New WAter Ways

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# Introducing water sensitive urban design

## Retrofitting

### Summary

**Retrofitting is the process of installing additional or alternative water management devices or undertaking a different approach in a developed area. Redeveloping or upgrading existing development and infrastructure presents opportunities for retrofitting. This can include both structural and non-structural techniques.**

### Main benefits

- Reduce flooding risk
- Improve public health and safety
- Improve water quality
- Restore and/or conserve environmental values
- Create more attractive and liveable neighbourhoods
- Enhance the cultural values of the urban landscape
- Improve use of open space and enhance recreational opportunities
- Improve community environmental awareness
- Demonstrate best management practice
- Utilise stormwater as a valuable resource to reduce potable water use
- Build resilience to a drying climate
- Reduce urban heat island effect

### Retrofit opportunities

- Address an existing problem
- Asset or infrastructure upgrades
- Local Government Drainage Scheme
- Redevelopment or infill development
- External funding opportunities
- Asset renewal/ replacement

### How do we retrofit?

#### Planning stages and approvals

- Identify the main objectives
- Identify and engage stakeholders
- Legislative requirements
- Site investigations
- Identify opportunities and constraints

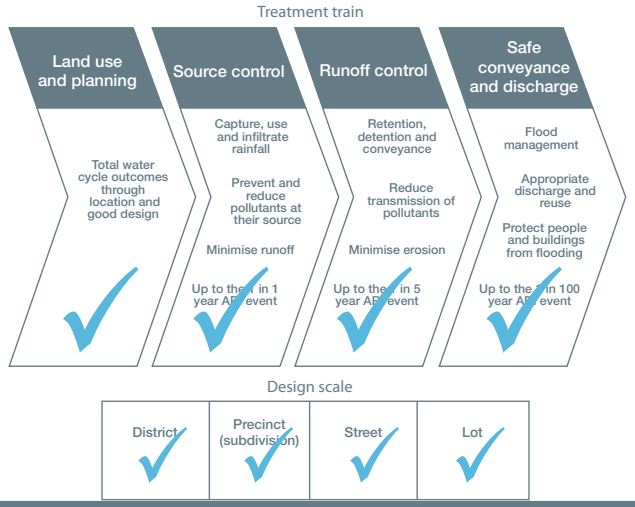
#### Decide on best approach. Options may include:

- Rainwater storage systems
- Infiltration soakwells, basins and trenches
- Pervious paving
- Litter and sediment traps
- Swales
- Biofilters
- Roads
- Revegetatation options
- Living streams
- Constructed wetlands
- Ephemeral detention basins
- Retrofitting existing permanent water bodies

#### Performance monitoring and maintenance

- Understand and schedule maintenance
- Record performance
- revise plans as required

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



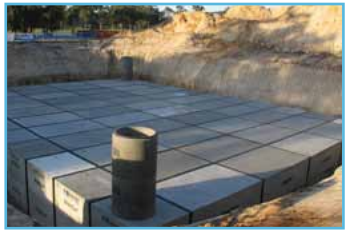

*Examples of Retrofitting options available*

*Infiltration cells*

*Subsurface detention systems*

*Soakwells*

*Detention and infiltration cells*



*Modular storage systems*

*Stormwater pits*

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Retrofitting in Western Australia - examples


**Parkfield Lake**

Constructed lake retrofit increased open space useability and improved public health and safety.



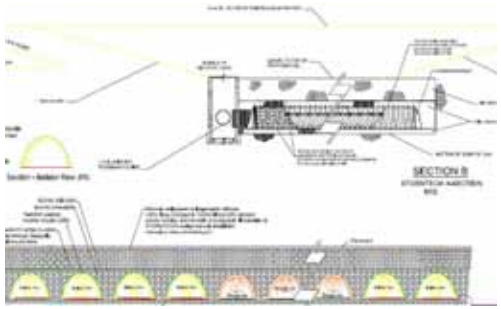

**Strelly St, Busselton**

This biofilter retrofit replaced a grassed verge with vegetated swales and flush kerbs to drain and treat stormwater from the adjacent roads.



**Bortolo Reserve, Mandurah**

This retrofit replaced a fenced-off sump with a multiple use public open space that still manages large storm events.




Source: New WAter Ways, *Retrofitting for WSUD,* Training Session

## Required reading

- *Stormwater Management Manual for WA,* Department of Water, 2004 – 2007, Chapter 6 on Retrofitting, available at <http://www.water.wa.gov.au/PublicationStore/first/84955.pdf>
- *WSUD Incentives,* available at <http://www.wsud.org/adopting-wsud/funding-linkages/wsud-incentives/>
- Legislative requirements: Acts that need to be considered before any retrofitting works are planned can be viewed on page 15 in *Stormwater Management Manual for Western Australia:Retrofitting* - see reference above.

Australian Government

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