

## Water sensitive urban design

### Water sensitive tourism

#### Summary

The tourism industry in Australia is heavily reliant on our natural landscapes and beautiful beaches that are key attractions for both international and domestic visitors. Applying water sensitive urban design principles and practices at both the city and tourist development scales is critical to provide protection for water assets, enhance liveability of places and spaces and optimise use and reuse of our scarce water resources. For a tourism development, this can also reduce project and operating costs, enable opportunities for cultural interpretation, create visitor experiences and result in design features which enhance attraction and amenity.

This fact sheet contains information to help tourism providers incorporate improved water management outcomes into their development. Further information is available at [newwaterways.org.au](http://newwaterways.org.au).

#### Introduction

Tourism is a critical economic driver in Australia. In 2019, total tourism spend (international and domestic day and overnight) reached a record \$152.4 billion (Tourism Research Australia website), with sightseeing and going to the beach amongst the top activities undertaken. The importance of our natural landscapes is demonstrated by repeat visitors on holiday in Western Australia, who are more likely to spend time in our “amazing natural landscapes or national parks” and beaches than anything else (Figure 1, Tourism Research Australia, 2018). Visitors to Perth’s beaches value the cleanliness and clarity of the water, the white sand, and the natural environment (Tourism WA, 2018). It is vital that the quality of these important environments is maintained. This can be achieved through the application of water sensitive urban design (WSUD) across our urban and natural landscapes.

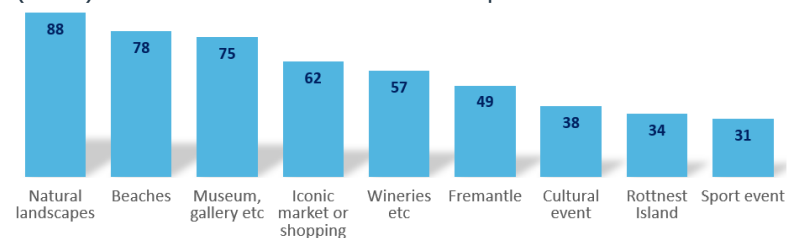


Figure 1: Activities undertaken by holiday repeat visitors on their two most recent trips (Tourism Research Australia, 2018)

#### How WSUD supports tourism development

WSUD promotes the sustainable use, reuse and management of water in all contexts across our built and natural landscapes. Protection of our important natural coastal and inland landscapes is achieved through the application of WSUD principles to all types of tourist developments which:

- create more natural environments and ecosystems;
- reduce stormwater runoff and improve flow regimes of urban waterways to reduce degradation;
- reduce pollutant and sediment loads entering freshwater and marine environments through modification to catchment drainage systems, including minimising direct, untreated discharge onto beaches and into rivers and wetlands;
- protect against flooding;
- support creation of green corridors and multi-function spaces; and
- provide cooling and increased amenity of streetscapes and public areas.

#### Opportunities in tourism developments

WSUD is beneficial in tourist developments, particularly as they are often undertaken in environments with limited access to infrastructure. Application of WSUD solutions can reduce environmental impacts and provide a sustainable source of water, amongst other benefits. Incorporation of WSUD elements will complement existing activities, increase visitor knowledge of water considerations and add value to the tourism product. Opportunities include:

- **Water harvesting and reuse** – including from roofs, shade structures, stormwater systems and/or local wastewater management systems. Collection and use of locally generated water supplies can also minimise energy use, achieve cost savings and increase resilience to climate change. Consideration should be given to seasonal rainfall patterns, seasonal demands and storage options, and the level of treatment should be appropriate for the distribution and use of the water source.
- **Water efficient fixtures and fittings** in buildings and for irrigation that incorporate smart technology, such as weather and moisture sensors.
- Capture and **treatment of stormwater** in tree pits, vegetated swales, raingardens or constructed wetlands, which enhance biodiversity, create design features and entry statements and provide cooling, amenity and attraction benefits.
- Retain and install **permeable surfaces** to assist in management of stormwater and recharge of groundwater.
- Install **green roofs and green walls** on buildings to reduce stormwater discharge and provide cooling and increased amenity. Planting green roofs and walls will also minimise visual impacts in important landscapes and increase biodiversity.
- Maintain catchment flow paths where possible by **directing flood flows** to waterways, wetlands or the coast via overland flow through vegetated surfaces. This minimises the risks associated with over-reliance on large on-site systems with uncertain management arrangements.
- Retain existing **vegetation** and trees where possible and plant locally native species for shade, water quality treatment, habitat, ecological corridors, and along trails.
- Protect ecosystems by **managing access** and activities on and adjacent to waterways, wetlands and coastal waters, to prevent impacts from physical disturbance, noise, litter and artificial light.
- Enhance and **share local knowledge**, including indigenous cultural values and interpretation.



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#### Case study: Rottnest Island

Rottnest Island is an A-Class nature reserve and significant tourist destination off the coast of Fremantle. Management of the island incorporates many sustainability initiatives to protect and enhance the natural landscapes, biodiversity and coastal environments that underpin the basis of the tourism economy.

Although Rottnest Island is licenced to obtain potable freshwater from a desalination plant based at Longreach Bay and the Wadjemup Aquifer, significant investment in water infrastructure has reduced the need for groundwater use and Rottnest is now self-sufficient for all its water requirements. This includes the use of treated wastewater to irrigate the golf course and other island landscapes. The Rottnest Island Wastewater Treatment Plant is a membrane bioreactor plant that produces consistent water quality and low pollution risk. Regular monitoring is undertaken of treated wastewater quality, irrigation and turf management practices and receiving environments to ensure performance complies with the approved nutrient irrigation and recycled water quality management plans.



The iconic Thomson Bay, Rottnest Island

Stormwater is managed utilising the highly permeable soils of the island, through minimisation of impermeable surfaces and at source stormwater management, such as un-kerbed roads. Stormwater quality risks are low due to minimal contamination sources.

The Rottnest Island Environmental Team also manage the Rottnest Island Nursery. Nursery activities include seed collection from Island plants for local provenance, seed treatment, seed storage and propagation of plant species native to Rottnest Island. These species are used to enhance the environment and cooling around the settlement areas.

#### Case study: Bakehouse Distillery

The Bakehouse Distillery, located in the hills of Kalamunda, contains a café, micro-distillery and tourist chalets. The site is located in a public drinking water source area and does not have access to reticulated sewerage. The development applies water sensitive design approaches to assist with protecting the valuable public drinking water resource.

The wastewater treatment system includes aerobic treatment units (ATU). Treated water from these units is an important irrigation source for landscape elements, such as grass and garden beds, which provide amenity for customers and visitors. Consistent with Department of Water and Environmental Regulation requirements, a grease trap will be used to collect waste oils for separate disposal via off-site removal, and a bunded area provided for storage of distillery products. Stormwater is managed on site via swales vegetated with local plants around the chalets and car parks, which increases visitor connections to local plants and wildlife.

#### References

Rottnest Island website, 2020, Rottnest Island – About the Island – Sustainability, <https://www.rotnnestisland.com/the-island/about-the-island/sustainability>

Tourism Research Australia, 2018, Understanding Repeat Visitation to Western Australia, Summary. Australian Government, Austrade.

Tourism Research Australia (2020) <https://www.tra.gov.au/International/international-tourism-results>

Tourism WA, 2018, Tourism and Perth’s Coast Research conducted by Kantar Public on behalf of Tourism WA 2017/2018



Images: Stormwater from car parks directed into vegetated areas to manage flows and pollutants