



Water sensitive urban design

Infiltration basins and trenches

Summary

Infiltration basins are depressions designed to capture and store stormwater prior to infiltration into the soil profile. Infiltration trenches are below ground linear devices that store stormwater prior to infiltration.

This brochure is part of a series that explain various aspects of water sensitive urban design. Please see *Water sensitive urban design in Western Australia* for background information on water sensitive urban design.

Main benefits

- They are very effective in sandy soils.
- They are simple to construct and have low maintenance requirements.
- They maintain site water balance and can replenish local groundwater.
- Infiltration basins can be integrated in public open space.
- Trenches can be used in confined areas.

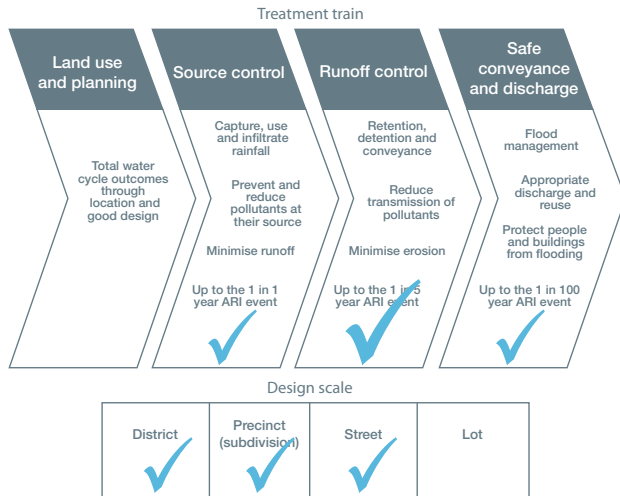
Design factors

- Consider the soil type (not in loose aeolian sands) and infiltration capacity of the soil.
- The pollutant removal effectiveness depends on the vegetation type and cover and phosphorus retention index of the soil.
- Base should be at least 300mm above the maximum or controlled groundwater level.
- Installation will be more difficult if rock or other hard material is present.
- Prevent mosquito breeding by adequate design – no water ponding after 96 hours between November and May in the south-west of Western Australia and throughout the year in the north.
- Ensure they are integrated with the landscape design of public open space.

Target pollutants

- litter and organic matter
- coarse sediment
- suspended solids
- nitrogen
- phosphorus
- heavy metals

Where they can be used in the water sensitive urban design process



College Grove, Bunbury, before and after a storm



Infiltration trench backfilling, Meadow Springs, City of Mandurah



Infiltration basin, flush kerb swales, retained trees, Seasapes, City of Mandurah, before a storm

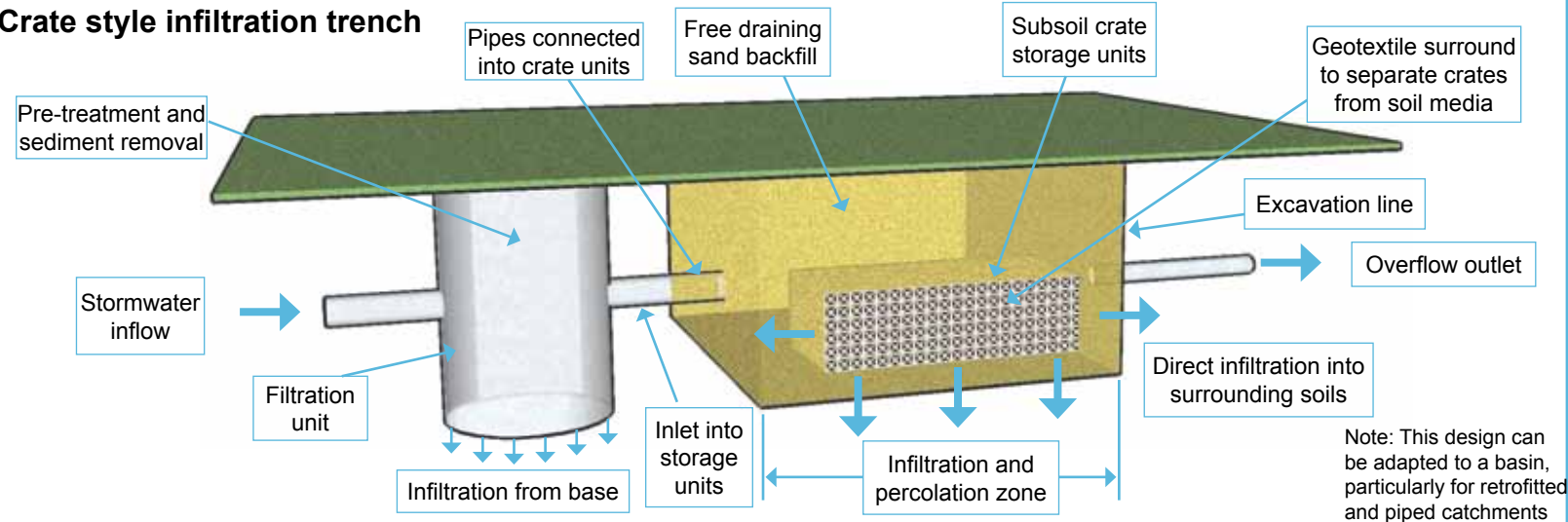


Infiltration basin, flush kerb swales, retained trees, Seasapes, City of Mandurah, after a storm

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Crate style infiltration trench



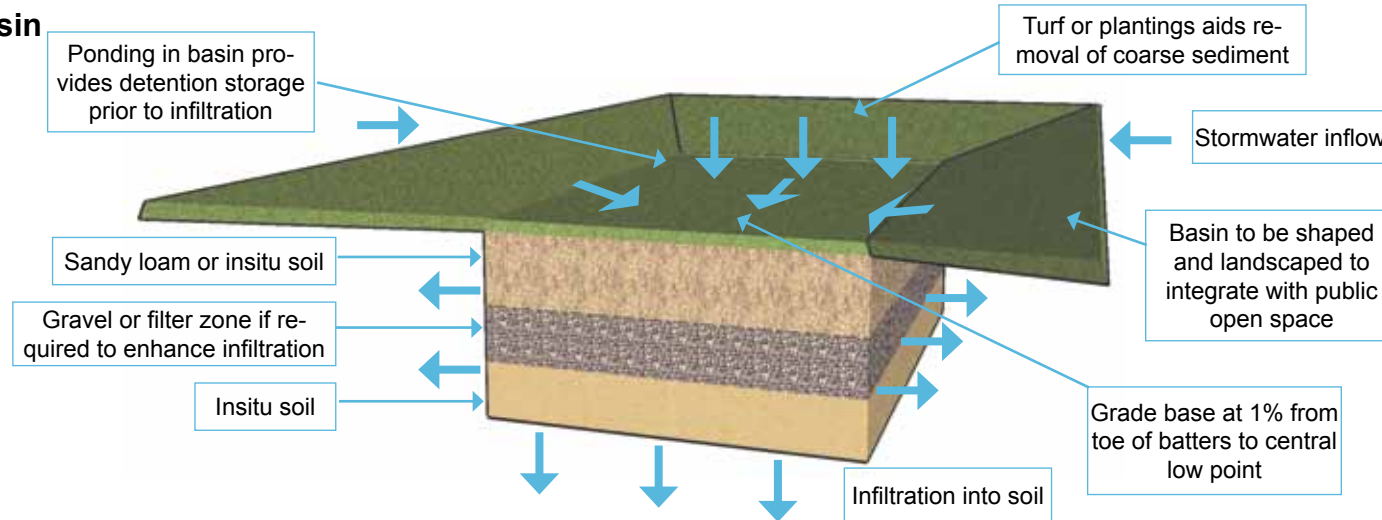
Required reading

Australian runoff quality: a guide to water sensitive urban design, 2006, Engineers Australia, available at <www.arq.org.au>.

Stormwater management manual for Western Australia, 2004–07, Department of Water, available at <www.water.wa.gov.au>. See Section 3.1 of Chapter 9 – Structural controls.

Water sensitive urban design: basic procedures for 'source control' of stormwater – a handbook for Australian practice, 2004, Argue, JR (Editor), University of South Australia.

Infiltration basin



(Source: Thompson McRobert Edgeloe Group 2008)