

looking after the future

What is a **Sustainable** Iandscape?

A sustainable landscape is a healthy and resilient landscape that will endure over the long term without the need for high input of scarce resources such as water. The natural functions and processes of the landscape are able to maintain themselves into the future.

Our South Australian urban landscapes are sustainable when they are in harmony with local environmental conditions.



The Windsor Street Linear Trail in the City of Unley, designed by Oxigen for local conditions Every drop counts a message from the Royal Botanic Gardens Cranbourne



The Sustainable Landscapes Project

Through demonstration, education and research this partnership project promotes the integration of good design, low water use plants, non-weedy plants, minimal chemical use, low energy consumption, habitat creation, water conservation measures and the use of sustainable products.

A sustainable park or garden:

- Is well-designed to suit local environmental conditions.
- Contains carefully selected water-wise plants.
- Contains plants that will not become environmental weeds.
- Conserves water by using mulch, efficient irrigation, watering only when necessary and grouping plants with similar water needs together.
- Provides habitat for local native fauna such as small birds, butterflies, bats, lizards and frogs.
- Avoids use of pesticide or other chemicals that could harm the beneficial organisms or contaminate soil and water.
- Consumes minimal non-renewable energy in construction and maintenance.
- Uses sustainable and locally sourced materials and products, and avoids materials such as rocks, pebbles or wood collected from wild landscapes.

We can all contribute to a healthy and sustainable future by using these principles to guide our public and private parks and gardens. Dianella revoluta indigenous to much of South Australia, waterwise and good for habitat Education and information is available for industry and community as well as schools

The Arum Iilly is one of many garden plants that easily escape and invade creeks and rivers The SA Water Mediterranean Garden features waterwise and non-invasive plants from countries with similar climates



Why Sustainable Landscapes?

The need to achieve a sustainable future is the driving force changing the way we live and work in the 21st century. Climate change and global warming, loss of habitat and biodiversity, and decline in water quality and availability all point towards a need for behaviour change in all sectors of our community.

Many urban landscapes are resource-hungry, requiring significant inputs of energy, water, nutrients and chemicals while many of our plant selections and practices are unsuited to the semi-arid and arid environments of South Australia. The result is all too often lush and green parks and gardens that are thirsty, hungry, deplete the soil, allow invasive plants to escape, use unsustainable materials, contribute to waterway contamination and provide limited habitat for native fauna.

To achieve landscape sustainability and to ensure a healthy future our urban landscapes need to be more efficient in their use of resources and work with our ecological and climatic conditions rather than against them.

Useful resources

Contact your local council and plant nurseries for more information about plants suitable for your area.

- Sustainable Landscapes Project
 www.environment.sa.gov.au/botanicgardens/sustainable.html
- Local indigenous plant lists for your area
 www.urbanforest.on.net
- State Flora for native plants and advice
 www.stateflora.com.au
- Attracting native fauna to your garden
 www.floraforfauna.com.au
- SA Water and water conservation
 www.sawater.com.au
- Sustainable Gardening Australia
 www.sgaonline.org.au
- Good residential design guide www.greenhouse.gov.au/yourhome/technical/fs54.htm
- Mawson Lakes www.mawsonlakes.com.au
- Weeds Australia www.weeds.org.au
- Organic pest control www.zerowaste.sa.gov.au/prog_garden.php

Recycled products

- www.resourceco.com.au
- www.ecospecifier.org
- www.plasticrecyclers.com.au
- www.a-p-r.com.au/home.asp
- www.adelaideruralsalvage.com.au
- www.replas.com.au

The Sustainable Landscapes project is a collaborative partnership between the Land Management Corporation, Innovations and Economic Opportunities Group (through the Mawson Lakes Economic Development Project), Adelaide and Mount Lofty Ranges Natural Resources Management Board, SA Water Corporation and the Botanic Gardens of Adelaide (Department for Environment and Heritage).

The project demonstrates and promotes appropriate park and garden design, plant and material selections and sustainable horticultural practices for South Australian environments including effective, efficient and appropriate water use.

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Adelaide and Mount Lofty Ranges Natural Resources Management Board



Botanic Garden of ADELAIDI

neryn Pitman, Joanna Park nd Trees For Life.

inted using environmentally endly products and processes



Many attractive waterwise plants are available from nurseries and garden centres Garden gazanias easily escape and invade vulnerable dune environments Xanthorrhoea species provide striking displays favoured by nectar-feeding birds Everyone can contribute to creating sustainable urban landscapes

sustainable park or garden



Design for local conditions

Good design considers the characteristics of a site. A well-designed garden makes the best use of space to suit lifestyle and taste, and works in harmony with the natural environment.

The local conditions of any site include:

- *Climate:* natural rainfall patterns, sunlight, shade, wind and frost. A sustainable garden is designed to suit the climate of the local area.
- *Soil:* soils vary naturally and may be modified in the building process. Many plants will only thrive in the soils that suit them. Poor soil can be improved with organic mulch and compost and it is more sustainable to work with the natural soil than to replace it.
- *Drainage:* drainage varies with soil type, gradient, proximity to low lying areas and to the water table. Plan to make the best use of naturally dry and damp areas, and to capture and re-use excess water or run-off.

Design may also consider fire risk, energy efficiency in the home, adjacent heat-reflecting surfaces, and how to minimise supplementary water and non-renewable energy requirements.

Careful consideration of local environmental conditions when creating a park or garden design will enable efficient management of soil, water and energy and lead to a healthy and resilient landscape.

Plant selection - water use

Plants from places with similar climates and conditions, such as Mediterranean climate zones, are generally more suited to our environment. If you select plants that require approximately the natural rainfall of your area, you will rarely need to water them once they are established. If you select plants that require more than your natural rainfall you will need to water them, especially in dry weather. However the many non-permeable surfaces in our towns and cities, along with the urban heat island effect, mean that even low-water use plants may need some extra water.

A sustainable garden is carefully designed to use available water effectively and does not need frequent supplementary water.

Plant selection - weed potential

Plants that grow naturally in your local area are unlikely to become weeds, but any plants that are introduced from other parts of Australia or from other countries have the potential to become weeds.

Australia-wide the impact of weed plants costs our economy billions of dollars each year. It is important to select plants that are not considered to be invasive in your area, and to ensure that plants do not escape from gardens and spread into waterways, reserves, farmland, coastal dunes and other natural areas.

Water conservation measures

Water can be conserved in various ways:

- *Mulch:* mulch garden beds to conserve soil moisture and provide coolness for plant roots (allow leaf litter to accumulate or use coarse mulch 6-10cm deep).
- *Hydro zone:* design the garden so that plants with similar water needs are grouped together.
- *Irrigation:* use irrigation systems that provide water efficiently with minimum water loss through evaporation or run-off. Under-mulch drip irrigation usually provides the most efficient water delivery. Check regularly for leaks.
- *Monitor:* only apply water when necessary. Check plants for signs of moisture stress and check soil for dryness. Observe weather reports as they indicate predicted rainfall, temperature and wind that impact soil moisture.
- *Water supply:* tanks and recycling systems can provide excellent sources of supplementary water. Bores are not a sustainable option where they deplete groundwater supplies and alter natural hydrological systems.
- *Lawns:* keep lawn area to a minimum, use drought tolerant grasses, water in the early morning rather than during the day, keep grass long in summer, allow lawns to lose some of their lushness in summer.
- *Permeable surfaces:* minimise hard surfaces such as concrete; mulch or porous pavers allow water to penetrate the soil and reduce run-off.
- Planting season: in our climate, the best planting time is often autumn or early winter. This gives plants time to become established before the heat of summer. Spring planting can lead to a greater need for supplementary water over summer.

Many threatened birds, such as Superb Fairy-wrens, need dense shrubby habitat Interpretive signage tells the stories, informs and promotes sustainable landscaping Many animals, such as the Bearded Dragon, enjoy the flowers and berries of native plants Logs, stumps, rocks and organic mulch provide excellent habitat for small native fauna Recycled plastic and other materials are increasingly used to make furniture and garden products Removal of rocks and pebbles from bushland and waterways can result in habitat loss and erosion



Habitat creation

Through careful design and plant selection, habitat can be provided for a diversity of native fauna. Land clearance in urban areas has led to the decline of many species of birds, insects, lizards, frogs and small mammals. Parks and gardens provide food and shelter for many animals that may inhabit a garden fulltime or use it as a stepping-stone between remnant habitat areas. Native fauna benefit the garden by keeping unwanted pest populations under control, pollinating plants and helping to sustain a mini-ecosystem.

Ways to provide habitat:

- Include a variety of plant species, including some local indigenous plants as they are most likely to provide habitat suitable for local native fauna.
- Ensure that something is flowering all year round and include nectar-producing plants for birds and butterflies.
- · Select plants with varying heights and habits to create layers.
- Include some dense prickly shrubs for shelter and protection for small birds.
- Include grasses and daisies for butterflies and caterpillars.
- Fallen branches, logs and rocks provide excellent shelter for small lizards.
- Protect garden habitat from cats and dogs, especially at night.
- Provide a water source, such as birdbath or shady pond.

Pesticides and other chemicals

While pesticides may get rid of unwanted animals and plants in your garden, they often affect non-target species as well.

Under storey, groundcover plants and soil provide habitat for many beneficial insects and micro-fauna that keep the soil healthy, recycle dead matter, and provide an essential food source for birds, frogs, lizards and bats.

Over-use of chemicals can also harm local waterways and lead to health problems in humans.

Ways to avoid over-using pesticides and other chemicals:

- Select pest resistant plants that suit local conditions.
- Use organic rather than synthetic fertilisers (organic fertilisers improve soil structure) and avoid over-fertilising plants.
- Identify pests or diseases before selecting a control method and investigate the alternatives.
- Target the identified pest and ensure that chemical product does not come in to contact with anything else.
- Only use chemicals with a low toxicity level, apply the recommended dose and avoid using them before rain or in windy conditions.

Energy

It is a myth to think that a sustainable park or garden will not require any maintenance; every garden needs some looking after. Design, plant selection and choice of materials will largely determine the level of maintenance required. A sustainable garden is designed to minimise the use of non-renewable energy-powered tools such as lawn mowers, trimmers and chain saws.

To minimise the energy consumption and greenhouse gas emissions from transporting materials over large distances, either from within Australia or from overseas, ensure that your garden products and materials are locally sourced.

Garden materials

A sustainable garden incorporates the thoughtful use of materials such as timber and rock. For example, the removal of moss rocks, river pebbles, rainforest or old growth timber from bushland or waterways can lead to erosion and loss of important habitat. Use of these materials in gardens is unsustainable.

Many innovative recycled products such as soil, mulch, waterwells, pavers, stakes and furniture are now available. Only use local plantation or recycled timbers. Ensure rock and pebble products are sourced from local, licenced suppliers.

Beautiful Functional Healthy Alive