

RAIN GARDENS

MAINTENANCE GUIDE

Rain gardens help remove pollutants and slow down stormwater flows, recharge freshwater bodies and look attractive. They filter stormwater through soil mix and plants. These absorb and filter contaminants before stormwater flows to surrounding ground, pipes, drains and streams, and eventually to the sea.

How and when should maintenance be carried out?

Rain gardens require regular inspection and maintenance to work properly. The maintenance schedule overleaf lists what needs to be done and when. In general, a rain garden should always be checked after heavy rainfall for blockage or damage, and a full inspection should be carried out one year after construction and then annually.

As part of the full inspection, a flow test is needed to check the underdrain works properly and that the rain garden drains within 24 hours. This may coincide with the end of the defects liability period for the construction contractor. In most cases an operation and maintenance manual, covering detailed maintenance of the rain garden, will be produced by the designer of the rain garden.

WARNING - CONTAMINATED SOIL

Where rain gardens treat stormwater run-off from roads, carparks, driveways or other surface areas, including rooves, the rain garden soil mix will accumulate pollutants, contaminating the soil mix. Unless soil tests show that soil is not contaminated, all material removed from these sites MUST be disposed of at a secure landfill.

Key components of a rain garden

- 1. Rain garden soil mix** filters pollutants. Usually a sandy loam mix.
 - 2. Ponding area** holds stormwater runoff until it seeps through the planting mix and into the underdrain system. Usually max 200mm - 300mm below surrounding hard surfaces. Ponding should not exceed 24 hours, as standing water can become a breeding habitat for mosquitoes.
 - 3. Plants (preferably native)** help filter pollutants and look attractive. Usually native plants - better suited to the extreme wet/dry conditions (such as ponding for up to 24 hrs).
 - 4. Overflow system** for excess flows when rain garden pond is full.
 - 5. Mulch / pebble/ rock layer** prevents weeds becoming established and helps to prevent soil drying out.
 - 6. Sand layer (if included)** for additional stormwater filter, removing pollutants passing through the planting bed. Also helps retain soils within the rain garden.
- Grass buffer strip (if included)** between hard surface and garden as first stage filtration, removing larger particles and creating runoff sheet flow (to avoid erosion). Not always included in rain garden design, due to site constraints.
- Underdrain system (if included)** usually needed to drain soil mix to stormwater network or waterways (e.g. stream, open water). Some free draining soils may not require an underdrain, as runoff will drain to groundwater aquifers.

MAINTENANCE SCHEDULE

TIMING

Monthly

ACTION

- Water monthly during extended dry periods.
- If grass strip is present, mowing frequency depends on growth rates and seasons. Mow no shorter than 50mm (approximately 3 finger widths).
- Re-sow grass as necessary.

3 monthly and following storms

ACTION

- Remove rubbish, leaves and other debris from surrounding drainage area.
- Clear inflow points of sediment, rubbish and leaves.
- Check for erosion or gouging, and repair.
- Test drainage of ponding area - check 24 hours after rain.
- Top up soil and mulch as necessary.
- Check soil and mulch level is below surrounding hard surface areas and overflow.
- Mulch may need to be redistributed or added around inflow points.
- Remove rubbish, leaves and other debris without walking on garden if possible.
- Check plant health and replace dead plants as necessary.
- Remove weeds manually – do not use herbicides or pesticides
- * Do not use fertilisers, as these chemicals will pollute the stormwater runoff.

Annually

ACTION

- Clear inflow points of sediment, rubbish and leaves.
- Check for erosion or gouging and repair.
- Check all water has drained 24 hours after heavy rain; OR
- Check rain garden draining freely using the drainage test. Dig a hole 20cm x 20cm x 20cm deep. Pour in 10 litres water in hole. Check drainage rate over 1 hour period - minimum 25mm/hour.
- Check soil level is below surrounding hard surface level and overflow grate.
- Check surface of mulch for build up of sediment, remove and replace as required.
- If crust of fine sediment present on surface of soil mix, remove with spade and rework using rake. Top up soil and mulch as necessary (ensuring level is below surrounding hard surface and overflow). Dispose of contaminated crusted topsoil in a secure landfill (unless soil testing shows no contamination).
- Use inspection well (if present) to check underdrain is working properly.
- If rain garden is not free-draining, the underdrain may be blocked. Try clearing underdrain from the outlet. If still blocked, the rain garden may need plants and soil mix removed and replaced.

TROUBLESHOOTING

PROBLEM

Stormwater run off is bypassing the rain garden.

Rain garden is ponding for longer than 24 hours.

Stormwater and/or mulch flowing off the rain garden.

Sulphur smell coming from the rain garden.

SOLUTIONS

- Check surface of the rain garden is below the surrounding area.
- Remove any sediments and debris from inflow areas and garden.
- Protect rain garden from construction sediments.
- Replace soil mix with the correct rain garden soil mix. Test soil mix is free-draining.
- Loosen the top 500mm soil by tilling or forking.
- Discourage vehicle, pedestrian and bicycle access to the rain garden.
- Remove sediment layer and turn over the top layer of rain garden soil mix.
- Remove excess mulch or soil so ponding area is below the overflow.
- Clear overflow and discharge pipes.

PROBLEM

Erosion and gouging occurring within the rain garden

Plants are stressed or dying - yellowing of leaves, unseasonal leaf fall, wilting.

SOLUTIONS

- Increase number and width of run off points, or replace kerbing with a different design, or increase kerb opening size by cutting kerbs.
- Install rip-rap (i.e. stones set into concrete) at the inflow point to spread flow and reduce erosion.
- Select plants appropriate for the location (e.g. full shade, partial shade, full sun).
- Inspect rain garden after rain event to check garden drains within 12 to 24 hours.
- Check soil and mulch for evidence of heavily polluted run off (e.g. rainbow slick, coloured mulch). Replace soil mix and replace plants.
- Check soil moisture content and water plants if dry.
- Check for leaf damage or pests and consult a garden centre for the best treatment. Avoid herbicides and pesticides.
- Replace stressed plants with healthy or pest-resistant specimens.
- Loosen the top 500mm of soil by tilling or forking. Do not allow vehicle, pedestrian and bicycle access to the rain garden.

Avoid

- Sprays to kill weeds/vegetation or algae, as this will contaminate the downstream waterways.
- Compacting the rain garden soil mix – use drainage test as described above to check.
- Adding clay or silt in the rain garden soil mix as this will restrict water draining through the soil