



Swale Design Principles

Implement WSUD in residential, commercial, and public spaces.



Swales are vegetated channels designed to manage stormwater, slow runoff, and improve water quality in urban environments. This quick guide outlines the key design principles to ensure swales function effectively while providing multiple benefits to the surrounding landscape.

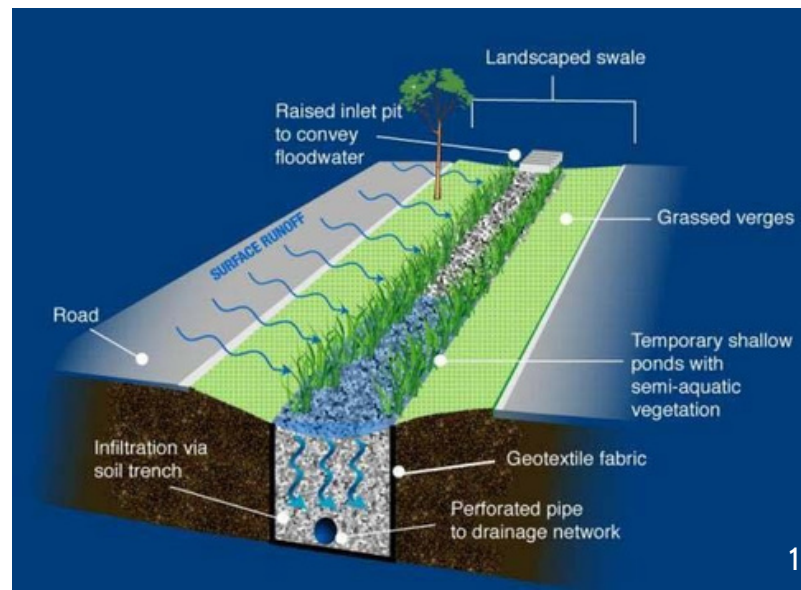


Bio-filter swale design principles

What is a swale?

Using vegetated strips to treat stormwater

- Top layer - Vegetated swale or basin to hold water
- Middle layer - filter media (specified sand base)
- Bottom layer - drainage pipe with connection to drainage system Swales should also contain an overflow or inlet for flood events



Source: Facility for Advancing Water Biofiltration 2008

Swales as buffer or grassed strips

Swales can also be grassed depressions or buffer strips that do not have filter media or pipes. These are more typical in a rural setting and be more effective treatment measure than traditional curb and channel, particularly where there is no connection to the drainage system.

Things to watch out for...

Tip: the swale needs to be assessed as being an appropriate treatment for the location and sized in accordance with modelled run off from the area it is treating/capturing. Swales also require regular maintenance.

Good design elements



Formalised pedestrian crossing

Calculated detention area/basin – will slow/capture water in a rain event and filter

Rocks good for scour protection and coarse sediment removal



Calculated slope planted with vegetation (grassed)

Getting the slope right i.e. not too shallow or too steep



Calculating the right amount of detention area

Swales in residential developments

Some Councils are no longer recommending the use of bio-filtration swales in an residential setting. Residents have misunderstood the purpose and made unwanted and detrimental modifications to the swale e.g. filling with rocks and/or top soil. If swales are to be successful in residential area a public awareness program should be in place.

For technical guidance refer to

Infrastructure Design Manual – Stormwater Treatment Section 20 <http://www.designmanual.com.au/>