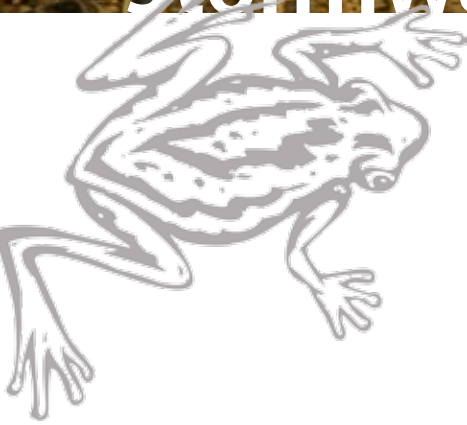




Stormwater Treatment



Where people are crowded into urban areas and natural wetlands have been filled in, stormwater run-off needs additional 'treatment' if it is to be recycled for irrigation or other purposes. Constructed wetlands can 'copy' the natural means by which stormwater run-off is cleaned.



Top Deep water allows sediments to settle out of stormwater, and reeds such as this *Juncus* species help filter out other pollutants.
Photo: Luke Simon

Above Sunlight can help neutralise bacteria in stormwater.
Photo: Luke Simon

Stormwater carries pollutants such as oils from road surfaces, detergents and cleaning agents from domestic use, and fertilisers that run off from gardens.

Stormwater may also carry bacteria that are harmful or may cause illness in humans such as *E. coli*, a bacterium that lives in the lower intestines of mammals, including humans, dogs and horses.

In constructed wetlands, natural processes - physical, chemical and biological - are used to filter and clean stormwater.

These processes include:

- the filtering of larger particles by reeds
- aquatic organisms absorbing organic matter (usually by eating them)
- the effect of sunlight (and especially ultraviolet rays) and oxygen on bacteria
- aquatic plants absorbing nutrients
- the settling of sand, clay and heavy metals (positively charged heavy metal ions attach to the negatively charged clay particles) onto the bottom of the wetland.

In addition, large detention ponds allow some pollutants to be diluted to the point where they are no longer dangerous.



Other pollutants 'stick' to the mineral soils that line the wetland and become trapped there. In another process, a long period of immersion in water may change a pollutant as it bonds with molecules of water. This can increase the rate at which these pollutants break down.

Constructed wetlands are generally not suitable for water-based recreation such as swimming or canoeing. Apart from the pollutants such wetlands may contain, activities that disturb wetland sediments could release toxic substances back into the water.

Wetlands are forever changing and the water quality within a constructed wetland may be highly variable. Water quality is influenced by all the processes mentioned above, by the amount of stormwater that enters the wetland and also by aspects of the wetland's design such as water depth, sediment type, and the amount and type of vegetation.

Council monitors the quality of stormwater that enters and leaves its wetlands - for sediments, salinity and a range of pollutants and nutrients. Sometimes samples are collected for bacterial counts, or planktonic algae may be examined. The water that leaves Salisbury wetlands meets the standards set in the South Australian Environment Protection Authority (EPA) Water Quality Policy.

Council involves school groups and members of the community in wetland monitoring programs, through the NRM Education sponsored Waterwatch Program.

Learn more

For more information on related topics, see the other fact sheets in the Wetlands series or visit:

Adelaide Mount Lofty Ranges
www.amlnrm.sa.gov.au

Waterwatch
www.waterwatchadelaide.net.au



Top Water-loving plants provide one of a variety of natural processes that filter stormwater.
Photo: Luke Simon

Above School students have been engaged in water quality monitoring across the State through Waterwatch.
Photo: Waterwatch SA

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Salisbury, Sustaining Our Environment

