

# home gardens

In urban areas, like Whites Creek in Annandale, the waterways and wetlands which were part of the water cycle have disappeared or are very sick. To bring back life to urban waterways the whole catchment needs to be improved through total catchment management.

Total catchment management means we need to understand how what happens in one part of the catchment will cause effects downstream. It will require cooperation between all interested parties if we are to restore the environment.

## THE DISAPPEARING SOIL

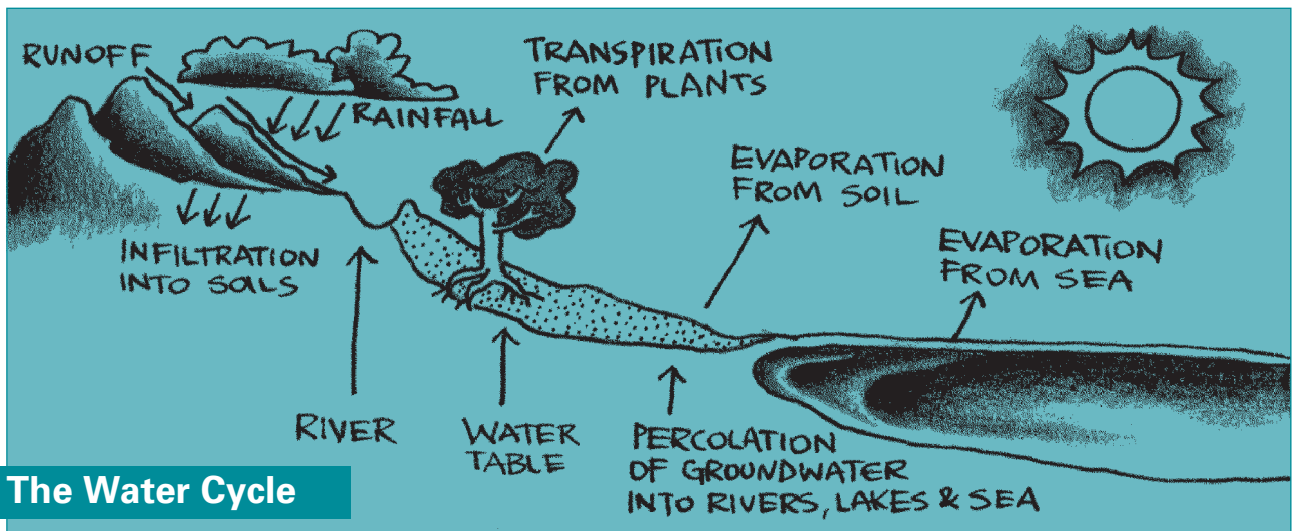
The majority of urban land is covered with hard impervious surfaces such as concrete pavements, bitumen roads and buildings. This has reduced the amount of land that's available to soak up rainwater, and so when it rains the water runs off the land and into the nearest creek, river or sea. This is what happens in the inner city suburb of Annandale, where 90 percent of the land is sealed by roads and buildings, and rainwater runs off into Whites Creek.

Most of the land in the suburbs where water can be soaked up by soils is found in home gardens. When rainwater infiltrates deep into a garden soil, the water is retained and available to growing plants during dry weather. The more rainwater is stored in soils, the less tap water is required to water gardens.

## HOW YOUR GARDEN CAN HELP

Home gardeners can help reduce flooding and stormwater problems by storing water in rainwater tanks and in the soil. Rainwater tanks are now being used to store water that's collected from the rooftops of houses. This helps conserve water as it saves using tap water and reduces the demand for stored water from the dams that house Sydney's water supply.

Every home gardener can help restore the water cycle and bring back life to waterways like Whites Creek. Water can be encouraged to infiltrate garden soils so that instead of flowing into concrete gutters and drains it's soaked up and absorbed within our gardens. This helps thirsty plants to grow and can also reduce flooding.



## ALTERNATIVES TO PAVING

Concrete paving prevents any water from infiltrating soils, and can cause flooding on the home block and in creeks and rivers downstream. A household garden can be a little oasis of nature rather than a bare slab of concrete.

A home garden may need a small amount of paving where people often walk, such as from the front gate to the front door. And although car driveways need to be solid, they don't have to be slabs of concrete several metres wide. All that's really needed are two narrow strips of paving, wide enough for the car's wheels. The rest of the driveway can then be planted with low growing plants or lawn.

Timber decking can be used in backyards instead of paving. It provides a solid base for areas that are heavily used, such as near the back door or where there's outside furniture. Timber decking that's laid with small gaps between the boards allows rainwater to drip onto the ground below and infiltrate the soil.

Trees are often planted in spots where they are surrounded by impermeable paving. Plant roots need to breathe and oxygen is essential for healthy growth, but air can't circulate in any soil which lies under paving and the tree's growth will be restricted.

Soils covered with paving aren't healthy or fertile. Healthy soils are dynamic and full of life and sustain plants growing on the surface. The plants add leaf litter to the soil, which then provides food for earthworms, slaters, micro-organisms and all the other numerous creatures who live in the soil. All this activity makes a *living* soil, while soils covered with concrete soon become sterile.

## HEALTHY GARDEN SOILS

Most gardeners know it's important to have a fertile soil for healthy vigorous plant growth. A healthy fertile soil not only contains all the nutrients necessary for plant growth, it also needs to be physically fertile.

A physically fertile soil has plenty of air and holds moisture. It will allow plant roots to penetrate and seedlings to emerge and grow with ease. A very important factor is whether water can quickly penetrate deep into a soil. When this happens, the soil is described as permeable, or is said to have a high infiltration rate.

Many factors can help make soils more permeable. Infiltration is reduced by clay and increased by sand. A healthy soil has a stable, porous structure, where the soil particles bind together into *aggregates* in a way which allows air and water to move freely.

A careful gardener can help build up and maintain a good stable soil structure. Organic matter binds soil particles together and vigorous plant growth adds organic matter to soils. Extra organic matter can be added by applying composts, animal manures, green manures such as weeds which can be dug in, and mulches made from straw, leaves or bark chips.

Many soil animals help form structure, especially earthworms. Micro-organisms are also important for binding soil particles together. For example, fungi have long hair-like *filaments*. Soil organisms need organic matter to feed on and well aerated soil. Artificial chemicals need to be used with great care and as little as possible as they can harm many soil organisms.

## ways to improve water infiltration in soils, in home gardens, public parks and gardens

- Increase plant cover to protect soil surface
- Encourage plants that have deep roots
- Improve soil structure by adding organic matter
- Add mulches, green manures and compost
- Encourage earthworms and micro-organisms
- Add soil improvers such as gypsum when needed
- Maintain rough soil surface
- Protect the soil from the impact of raindrops
- Reduce soil compaction
- Improve subsurface drainage
- Use organic fertilisers and animal manures

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