



# Water sensitive urban design

## How water sensitive urban design supports healthy communities

### Introduction

Health systems are designed to deliver safe, high quality and accessible services that focus not only on treatment but also prevention, to increase the general level of health across the community, contributing to wider social and economic benefits for the community (Department of Health, 2015). This focus on multiple outcomes is also at the heart of water sensitive urban design, which aims to optimise management of water resources and the water cycle to support delivery of social, environmental and economic benefits.

### How WSUD supports a healthy community

Water sensitive urban design promotes the sustainable use, re use and management of water in all contexts across our built and natural landscapes. Application of water sensitive urban design results in more natural water cycles and improved water quality, which leads to healthier environments and ecosystems. Recognition is also increasing regarding the additional health-related benefits to our communities.

The health benefits to our communities from water sensitive urban design include:

- increased access to nature, which improves mental well-being and provides opportunities for passive recreation (WHO, 2016);
- urban cooling from green roofs, green walls, raingardens, passively watered street trees, waterways, wetlands, and irrigated parks;
- improved amenity provided by the visual appearance of green infrastructure such as trees, creeks, wetlands and raingardens;
- access to sustainable sources of water for irrigation of parks;
- increased usage of pathways for walking and cycling when these are integrated with green and/or blue infrastructure;
- reduced numbers of mosquitoes and midges through creation of healthy ecosystems;
- improved air quality through reductions in noise, light and pollutant levels due to increased vegetation (Frontier Economics 2019);
- greater access to recreational activities on waterways and wetlands as a result of less algal blooms, litter and/or contamination which can close these sites in response to associated human health risks; and
- enhanced sense of community (socialisation and connections between individuals) particularly where management of waterways and wetlands is undertaken by community members.

### Drivers for WSUD in our communities

There are a number of drivers for the integration of water sensitive urban design into our landscapes. These include:

- the multiple health benefits of local and easily accessible green spaces to the community are increasingly being recognised and valued by the community;
- lack of available water and increasing water restrictions and/or uncertainty around water availability makes the provision of accessible green spaces increasingly difficult;
- densification and infill in urban areas reduces space for greening and also increases pressure on available green spaces; and
- climate change resulting in increased temperatures and flashier flooding requires solutions that promote resilience



Passively watered street trees grow faster, reduce stormwater flows and pollutants and add amenity



Increased access to nature



Urban cooling



Improved amenity



Enhanced sense of community



Sustainable sources of irrigation



Increased passive & active recreation



Reduced mosquito-borne disease



Improved air quality

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### Opportunities

Water sensitive urban design opportunities that improve mental and physical health can be incorporated into all elements of our cities, including neighbourhoods, streets, parks (including drainage infrastructure) and buildings.

#### Water Sensitive Neighbourhoods

Urban forestry programs that promote increased planting of trees, particularly where the trees are passively watered by diverting stormwater systems (CRCWSC, 2020).

Opportunities for celebration of cultural values, particularly as many Aboriginal values are associated with water.

#### Water Sensitive Streets

WSUD system vegetation and shading from trees can cool streets by up to 6 degrees in comparison to streets without trees (Coutts et al, 2015).

Passively watered trees grow faster than those without access to stormwater.

Street trees and vegetated stormwater systems increase neighbourhood amenity and property values (Plant et al. 2017; Pandit et al 2013).

Street trees can cause motorists to drive slower (Naderi, et al, 2006, 2008, Edquist et al 2009).

#### Water Sensitive Parks

Passively directing flood flows to parks.

Planting trees and irrigating parks with groundwater or recycled water can reduce temperatures in surrounding area by 1-2 degrees, (Coutts et al, 2015).

Retrofitting drains and detention basins into vegetated areas for public access and connections.

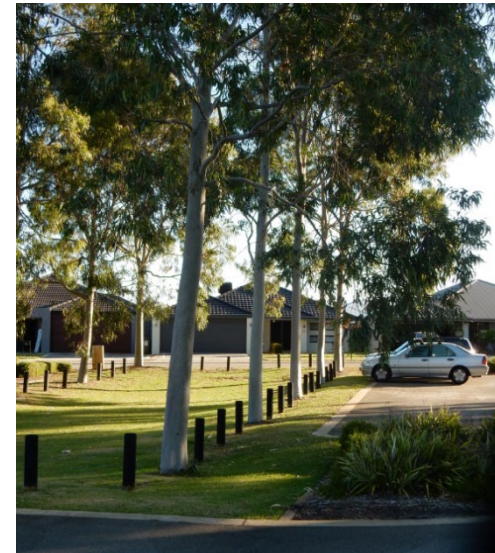
Areas downwind of waterbodies are cooler than other areas.

#### Water Sensitive Buildings

Green walls and green facades improve amenity; reduce external and internal building temperatures; and can be watered via on-site greywater systems.

Green roofs assist in stormwater management and provide biodiversity and amenity benefits. Green roofs can reduce surface temperatures by up to 20 degrees (Coutts et al, 2013). Green roofs can fit on any platform and can be watered from greywater sourced from the building (e.g. WorkZone offices, Perth).

Raingardens, permeable driveways and car parks lower surface temperatures, improve stormwater management and increase amenity.



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Images: Stormwater directed from car parks into vegetation for passive watering and improved stormwater management (above) and a multi-functional area of public open space which provides for the management of major rainfall events (below)