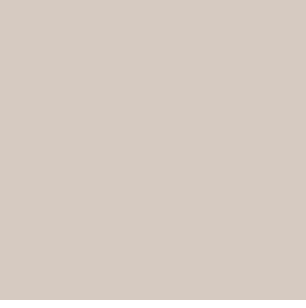
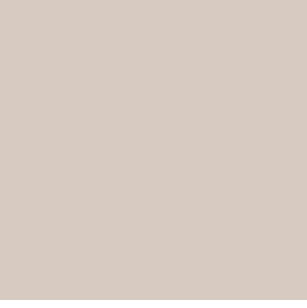
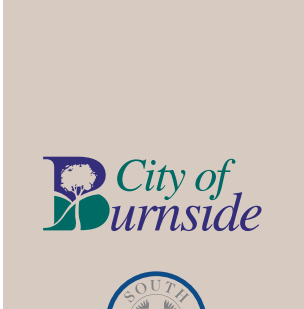
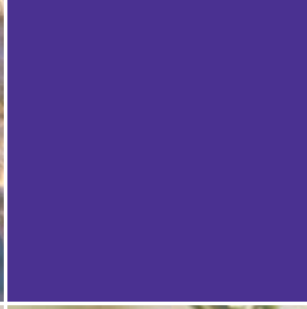
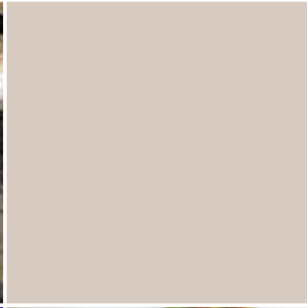


Appendix 11
**Property Owners Guide to Managing
Healthy Urban Creeks**



Urban Creeks

A property owner's guide to
**managing healthy
urban creeks**



stormwater

habitat

erosion

plants



Government of South Australia

Adelaide and Mount Lofty Ranges Natural Resources Management Board

Native plants suitable for urban creeks

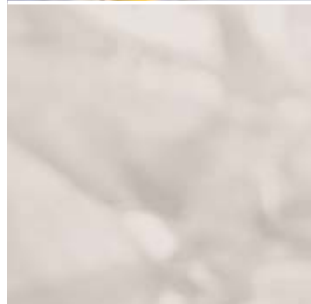
Listed here are just a few of the many local native plant species that thrive in watercourses. Check with your local native plant nursery for other suitable species.



Common Reed

Phragmites australis

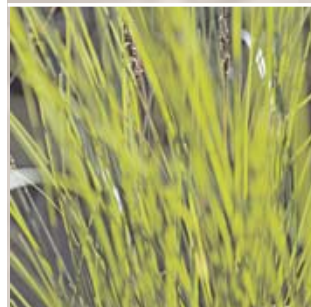
A large perennial grass, native to wetlands. They grow from 2 metres to 6 metres tall and can grow in slightly salty waters. Needs constant moisture.



Swamp Wattle

Acacia provincialis (formerly *Acacia retinodes* – *Swamp Form*)

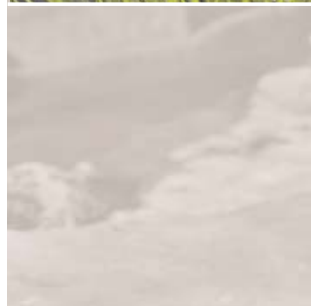
A large, open shrub to 6 metres high. Its flowers are cream-yellow balls which appear in winter and spring. Tolerant of dry conditions in summer.



Tall Sedge

Carex appressa

A large clumping grass growing to 80 centimetres high and 60 centimetres across. It has attractive large yellow seed heads in spring that can reach up to 1 metre high. The flowers and seed spikes are appealing and suitable for floral arrangements. Not drought tolerant.



Finger Rush

Juncus subsecundus

An attractive evergreen grass-like plant with blue-green stems and leaves. It grows in wet or boggy sites to approximately 1 metre high. Is drought tolerant.





In South Australia, we all have a duty of care to our environment, and the Natural Resources Management Act of 2004 sets out some clear responsibilities.

For example, if you are fortunate enough to have a creek running through your property, it's up to you to help look after it. Sometimes creeks will be located in an easement on a person's property. In most cases the responsibility to care for the creek remains with the property owner.

The Adelaide and Mount Lofty Ranges Natural Resources Management (NRM) Board is working with your local council to manage and protect the region's natural assets – but they can't do it alone. There's a lot that you and your neighbours can do to help ensure we maintain healthy and balanced ecosystems.

This guide shows how a small effort now can make a big difference in the future.

Why healthy creeks are important

Our urban creeks provide stormwater drainage for you, your neighbourhood and for upstream catchments. A healthy waterway will help clean the water naturally, provide habitat for native fish and wildlife, be resistant to erosion and the build-up of sediment and, of course, offer recreational amenity. A well managed watercourse will also help prevent against flooding.

Unfortunately, the natural qualities of our waterways are damaged by the actions of some property owners. Obstructions such as bridges and fences may interfere with water flow. Exotic trees can contribute to erosion, pollution and diminished water quality. Weeds and introduced plant species can smother natural habitat.



Native plants are best

Plants native to Adelaide's urban creeks have evolved to suit local conditions. They can tolerate the extremes of drought and flood, while continuing to provide rich habitat for birds, frogs, fish, beetles and bugs. Some native plants include the Common Reed, Wirilda Swamp Wattle, Tall Sedge, Flat Sedge, Finger Rush, Hop Goodenia, Native Raspberry and the Silky Tea Tree.

Native plants growing near or within a creek also help to maintain good water quality by providing oxygen to the water, helping with the exchange of nutrients and breaking down pollutants. Vegetation also plays a crucial role in maintaining the stability of the creek bed and its banks, by preventing soil from being washed away. The Urban Forest Biodiversity Program's website has information on appropriate local native plant species for your area, visit www.urbanforest.on.net. Your local native plant nursery may also be able to help you.

Reeds and rushes are especially important for creek bed stability due to their dense root systems that reinforce the soil, binding it together. These plants also shield the soil from direct contact with water flow and in times of flood lie flat, allowing flood water to pass over them without restriction.



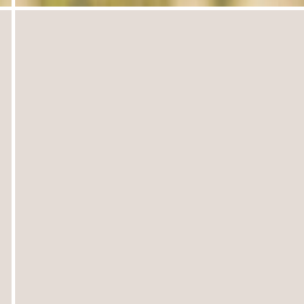
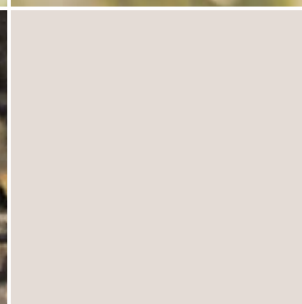


If your creek is overgrown with woody weeds or trees that aren't native, such as ash, willows, olives, bamboo or blackberry, consider removing them as they don't provide good habitat for native species. They take growing space away from native plant species, and create dense shade which can prevent the growth of native plants.

Non-native plants also affect water quality. Some exotic trees have shallow root systems that trap sediments around them, changing the alignment of the creek over time.

Removing non-native plants needs to be done gradually so the bed and bank are not left exposed for too long, becoming susceptible to erosion. Once removed, when there is less shade, the growth of plants such as reeds, sedges, shrubs, herbs and grasses will improve, which will help to keep the creek bank stable. The NRM Board's website has information on pest plant control, visit www.amlrnrm.sa.gov.au.

Council approval is required to remove a tree with a trunk circumference of two metres or more. For more information, contact your local council.





Minimise obstructions

Footbridges, driveway culverts and boundary fences can impede flood flow and become traps for debris. If possible, they should be removed or modified to minimise their impact. Before doing so, you must check with the Natural Resources Management Board or your local council as a development approval or water affecting activity permit may be required.

Any earthworks, construction or depositing of materials in or near a watercourse is considered a water affecting activity and requires pre-approval and a permit. Examples of activities include:

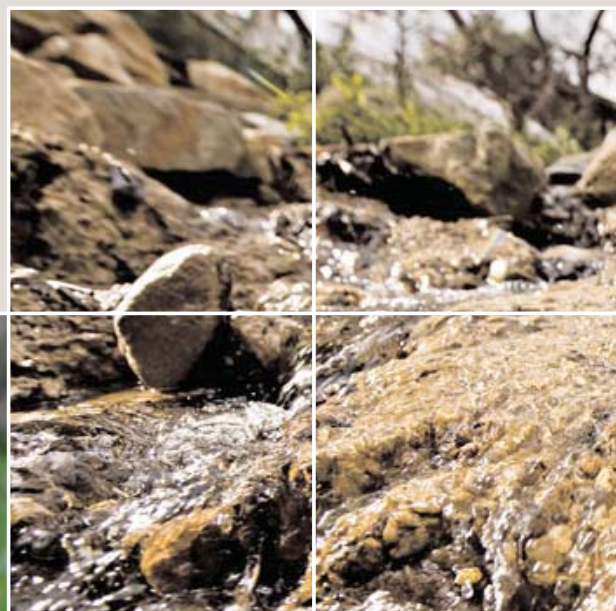
- dams, walls or other structures that will collect or divert water
- bridges, sheds, creek crossings
- placing rock, soil or rubble in creeks
- destroying vegetation in a watercourse, such as removing reeds.

The permit system enables the NRM Board to regulate potentially damaging activities that may affect the quantity or quality of water resources and the ecosystems that depend on them.

For further information, visit www.amlnrm.sa.gov.au.

Keep weeds in check

Creeks require regular weeding to ensure they maintain a diverse range of native plants and habitat for native animals.





Some debris in creeks can be beneficial

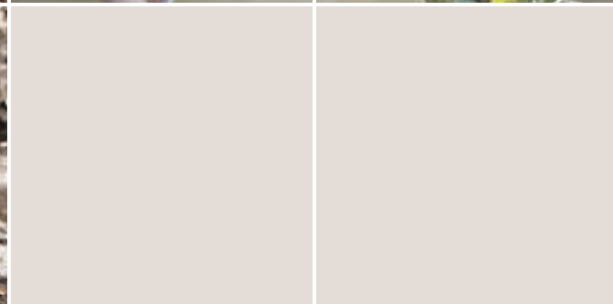
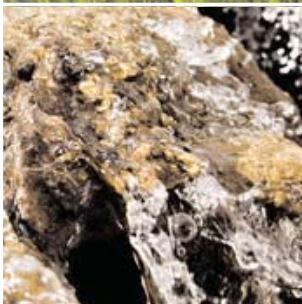
Snags and woody debris can help prevent the erosion of the bed by slowing down the flow of water. This debris can also provide important habitat and refuge for native animals and fish.

Control erosion

Bare and undercut banks, a sudden step in the level of the creek bed and the exposure of tree roots are all signs that erosion is at work. This erosion must be managed early before it leads to catastrophic consequences like undermining infrastructure including roads, bridges, retaining walls, sheds and even houses.

Covering the banks with reeds, sedges and shrubs is one of the best ways to protect creeks from erosion.

Severe erosion may require engineering works to stabilise the site so expert advice should be sought. Your council can point you in the right direction.





Keep stormwater pollution-free

Activities around the home and garden can help reduce the amount of stormwater pollution entering our creeks and waterways.

The Environment Protection Authority has developed a code of practice for some of them, including gardening, pesticide use, vehicle use and care, outdoor cleaning, home maintenance, animal faeces, septic tanks and wastewater disposal. To find out more, visit www.epa.sa.gov.au.

In residential areas, fertilisers used on lawns and gardens are easily dissolved in rain run-off and have a high content of phosphate, which when mixed with nitrogen in a watercourse, encourages algal growth.

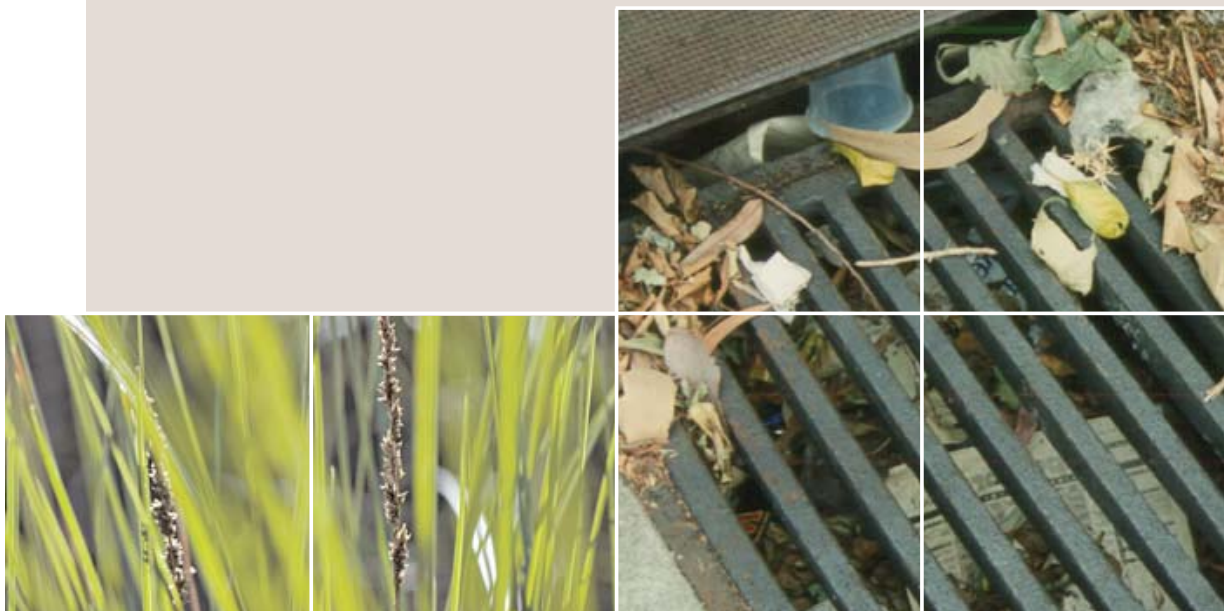
The Adelaide Coastal Waters Study has identified suspended sediment, which can come from erosion in urban creeks, as being the stormwater issue of most concern for the health of Gulf St Vincent.

To find out more, visit www.clw.csiro.au/acws.

Rake up garden leaves

In autumn, it is important for householders to remove fallen leaves from paved areas. Leaves can be used as mulch on garden areas or put into your green waste bin. When large quantities of leaves from deciduous trees wash into our creeks, they break down quickly and in doing so, use a lot of oxygen. This can result in fish dying.

Large amounts of leaves on our roads and footpaths can block downstream drains creating a local flood risk.



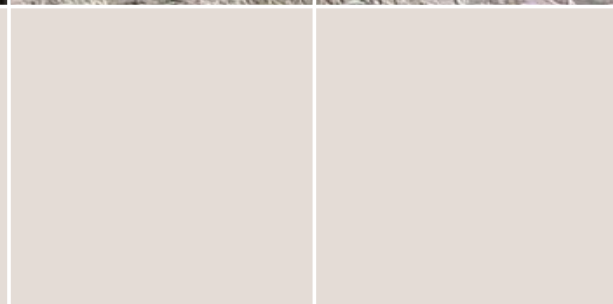
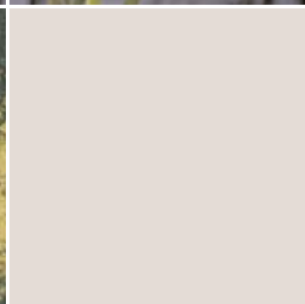


Prepare for flood

Creeks will flood periodically. You can't prevent this, but you can reduce the impact.

Ensure that the main channel is not choked by large trees, the bed and bank have a good cover of reeds, sedges and shrubs, and the creek is not obstructed by fences or debris.

It is a mistaken view that vegetation in and around creeks will worsen the effects of flooding. In fact, only a dense area of large trees within a creek channel can force floodwater levels to rise significantly. Large trees close together can trap debris, like floating branches, to create a dam effect. Smaller native plants are flexible and bend over in higher flows, having virtually no effect on the level of floodwaters. Rather than create a blockage, such as that created by dense large trees, they protect the bed and banks from erosion and allow flood flow to pass by easily.





Examples of what can be achieved

Here are some examples where local councils and communities have been working together to improve the environment of urban creeks, which we encourage you to visit.

Tea Tree Gully

Raymond Road, St Agnes

Frank Street, Tea Tree Gully

Carnarvon Avenue, Redwood Park

Norwood Payneham & St Peters

End of 'The Crescent', Marryatville

Burnside

North west corner of Kensington Gardens Reserve,
Kensington Gardens

Bellyett Reserve, Stonyfell Road, Stonyfell

Simpson Reserve – Western side of Hallett Road,
opposite Heatherbank Terrace, Stonyfell

Hubbe Court Reserve, Hubbe Court, Burnside

The Common, Beaumont

Mitcham

Main Road, Coromandel Valley, south of Dalls Bridge

Near Hawthorndene Oval, Hawthorndene

Dunn's Reserve, Dunn Avenue, Glenalta

Magpie Gully, Trevor Terrace, Blackwood

More native plants suitable for urban creeks



Hop Goodenia

Goodenia ovata

A small to medium shrub, 1 metre to 2 metres high by 1.5 metres wide, with fan-shaped yellow flowers occurring throughout the year.



Native Raspberry

Rubus parvifolius

A small species which, although often growing quite close to the ground, can grow to 90 centimetres high. The red fruits are small, very succulent and tasty.



Silky Tea Tree

Leptospermum lanigerum

A medium shrub growing to about 3 metres high. Its leaves are grey-green with dense, small hairs and white, 5-petalled circular flowers.



Knobby Club-rush

Isolepis nodosa

An attractive evergreen clumping plant. Stays green in seasonally dry conditions.





**Government
of South Australia**

Adelaide and
Mount Lofty Ranges
Natural Resources
Management Board



**City of
Norwood
Payneham
& St Peters**

Adelaide and Mount Lofty Ranges Natural Resources Management Board

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205 Greenhill Road
Eastwood SA 5063
Phone 08 8273 9100
www.amlrnm.sa.gov.au

Contact your local council

City of Burnside

Phone: 8366 4200
www.burnside.sa.gov.au

City of Mitcham

Phone: 8372 8888
www.mitchamcouncil.sa.gov.au

City of Unley

Phone: 8372 5111
www.unley.sa.gov.au

City of Tea Tree Gully

Phone: 8397 7444
www.teatreegully.sa.gov.au

City of Norwood Payneham & St Peters

Phone: 8366 4555
www.npsp.sa.gov.au