

whites creek CATCHMENT



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WATER IS LIFE IS A SERIES OF THREE LEAFLETS WHICH DESCRIBE HOW TO HELP RESTORE URBAN WATERWAYS BY MAINTAINING HEALTHY SOILS AND FOLLOWING A TOTAL CATCHMENT MANAGEMENT PLAN

Water is essential for all life on earth. About three billion years ago life began as small microscopic marine organisms. Nearly 300 million years ago primitive amphibians crawled out of their watery home onto dry land. Humans are a fairly recent addition — we first appeared about one million years ago. Since then our numbers have grown enormously and our way of life has had profound consequences for the water cycle, particularly in urban areas.

The water cycle begins with water being evaporated by the sun mainly from the sea,

water supply and renews all water resources be they rivers, lakes or reservoirs.

RUNOFF IS PART OF THE WATER CYCLE

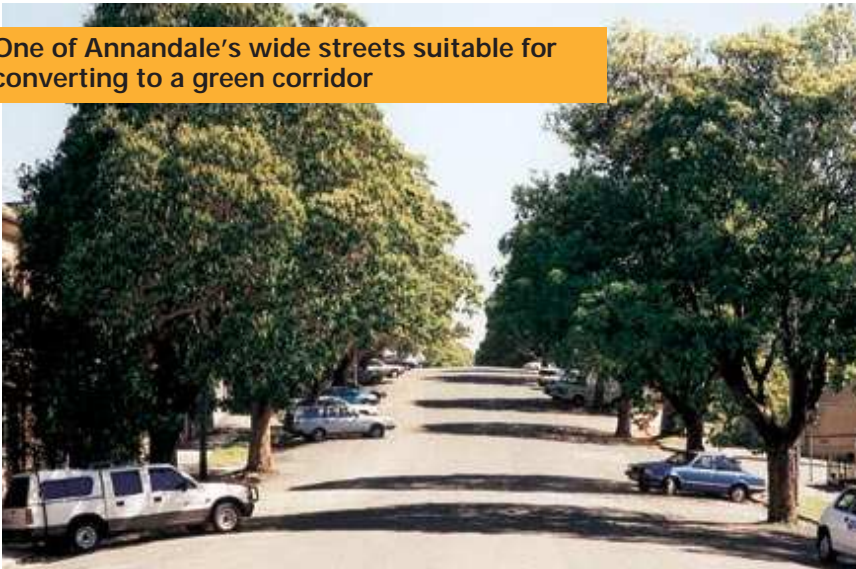
The rainwater that runs off the land is an essential part of the water cycle in healthy ecosystems, and helps keep aquatic organisms alive. Rain makes its way into the soil and provides water for thirsty plants.

Runoff replenishes water in creeks, rivers, ponds, lakes, billabongs, swamps and marshes. Living water is home for fish, frogs, ducks and many other animals, be they as small as insects or as large as whales.

In spite of its crucial role in the water cycle, government authorities have long treated rainwater runoff as if it were a major disposal problem. Water has been captured in gutters, drains, pipes and canals. Runoff has been drained away as quickly as possible, as if it were a nasty infectious disease. Why is it that people in cities treat rainwater as though it is something threatening that needs to be controlled and drained away?



One of Annandale's wide streets suitable for converting to a green corridor



WHITES CREEK

Whites Creek, Annandale, is typical of many creeks and urban waterways in suburban Sydney where the catchment has been neglected and the creek is now an ugly concrete drain.

The catchment is intensely developed and, in common with many other densely populated suburbs, the importance of soils is poorly understood. Most soils have been sealed by buildings, roads, footpaths and paving. Only a little area remains where water can manage to penetrate

deep into the soil, and be stored. which becomes vapour and forms into clouds. Some of the cloudy vapour blows inland where it falls as rain before eventually flowing back to the sea.

The main source of fresh water is rainfall runoff, which is widely used to meet human needs. Runoff is a vital part of long-term

deep into the soil, and be stored.

When it rains, water is collected in roadside gutters. The water swiftly flows along the street, then drops down a gully pit into a pipe. Underground pipes are out of sight and out of mind, so we don't know where they are or where the water flows. By

contrast, natural creeks are at ground level and are easy to see and follow.

Eventually the stormwater pipes drop their load into Whites Creek. Two hundred years ago this was a babbling little brook. Now it is an ugly, dirty, smelly drain.

Some years ago engineers turned Whites Creek into a concrete canal. They didn't understand, or overlooked the importance of rainwater runoff in the water cycle. It was believed a concrete canal would quickly get rid of unwanted stormwater.

Today however, instead of fighting nature, total catchment management aims to live side by side with it. In cities we must work towards restoring damaged ecosystems so as to gain the benefits of rainfall. Concrete canals such as Whites Creek, could easily be converted back into natural waterways.

Management could begin in the upper reaches of the catchment. Water needs to be stored high up in the catchment, as close as possible to where rain falls, so as to reduce flooding. Flooding is a problem in some low lying areas of Whites Creek, which could be controlled by upper catchment management.

WHY SOILS ARE IMPORTANT

Healthy stable soils are a very important part of the water cycle, but in urban areas soils are poorly understood, abused and suffer from neglect.

During the water cycle rainwater lands on the soil and, if more water can enter the soil flooding can be reduced. It's also possible to reduce pollution when runoff filters through vegetation and into soils.

The process when water moves downward into the soil, is called infiltration.

Rain can be encouraged to infiltrate into soils. In many densely populated inner suburbs, residential backyards are the major land area available where water can directly infiltrate into soils. Council parks and

gardens are also ideal places where water can be encouraged to infiltrate into soils.

WHAT MAKES HEALTHY SOIL

If we improve the soil structure, or add organic matter and use mulches, then the soil will soak up more water. Vegetation, especially trees, also intercepts rain before it reaches the ground.

Soils are usually composed of three kinds of particles — sand, silt and clay. A healthy soil has a stable, porous structure, where the soil particles bind together in a way which



An eco-engineered wetland (top) and an eco-engineered creek (bottom)

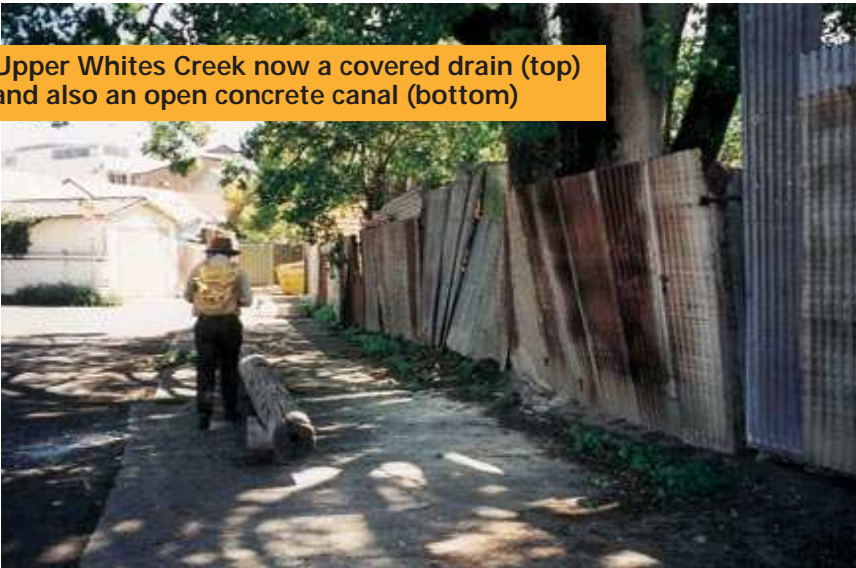


allows air and water to move freely. When water can quickly infiltrate the soil, the soil is described as permeable.

Water makes its way easily into sandy soils and soils with a deep, loamy, topsoil, while clayey soils are less permeable.

Vegetation protects the soil from the impact of raindrops, which can break down

Upper Whites Creek now a covered drain (top) and also an open concrete canal (bottom)



the soil's surface structure so that when it dries it forms a crust. Plant roots and organic matter improve soil structure, and allow the water to easily penetrate.

Building up a good structure helps the water infiltrate the soil. Even clayey soils are

prevent pollution.

Most citizens are now aware of environmental problems and are prepared to help save our planet, but we need strong government leadership. It's time for governments to "do the right thing".

permeable if the soil has a stable, structure.

A healthy soil with plenty of organic matter encourages micro-organisms to grow, which help to form a stable structure. Soil animals, especially earthworms improve structure. Soil improvers such as gypsum can help in heavy clay soils.

WHAT NEEDS TO BE DONE

If we are serious about applying total catchment management to restore our waterways, it will require cooperation between all interested parties. This includes governments, business, industry and landowners. Local governments will need to carry out the work; state and federal governments will need to set the standards and provide funds.

The primary responsibility for managing our waterways rests with the state government, which will have to devise legislation to

The Water is Life series of leaflets stress the importance of maintaining healthy soils so as to encourage the restoration of natural waterways.

The Home Gardens leaflet includes several ways to make soils more physically fertile. Councils, the big landholders explains the important role local councils will have to play in soil management and restoring natural waterways.

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The New South Wales Government is funding this project through its Rivers reborn program



Campaigning on environmental issues in their social, political and human rights context