

What is ‘water sensitive urban design’?

Integrated Water Cycle Management

Water Sensitive Urban Design is about the **integration** of urban planning and development with the management, protection and conservation of the **water cycle** as a whole.

A range of applications are available for the integration of WSUD concepts and technologies into urban developments. WSUD is about a **balanced approach** – the right applications (a range of concepts and technologies) applied in the right locations (site conditions and constraints) **to achieve sustainability** (conservation, protection and recharge - whole water cycle management).

Key Principles

The key principles of WSUD as stated in the *Urban Stormwater – Best Practice Environmental Management Guidelines* (Victorian Stormwater Committee, 1999) are as follows:

1. **Protect natural systems** – protect and enhance natural water systems within urban developments;
2. **Integrate stormwater treatment into the landscape** – use stormwater in the landscape by incorporating multiple use corridors that maximise the visual and recreational amenity of developments;
3. **Protect water quality** – improve the quality of water draining from urban developments into receiving environment;
4. **Reduce runoff and peak flows** – reduce peak flows from urban development by local detention measures and minimising impervious areas;
5. **Add value while minimising development costs** – minimise the drainage infrastructure cost of development.

Planning & Feasibility

WSUD concepts and technologies, if planned and implemented correctly, offers an opportunity for *not only elements of the water cycle complimenting the development, but the development to in turn compliment the water cycle.*

In order to achieve the best possible results of implementation, the pre-planning phase must:

- identify the land use capabilities and existing conditions or constraints of the site (ie feasibility stage);
- consider the intended design and function of the proposed development;

- identify the likely impacts of the development on the existing environment (immediate and surrounding areas);
- then match these factors with the most appropriate WSUD technologies, designed to achieve a sustainable balance between development and environment;

so as to ensure integration, sustainability and sound management of the water cycle.

WSUD Techniques

Types of WSUD techniques include (not limited to):

- grass or vegetated swales – primary treatment and conveyance function
- infiltration trenches – primary and secondary treatment and conveyance, detention and retention options
- bio-retention systems – secondary treatment, conveyance, detention and retention functions
- wetlands – tertiary treatment system, storage/detention, possible reuse
- rainwater tanks – using stormwater as a resource not a nuisance, detention, retention, substitute potable supply for gardening, car washing, toilet flushing, etc
- greywater reuse – collect from households, primary treat on site, reuse for external irrigation or internal toilet flushing
- rain gardens, rooftop greening, urban forests – provide natural vegetated features of aesthetic value and provide treatment function by filtering stormwater
- or any combination of these and other techniques for the best possible outcome.