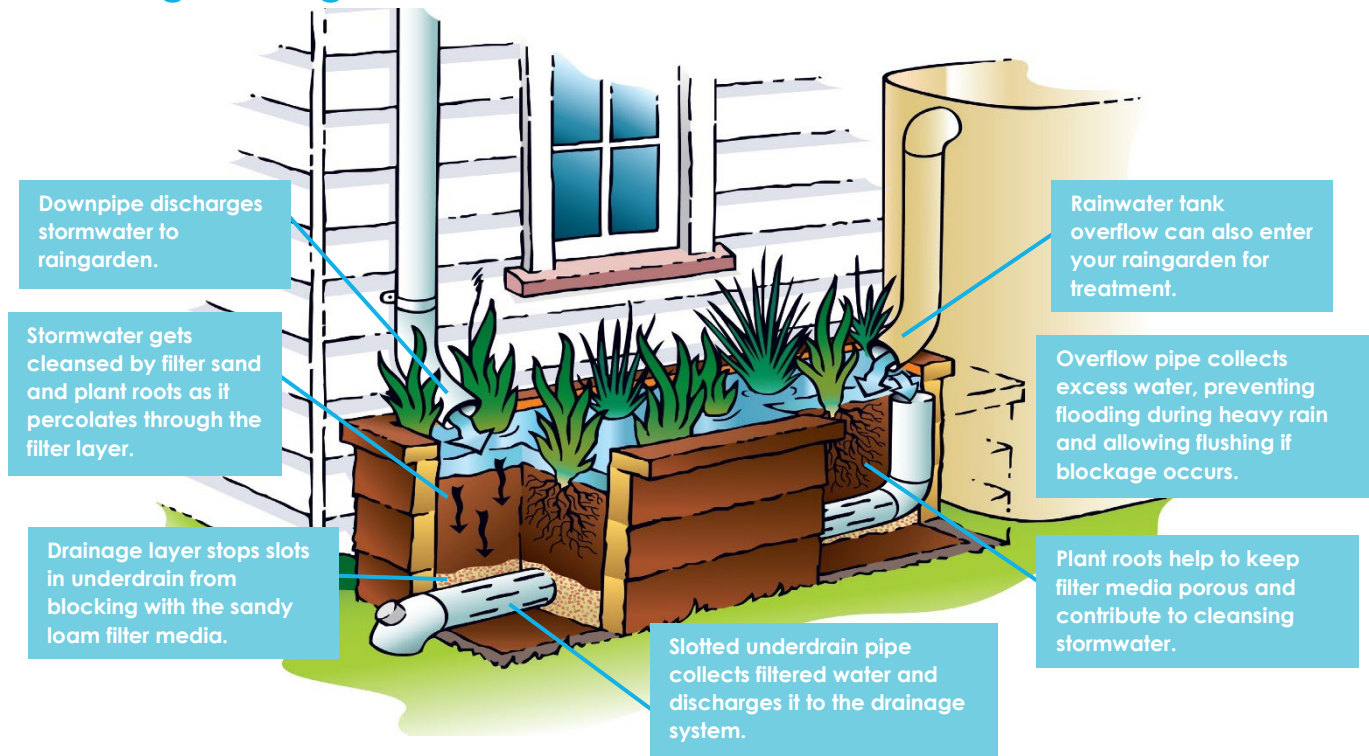
When rain falls on natural, vegetated areas such as a forest it is filtered by soil and plants and soaks back into the ground. When rain falls on hard, impervious surfaces such as rooftops, footpaths and roads it cannot soak into the ground and becomes stormwater runoff.

Stormwater runoff picks up pollution such as mud, chemicals and litter and carries them into stormwater drains and out into our waterways, some from which we get our drinking water.

These pollutants are harmful to fish and other marine life. Mud, which is also called sediment 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 which can 'choke' waterways and become toxic to humans, fish and other marine life.



## Creating a raingarden



### 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.

#### Raingardens are a good alternative to traditional gardens or lawns.

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**Choosing a location:** On flat areas, raised planter boxes make ideal raingardens. On steeper areas with enough depth for drainage, raingardens can be built into the ground.

- Try to capture and treat stormwater from the greatest impervious area, for example, from the rainwater pipe that comes off your roof or off your driveway.
- 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.

Area from which run-off will be captured	Raingarden size
50 m <sup>2</sup>	1 m <sup>2</sup>
100 m <sup>2</sup>	2 m <sup>2</sup>
150 m <sup>2</sup>	3 m <sup>2</sup>
200 m <sup>2</sup>	4 m <sup>2</sup>
250 m <sup>2</sup>	5 m <sup>2</sup>
300 m <sup>2</sup>	6 m <sup>2</sup>
350 m <sup>2</sup>	7 m <sup>2</sup>

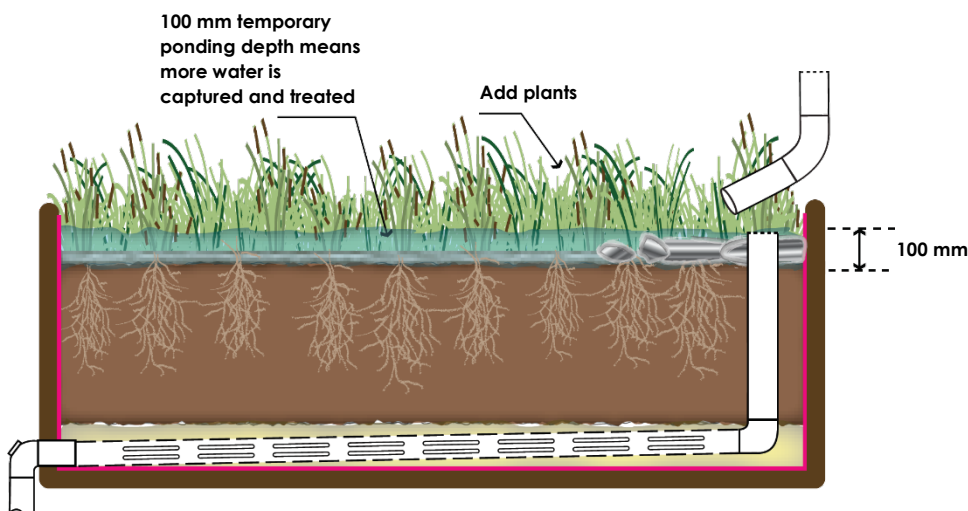
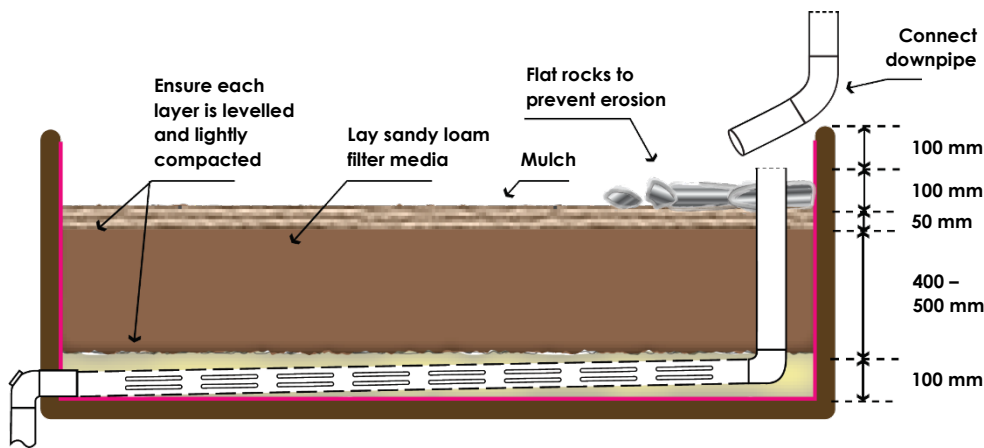
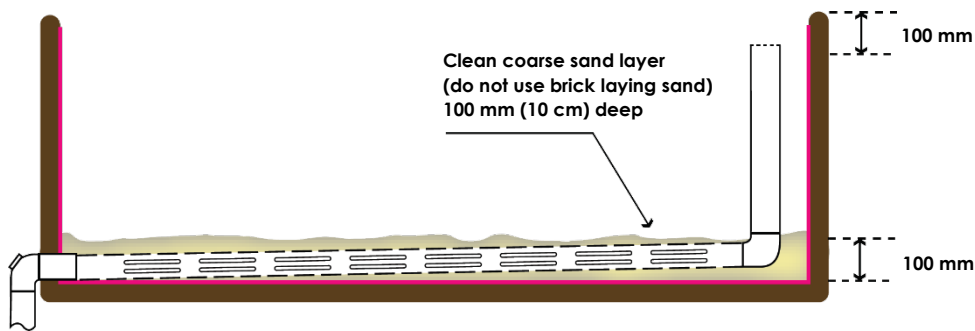
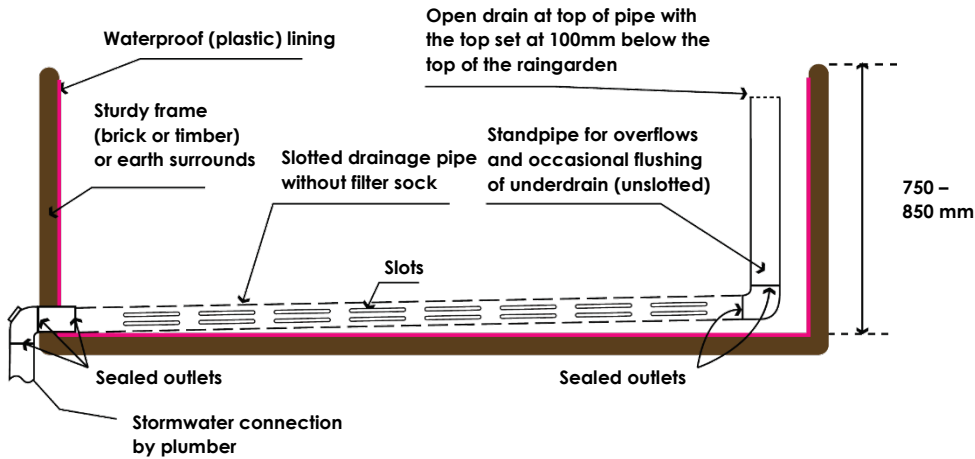
**Picking the right size:** Ideally, your roof and driveway should drain into your raingarden, however, this is not always practical. A raingarden should be approximately 2% of the size of area from which runoff will be captured. Our table will help you work out the correct size for your raingarden.

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.

**Using the right type of 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. : Large raingardens should use a third gravel drainage layer.

## Step by step guide



- Either construct a planter box or excavate a trench.
- Seal the raingarden by lining it with plastic.
- Connect the horizontal drainage pipe to the vertical overflow pipe with the top set at 100mm below the top of the raingarden.
- Contact a licensed plumber to connect the drainage pipe to the stormwater outlet.
- Ensure that the connections and plastic are well sealed (glued).

- 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.

- 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.

- 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 include 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*) and 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.

## 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.

