



## Water sensitive urban design

### Water sensitive urban design in WA: an introduction

#### Urban water management objectives

Better urban water management outcomes can be achieved through the implementation of the following objectives:

##### *Manage catchments to maintain or improve water resources*

- Manage runoff from all rainfall events as high in the catchment as possible.
- Post development hydrology should mimic pre-development conditions.
- Maintain or improve water quality of surface water and groundwater.
- Manage, protect and restore waterways and wetlands.
- Minimise pollutant inputs through implementation of appropriate non-structural controls.
- Retain native vegetation and natural landform.
- Protect public drinking water source areas.
- Safeguard the quality and availability of water resources for the future.

##### *Manage risks to human life and property*

- Provide adequate clearance from 100-year average recurrence interval flooding and surface or groundwater inundation and waterlogging.
- Prevent flooding or inundation of upstream or adjacent developed areas.
- Manage surface water flows to prevent damage to downstream infrastructure and assets.
- Manage risk to public health from disease vector and nuisance insects.

##### *Ensure the efficient use of water resources*

- Minimise water use within developments.
- Maximise water reuse, including using wastewater and harvested stormwater.
- Achieve highest value use of fit for purpose water, considering all available forms of water for their potential as a resource.

##### *Ensure that economic, social and cultural values are recognised and maintained*

- Enhance social amenity through multiple use corridors and by integrating water management measures into the street and lot landscape to increase visual, recreational, cultural, public health and ecological values.
- Implement water management systems that are economically viable in the long-term.
- Ensure the delivery of best practice urban water management through planning and design of high quality urban areas in accordance with sustainability and precautionary principles.

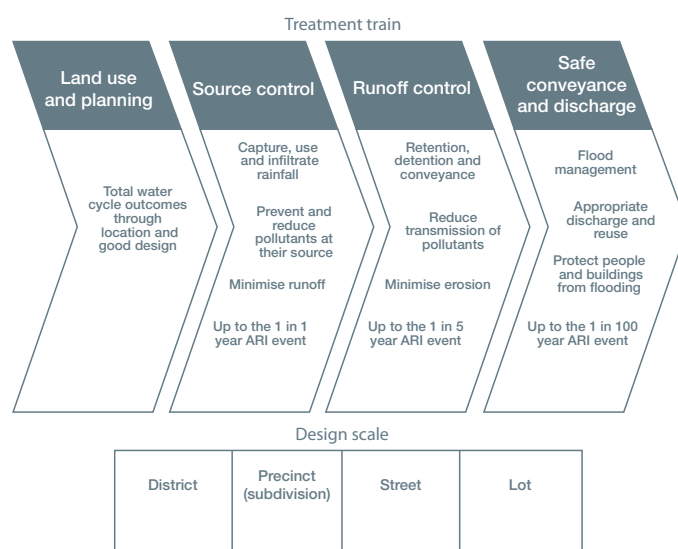
*Integrating water as early as possible into the land use planning process provides the best opportunity to achieve optimal solutions and implement efficient and effective best management practices.*

#### Treatment train

Stormwater management involves a continuous chain of water quantity and treatment management elements that address hydrologic changes in urbanised catchments, including flooding impacts, water quality, water reuse and ecological objectives. This is achieved by a series of hydrological design responses at four stages in the urban hydrological system.

There are a range of structural and non-structural practices that can be used as part of the treatment train. Some have specific purposes and as such should be used for specific stages in the treatment train, while others are applicable to a range of stages in the treatment train.

The design should aim to achieve the urban water management objectives at each part of the treatment train.



#### Design scale

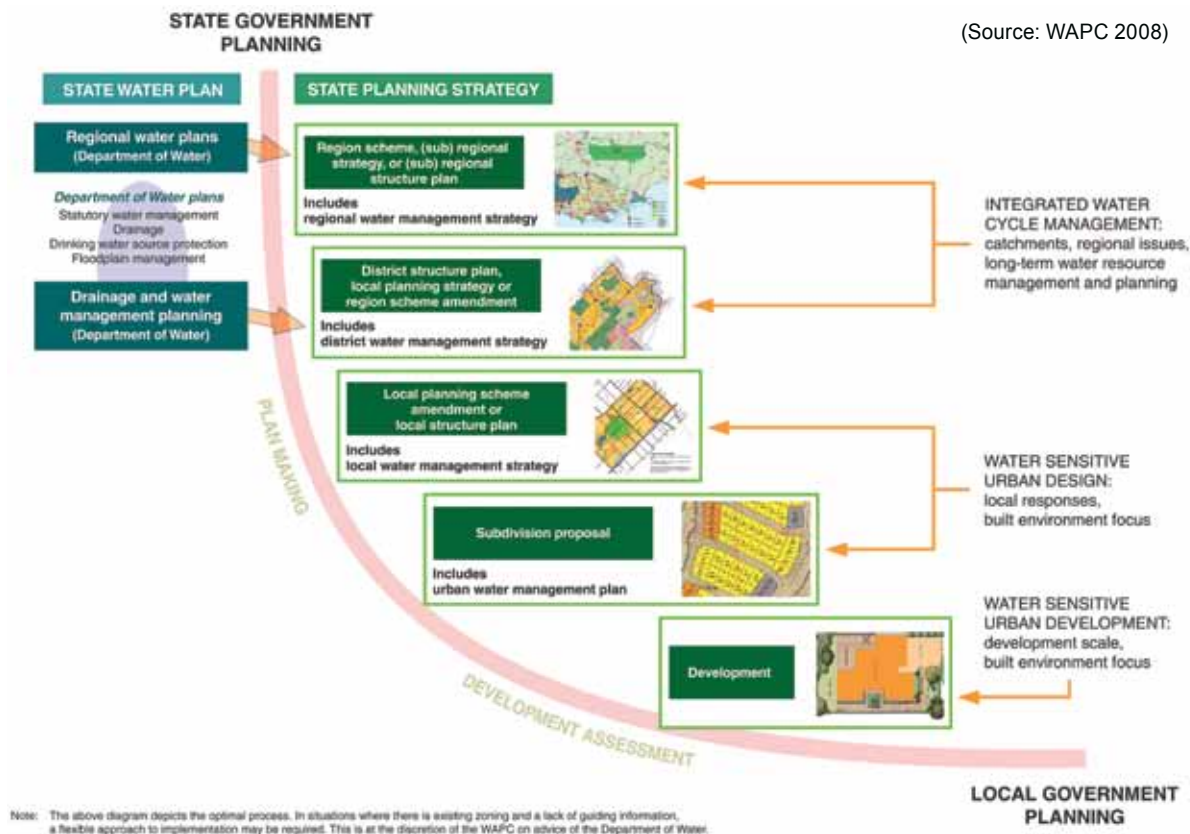
The selection of management practices (sometimes referred to as best management practices) must also consider the development scale that it can be applied at. This includes practices which are applied at the broad district level, such as wastewater recycling schemes; at a whole of precinct level, such as public open space solutions and neighbourhood

reticulated non-drinking water schemes; at the street level in verges and roads; and at the individual lot level, as part of the design and construction of buildings and private spaces. The "Water sensitive urban design" brochures series provide an indication of applicable design scales for each management practice.

## Support for water sensitive urban design in WA

(Source: WAPC 2008)

- The integration of water and land use planning is a recommendation of the *Securing our water future: a state water strategy and State water plan* (Government of Western Australia 2003 and 2007).
- Better urban water management* (Western Australian Planning Commission 2008) provides a framework for the implementation of *State planning policy 2.9: Water resources* (Government of Western Australia 2006), which requires consideration of water resources as part of the land use planning and development approvals process.



## Better Urban Water Management aims to achieve the consideration of water as part of land use planning and deliver urban water management objectives by:

- Facilitating better management and use of our urban water resources by ensuring an appropriate level of consideration is given to the total water cycle at each stage of the planning process.
- Assisting regional, district, local, subdivision and development phases of the planning process by identifying the actions and investigations required at each planning stage.
- Applying to proposed greenfield and urban renewal residential, commercial, industrial and rural-residential uses and development.
- Ensuring consideration of relevant issues at a level of detail appropriate to the planning decision being made and the degree of risk to ecological systems and community assets.
- Identifying the agencies responsible for provision of water resource information.
- Allowing a flexible approach to planning and development assessment.

## WSUD outcomes are also supported by the following key strategies:

### National strategies

- National strategy for ecologically sustainable development*
- National water quality management strategy*
- Australian guidelines for water quality management*

### State strategies

- State sustainability strategy*
- Securing our water future: a state water strategy for Western Australia*
- State water quality management strategy series*
- Wetlands conservation policy for Western Australia*
- State waterways initiative: Strategic directions for the future*

### Regional strategies

- Natural resource management regional strategies

## Required reading

*Australian rainfall and runoff - a guide to flood estimation*, 2001, Engineers Australia.

*Australian runoff quality - a guide to water sensitive urban design*, 2006, Engineers Australia, available at <[www.arq.org.au](http://www.arq.org.au)>.

*Better urban water management*, 2008, Western Australian Planning Commission, available at <[www.planning.wa.gov.au](http://www.planning.wa.gov.au)>.

*Interim guidelines for the preparation of local water management strategies*, 2008, Department of Water, available at <[www.water.wa.gov.au](http://www.water.wa.gov.au)>.

*State planning policy 2.9: Water resources*, 2006, Government of Western Australia.

*State water plan*, 2007, Government of Western Australia.

*Stormwater management manual for Western Australia*, 2004–2007, Department of Water, available at <[www.water.wa.gov.au](http://www.water.wa.gov.au)>.

*Urban water management plans: guidelines for preparing plans and for complying with subdivision conditions*, 2008, Department of Water, available at <[www.water.wa.gov.au](http://www.water.wa.gov.au)>.