

Legislation, policy and urban greening audit

Background paper to support the development of an Urban Greening Strategy for Metropolitan Adelaide | 2024



Recognition of Kurna Miyurna and Yarta

We acknowledge and respect the Native Title holders and traditional owners of the Green Adelaide region – the Kurna Miyurna (Kurna people) – and pay homage to their ancestors who maintained the natural processes of the land we are on and whose spirits still dwell on Yarta (Country).

Mutual respect and trust enables us to walk and work side-by-side to restore Yarta.



Acknowledgement

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The information contained in this report is current as at April 2024.

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1 Background

1.1 What is the Urban Greening Strategy?

Green Adelaide has been tasked with bringing together state agencies, local government, non-government organisations (NGOs), industry peak bodies, the Kaurna community and the broader community to drive an ambitious and coordinated approach to greening metropolitan Adelaide. In 2021, Parliament passed a motion to:

*Prioritise the protection of existing urban trees and green open spaces; and develop a comprehensive strategy to **increase tree canopy and reduce hard surfaces** (led by **Green Adelaide**) in collaboration with **local government** and **local communities** to create healthy and diverse urban forests across metropolitan Adelaide with the aim to, at a minimum, meet the urban green cover targets of the 30-Year Plan for Greater Adelaide along with a particular focus on areas identified as being most vulnerable to heat.*

This comprehensive strategy will also help deliver the South Australian Government's commitment to increase greening in our neighbourhoods, support biodiversity and retain more mature trees.

1.2 Purpose and scope of this report

The purpose of this report is to provide background information on the key legislative and policy provisions that currently impact urban greening across metropolitan Adelaide. It has been used to inform the development of the Urban Greening Strategy for Metropolitan Adelaide.

It includes an audit of how South Australia's urban greening outcomes are impacted by state government legislation and policy and identifies where there are potential opportunities for improvement. This audit and associated recommendations are drawn from relevant recent consultation on urban greening such as:

- Green Adelaide's Policy and Green Open Space Technical Working Group
- the parliamentary Natural Resources Committee's [Inquiry into Urban Green Spaces \(2020\)](#)
- [Green Adelaide's Regional Landscape Plan 2021-2026](#)
- the Minister for Planning's [Planning System Implementation Review](#) (2022-ongoing)
- the parliamentary Environment Resources and the Development Committee's [Inquiry into the Urban Forest](#) (2023-ongoing).

This audit is grouped under the following headings:

- Legislation
- Land use planning system
- State government projects and public infrastructure upgrades

While it is recognised that local government policy and programs play an important role in urban greening, the Urban Greening Strategy is focused primarily on levers that affect the whole of the metropolitan Adelaide region. Accordingly, the scope of the audit is on state government policy and legislation provisions.

Further, it is recognised that there are many emerging issues in relation to urban greening across metropolitan Adelaide. Any new opportunities identified, which have not been covered in this paper, are welcome to be provided through the public consultation process on the draft Urban Greening Strategy, which is taking place between 30 April 2024 and 28 June 2024.

2 Legislation

This section of the report examines the major regulatory instruments that influence or impact urban greening across metropolitan Adelaide. A summary of the key legislation relevant to urban greening and biodiversity is provided in **Table 1**, and a more comprehensive list of legislation is provided in **Appendix A**. On the pages that follow, key pieces of legislation are further explored in relation to their impact and relationship with urban greening.

Table 1: Key legislation impacting urban greening outcomes in South Australia

Legislation	Description
<i>Aboriginal Heritage Act 1988</i>	Provides for the protection of Aboriginal sites, objects and remains. This includes the protection of scarred trees, which are trees with markings or scars where the bark from the tree was used by Aboriginal people to make canoes or other artefacts.
<i>Adelaide Park Lands Act 2005</i>	Establishes the special status, attributes and character of the Adelaide Park Lands. Provides for the protection of those Park Lands, and for their management as a world-class asset to be preserved for the benefit of present and future generations.
<i>Coast Protection Act 1972</i>	Provides for the conservation and protection of South Australia's coastal areas.
<i>Electricity Act 1996</i>	Regulates the electricity supply industry and provides for safety and technical standards for electrical infrastructure, including the vegetation that may be planted near overhead powerlines.
<i>Environment Protection Act 1993</i>	Provides the regulatory framework to protect South Australia's environment, including land, air and water.
<i>Highways Act 1926</i>	Provides the regulatory framework for carrying out roadworks (along with the <i>Local Government Act 1999</i>) including the management of roadside vegetation under Operational Instruction 19.8 and Operational Instruction 20.1.
<i>Landscape South Australia Act 2019</i>	Promotes sustainable and integrated management of South Australia's landscapes, to make provision for the protection of the state's natural resources. This legislation is the key framework for managing land, water, pest plants and animals, and biodiversity across the state. It is administered by Green Adelaide and 8 regional landscape boards. Notably, Green Adelaide (which is established under the <i>Landscape South Australia Act 2019</i>) has a vision to create a cooler, greener, wilder and more climate-resilient Adelaide. A major focus across 2 of Green Adelaide's legislated priorities (Biodiversity Sensitive and Water Sensitive Urban Design and Green Streets and Flourishing Parklands) is to encourage greening and biodiversity in the urban environment by: • accelerating urban greening to increase habitat for native wildlife and connect people with nature • building industry and community capacity to design cooler, greener and biodiverse urban infrastructure to transform green spaces into thriving ecosystems. The legislated priority for Water Resources and Wetlands also supports urban greening, both directly (such as planted wetlands) and indirectly (as in, water being critical to plant survival and plant health).

<i>Local Government Act 1999</i>	Includes environmental considerations in the functions of local councils by a provision for councils to manage, develop, protect, restore, enhance and conserve the environment in an ecologically sustainable manner, and to improve amenity (Section 7e). Each council must also generate strategic management plans that include financial and asset management plans. This includes creation of community management plans for all land that the council owns. Includes responsibility for vegetation on a public road vested in the council.
<i>National Parks and Wildlife Act 1972</i>	Provides for the establishment and management of reserves for public benefit and enjoyment and for the conservation of wildlife in a natural environment.
<i>Native Vegetation Act 1991</i>	Provides incentives and assistance to landowners in relation to the preservation and enhancement of native vegetation, and regulates the clearance of native vegetation.
<i>Planning, Development and Infrastructure Act 2016</i>	Provides for matters that are relevant to the use, development and management of land and buildings. Sets out the overarching framework for planning and development throughout South Australia. Under the <i>Planning, Development and Infrastructure Act 2016</i> (PDI) Act the Minister must create a series of state planning policies that guide the development of regional plans, and the Planning and Design Code. Mandates a specific biodiversity state planning policy. Sets out the legislative controls for protecting trees over a specified trunk circumference (defined as regulated and significant trees) in metropolitan Adelaide and some Adelaide Hills urban areas.
<i>Water Industry Act 2012</i>	Assesses water demand and supply, regulates the water industry, provides technical standards for water and sewerage infrastructure, and promotes measures to ensure that water is managed wisely. <i>Water Industry Regulations 2012</i> also have sections relating to planting of trees and protection of infrastructure. This includes, for instance, a schedule of trees that can be planted in proximity to sewerage infrastructure without written approval.

2.1 Regulated and significant tree legislation

Strengthening tree protection legislation and planning policy is considered by stakeholders to be the number one opportunity to support better urban greening and biodiversity outcomes¹. Further feedback suggested that South Australia's tree protection laws (under the *Planning, Development and Infrastructure Act 2016*) are not strong enough. A [research report](#) commissioned by the State Planning Commission and prepared by the Environment Institute (within the University of Adelaide), compared South Australia's tree protection laws with other jurisdictions across Australia, in relation to the size of the trees protected and the various exemptions available. The report found that South Australia has the lowest level of protection for trees compared to other jurisdictions.

Another question posed by stakeholders was whether the fees associated with tree removal are enough of a deterrent. For example, for every regulated tree that is removed, 2 trees need to be replanted, while for

¹ This was the top opportunity ranked by respondents to the Urban Greening Practitioners Survey.

any significant tree that is removed, 3 trees need to be replanted. As at 1 July 2023, a removal fee of \$163 per tree is charged for any replacement tree that is not planted. This fee is deemed by many stakeholders to be too low to act as a deterrent. If the fee does not adequately reflect the ecosystem services and habitat values of urban trees, it provides a relatively cheap alternative to planting the required replacement trees.

It is important to recognise the significant work of the Conservation Council in preparing a [range of reports on urban trees](#). These documents analyse what is happening to trees in Adelaide, make comparisons with how trees are managed interstate, and make recommendations about what changes should be made to better protect urban trees in Adelaide. Some of these recommendations are consistent with those of the University of Adelaide [research report](#) mentioned above.

In response to the community's growing concern about the effectiveness of the tree protection laws, the State Planning Commission has commenced an [Open Space and Trees project](#) to better understand the use and benefits of trees in an urban context and to consider the impact of infill development on the state's urban tree canopy. The project is being undertaken in stages:

- Stage 1 is already complete, and involved reviewing tree species that are exempt from regulated tree controls and considering an appropriate off-set contribution for the removal of regulated and significant trees (a desktop review of the regulatory tree controls and an [arborist review](#) have been completed).
- Stage 2 is also complete, and involved undertaking a more detailed review of regulated and significant tree regulations, including tree protection sizes and other exemptions from protection, and comparing these to other Australian states and territories (see the [research report](#))
- Stage 3 is yet to begin, but will consist of a review of urban greening and impact of infill development and review tree canopy targets in the [30-Year Plan for Greater Adelaide \(2017 Update\)](#). *(Part 3 is currently on hold pending the government's implementation of the recommendations from the [Planning System Implementation Review](#).)*

In August 2022, the Minister for Planning established an expert panel to undertake the [Planning System Implementation Review](#). The scope of the panel's review included reviewing the Planning and Design Code (and related instruments) as it relates to trees.

As part of its review process the panel released 3 discussion papers and a number of summary reports. The [Planning and Design Code Discussion Paper](#) includes a chapter on tree policy and poses a number of questions about what the implications would be of making changes to the current definition of regulated and significant trees or increasing the off-set fee for removing an urban tree. On 28 March 2024, the panel's [final report](#) and the [state government's response](#) was released.

The panel made 113 recommendations, including for stronger tree protection. The government has supported 63 of these recommendations in full, 13 in principle, and 36 in principle with further investigation. It is anticipated it will take approximately 18 months to implement the recommendations. Those panel recommendations that cover tree protections will be considered by the State Planning Commission in completing Part 3 of the Open Space and Trees Project.

Additionally, the [Environment, Resources and Development Committee of Parliament](#), through its Inquiry into the Urban Forest, is investigating a range of matters including selection and maintenance of appropriate tree species, with a focus on infill development and legislative options to improve the resilience and longevity of trees in the urban forest. An interim report has been released, featuring 13 recommendations that focus on regulatory changes to better value trees; protecting existing trees; facilitating the planting of more trees; refining distance and species exemptions allowing tree removal; protections based on trunk size and/or canopy cover; fees for legal and illegal tree removal; creation of an urban forest fund; and encouraging community-based tree protection. The committee has indicated that it will release its final report in the later part of 2024.

2.2 Off-set schemes

Under s197 of the Planning, Development and Infrastructure Act, an off-set scheme may be established that is designed to support or facilitate (amongst other things) development that may be in the public interest by enabling money to be paid in lieu of providing an on-the-ground physical outcome. There are currently 2 off-set schemes related to urban greening in operation under this section:

- Open Space Contribution Scheme
- Urban Tree Canopy Off-set Scheme.

As a general principle the use of off-set schemes should only occur in those circumstances where the removal of the tree(s) is the only viable option. The retention of existing trees should be the default approach because of the significant ecosystem services, health and wellbeing, amenity, and other benefits they provide.

In its Planning and Design Code Discussion Paper, the panel included discussion about the Urban Tree Canopy Off-set Scheme in relation to money paid in lieu of trees for new developments and costs associated with removal of regulated or significant trees. The panel concluded that the fee for not planting a tree and instead paying into the scheme is not enough, as it does not reflect the actual cost of planting and maintaining replacement trees elsewhere. The discrepancy in cost is usually borne by local government.

The panel also agreed that the fees for the removal of regulated or significant trees are inadequate and should be reviewed. The panel was of the view that the overall cost associated with the removal of a regulated or significant tree (to amenity, history, biodiversity, and the urban heat island effect) is not appropriately compensated by the fee. As such, it is anticipated that the panel will recommend changes to the current off-set schemes.

If there is a recommendation that a review of the scheme calculation method is undertaken, it should ensure the fee payable is more commensurate with the actual costs borne by local government to plant and maintain a replacement tree of a similar size (i.e. small, medium and large).

The [research report](#) (referenced in Section 2.1 of this report) includes a section on tree valuation, and concluded that the value of trees should be calculated using a method developed for Adelaide conditions and species. **Breakout Box 1** explores some of the options available for calculating off-set fees.

Breakout Box 1

Off-set calculation methods

There are several tree valuation systems that could be looked at and adapted to apply to urban trees in metropolitan Adelaide.

One valuation system that is already in operation in South Australia is under the *Native Vegetation Act 1991*, where approval to clear native vegetation is off-set by a Significant Environmental Benefit (SEB). SEB off-set calculations are based on habitat values. Applying the same philosophy as SEB off-sets in the urban environment could require a net biodiversity gain on-site, so that habitat is being restored, diversity is being encouraged, and soft landscaping is being provided.

Another system is the Burnley Method which uses amenity tree evaluations. Amenity tree evaluations are widely used in Australia by open space managers to value trees. They are used primarily to place a monetary value on the tree so that they can then be recognised as assets.

The City of Melbourne has adopted a tree valuation calculation for public trees based on size, species life span, aesthetics, and tree condition. This is then combined with removal costs, value of ecosystem services, and reinstatement costs to get an overall figure that would off-set the removal of the public tree.

2.2.1 Open Space Contribution Scheme – Planning and Development Fund

New subdivision applications (new residential suburbs or infill developments) that result in the creation of allotments less than 1 hectare in size need to provide 12.5% of the development area as public open space for community use. Where it is not possible to meet the open space requirements for development involving the division of land into 20 or fewer allotments, and also for strata and community titles, an 'open space contribution fee' can be paid in lieu. This is generally the case for smaller subdivisions where providing the open space on site is impractical.

The fee is based on the number of additional allotments being created, and the fee for each allotment is set by regulation. These fees are held in the Planning and Development Fund, which can be used to assist with the acquisition, management or development of public land for conservation and recreation purposes. Councils can apply for funding through the Open Space Grant Program, which comes out of this fund, to purchase or upgrade public open space – particularly in areas of urban growth and renewal.

The grant program is important for facilitating projects that deliver urban greening outcomes, and supports projects that:

- facilitate the integrated delivery of quality public open space, particularly in areas of growth and renewal
- provide a diverse range of high-quality public open spaces that offer a range of active and passive uses
- improve the way our places function, making them more sustainable, more accessible, safer and healthier
- promote urban greening and climate change resilience
- create an interconnected network of high-quality green spaces that join destinations, public transport and growth areas.

These assessment criteria already support projects that promote 'urban greening and climate change resilience', 'access to quality green public spaces' and 'improving sustainability'. There is an opportunity to expand these criteria to include 'making a contribution to urban biodiversity'.

There is also an opportunity to review the adequacy of the 12.5% mandatory open space provision, which was first implemented in the 1960s, and the fee structure for monetary contributions, to reflect contemporary community value provided by open space.

A further opportunity that could be investigated is encouraging developers in strategic locations to co-contribute to upgrades to streetscapes adjacent to their development. Contributions could be linked to off-sets against other infrastructure related charges including, but not limited to roads, water and sewers. Opportunities for private contribution to public open space should be explored through the Greater Adelaide Regional Plan, the Metropolitan Open Space System and the development of an open space strategy for greater Adelaide.

2.2.2 Urban Tree Canopy Off-set Scheme

In specific circumstances where planting a tree can be challenging, such as highly reactive soils on small allotments, the [Urban Tree Canopy Off-set Scheme](#) enables contribution into the Urban Tree Canopy Off-set Fund as an alternative to planting the required tree. The scheme operates in the following circumstances:

- Housing Diversity Neighbourhood Zone
- Urban Renewal Neighbourhood Zone
- City Living Zone
- any site with a 'Designated Soil Type' as described in the scheme.

Money from the fund can be used for planting trees in reserves or on public land, or to purchase land to preserve existing trees or plant trees in areas with a low urban tree canopy or demonstrated urban tree canopy loss.

There has been significant stakeholder discussion about whether the fees for the Urban Tree Canopy Off-set Scheme need to be increased to be more effective as a deterrent for tree removal, but also to be more commensurate with the actual costs borne by local government to plant and maintain a replacement tree of a similar size (i.e. small, medium and large). As discussed above, the State Planning Commission's [research report](#) provides commentary about tree valuation options.

It is noted that since the Planning and Design Code became fully operational, in March 2021, only approximately 5% of eligible applications have elected to pay into the Off-set Scheme. Therefore, it is considered that an increase in fees shouldn't significantly impact the economic viability of development within these areas. Work is currently being undertaken to improve the Development Assessment Processing System for the collection of tree data. It is intended that in the future, data will capture the number of tree removals approved, and whether new housing developments are opting to retain or plant a tree or make a payment into the off-set scheme. Having access to this information will also assist in determining the effectiveness of the Planning and Design Code's tree policies and enable councils to follow up on whether replacement trees are being planted.

2.3 Native vegetation

It is estimated that only 3% of remnant vegetation remains in metropolitan Adelaide, some of which is found nowhere else in the region, making it even more critical to conserve. Native vegetation in metropolitan Adelaide is not always protected under legislation. *The Native Vegetation Act 1991* currently applies to a limited number of areas within metropolitan Adelaide. It covers the Hills Face Zone, areas that were previously zoned for the Metropolitan Open Space System, and parts or all of some hills and fringe councils. It does not apply across metropolitan Adelaide. The regulated and significant tree controls under the Planning, Development and Infrastructure Act provide protection to native trees that are large enough to be captured, but this legislation does not protect native vegetation more broadly. This means that native vegetation in metropolitan Adelaide can be removed without any regulatory assessment requirements.

To address habitat loss, biodiversity decline and climate change, as well as maintain a liveable city for all, it is important that native vegetation is protected and opportunities to restore and regenerate are prioritised. To better protect the small percentage of remnant native vegetation in metropolitan Adelaide, including scattered trees, consideration should be given to what regulatory measures could be used to protect native vegetation. For example, one solution could be expanding the application of the Native Vegetation Act to cover all known areas of native vegetation or strategic biodiversity corridors in metropolitan Adelaide. Protections could also be considered for revegetated areas in recognition of the important contribution they make to urban green cover.

2.4 Electricity infrastructure

The *Electricity Act 1996* regulates the planting and clearance of vegetation around electricity infrastructure. For this reason, the provision of electricity infrastructure often guides how streetscapes and public spaces can be greened, especially in relation to trees. Like with water utilities, there can be conflict between electricity infrastructure and urban greening, particularly with regard to the placement and species of trees. Trees are often treated as a risk to critical infrastructure, without considering the benefits that they provide to the community.

SA Power Networks is currently working with an [Arborist Reference Group](#) and Local Government Association Working Group to determine ways to better manage these challenges. They released a [Powerline Friendly Trees](#) guide in 2018, and their revised [Protocol for vegetation management near](#)

[powerlines \(2019-2021\)](#) was endorsed by the Local Government Association (LGA) Board in May 2019. The Office of the Technical Regulator reviewed the regulations governing the electricity network in 2021.

A challenge for tree canopy outcomes is maximising canopy with respect to overhead powerlines. The Office of the Technical Regulator maintains approved planting lists for trees with a maximum height of 3 m within the bushfire risk area and 6 m within the non-bushfire risk area. The current lists of trees approved for planting under powerlines is limited in its diversity to meet future climate resilience needs, such as providing shading and cooling benefits. Further work has been ongoing to establish a broader list of suitable tree species in order to meet tree canopy requirements that will contribute to amenity and climate resilience (e.g. cooling and shading), through both a SA Power Networks Tree Species Advisory Committee (now ceased) and the University of Adelaide Future Trees Project.

Under the *Electricity (Principles of Vegetation Clearance) Regulations 2021* there is an exemption from the allowed species list if the tree forms part of “avenues” or “stands” of trees. To date, these terms have not been formally defined, which makes it difficult to understand if this is referring to heritage features or whether it applies to more typical streetscape plantings. The Office of the Technical Regulator is currently working on clarifying the reference in the legislation to avenues and stands, which may assist in providing protections for existing avenues and stands of trees.

The undergrounding of powerlines removes the potential for tree canopy conflict, however this comes at a significant cost and there is limited funding available to support these projects. Funding for projects to underground powerlines are considered by the Power Line Environment Committee, which assesses the application against criteria including the significance of the area for tourism or heritage, and safety concerns. The ability to plant trees that provide substantial canopy could be considered for inclusion as a standard criterion during the assessment of undergrounding applications.

2.5 Proposed biodiversity legislation

The government is committed to introducing new biodiversity legislation that will strengthen how biodiversity is protected and restored in South Australia. Numerous Acts currently provide regulation for activities that impacts biodiversity, but a new Biodiversity Act will provide the opportunity to make biodiversity protection, conservation and recovery the key purpose.

The government consulted on a discussion paper from December 2023 to March 2024 and submissions are currently being considered to inform the development of a draft Biodiversity Bill. Once the Bill is prepared there will be a further consultation period.

The discussion paper highlighted the reasons for and benefits of a dedicated Biodiversity Act, for example:

- a sense of shared responsibility in looking after our biodiversity
- improved conservation and protection of biodiversity
- stronger partnerships with First Nations peoples in biodiversity conservation
- consistency and transparency in our approach to biodiversity conservation
- clearer provisions relating to identifying and protecting at risk species
- improved alignment with national legislation and international obligations
- support for a smart, sustainable and inclusive economy.

The discussion paper also set the following goals for the new Biodiversity Act:

- to conserve biodiversity and maintain the diversity, quality and function of ecosystems
- to enhance capacity to adapt in the context of a changing climate
- to protect threatened and culturally important species and ecological communities
- to recover threatened species and ecological communities so their conservation status improves.

Adequate legislation for biodiversity would play a pivotal role in safeguarding South Australia's biodiversity by providing a framework for conservation and restoration efforts and regulating human activities that may harm ecosystems and species.

This is especially important as the critical role of biodiversity in sustaining our everyday lives is becoming more understood. However, the question of how to protect biodiversity while simultaneously managing human needs is not unique to South Australia – it is something being grappled with across the world. An example of how this challenge is being met by another jurisdiction is shown in the United Kingdom example in **Breakout Box 2**. Examples like this from other jurisdictions will help to inform the development of South Australia's new biodiversity legislation.

Breakout Box 2

Amendments to the United Kingdom's *Environment Act 2021* to support biodiversity net gain

Under the United Kingdom's *Environment Act 2021*, all planning permissions granted in England (with a few exemptions) will have to deliver at least 10% biodiversity net gain, from 12 February 2024. BNG will be required for small sites from 2 April 2024.

Biodiversity net gain (BNG) is an approach to development, and/or land management, that aims to leave the natural environment in a measurably better state than it was beforehand. It delivers measurable improvements for biodiversity by creating or enhancing habitats in association with development.

BNG can be achieved on-site, off-site, or through a combination of on-site and off-site measures.

This net gain will be measured using Defra's biodiversity metric, and habitats will need to be secured for at least 30 years. This sits alongside:

- a strengthened legal duty for public bodies to conserve and enhance biodiversity
- new biodiversity reporting requirements for local authorities
- mandatory spatial strategies for nature: Local Nature Recovery Strategies.

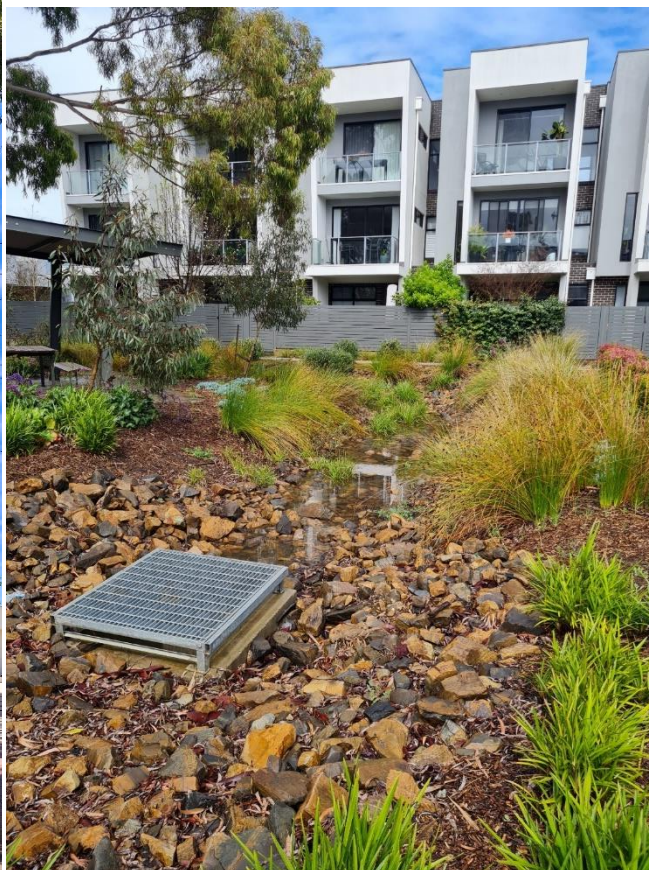


Source: Nature England, https://naturalengland.blog.gov.uk/wp-content/uploads/sites/183/2022/03/BNG-Brochure_Final_Compressed.pdf

2.6 Potential opportunities for improvement of legislation

Based on this audit, the following should be considered:

- Investigate expanding the *Native Vegetation Act 1991* to cover strategic locations in metropolitan Adelaide.
- Strengthen existing tree protection laws, including to:
 - Protect a wider range of trees – tighten protection criteria for regulated and significant trees (such as height, crown spread, lower trunk circumference) and remove exemptions allowing removals.
 - Review off-set and tree valuation calculation methods for trees to ensure they act as an appropriate deterrent and better reflect the true value of the tree.
 - Review off-set scheme fees.
- Investigate whether criteria for funding from both the Planning and Development Fund and Urban Tree Canopy Off-set Fund can support biodiverse plantings.
- Investigate the adequacy of mandatory open space provisions and the fee structure for monetary contributions to the Planning and Development Fund.
- Investigate opportunities for encouraging developers to co-contribute to upgrades to streetscapes adjacent to their development, to improve greening outcomes at the interface between the private and public realm.
- Provide definitions for the terms “avenues” and “stands” of trees in the *Electricity (Principles of Vegetation Clearance) Regulations 2021*.
- Introducing new biodiversity legislation
- Investigating the introduction of biodiversity net gain legislation for new development – create on-sets rather than off-sets.



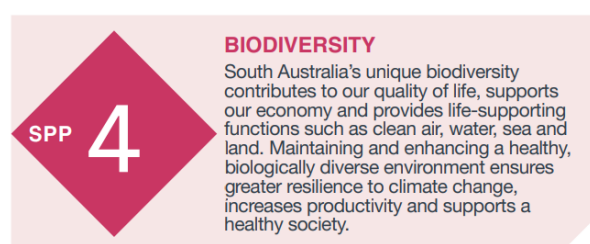
3 Land use planning

The South Australian planning system has recently undergone significant reforms, which became fully operational across the state in March 2021. The *Planning, Development and Infrastructure Act 2016* (PDI Act) was the cornerstone of these reforms and established a number of new planning instruments, including Regional Plans, the Planning and Design Code and design standards. Each of these instruments is discussed in more detail below.

Several of these instruments – Planning, Development and Infrastructure Act, Regional Plans, and the Planning and Design Code – were reviewed as part of the [Planning System Implementation Review](#). The Expert Panel provided the Minister for Planning with its final report and 113 recommendations. 9 of these recommendations are related to urban greening and the government is considering these.

3.1 State Planning Policies

Under the land use planning system, [State Planning Policies](#) set out the overarching goals for the state. They include a suite of policy directions for how areas like climate change, biodiversity and design quality should be addressed and considered across the different instruments in the planning system. The State Planning Policies are implemented through Regional Plans and the Planning and Design Code.



The Planning, Development and Infrastructure Act made it mandatory to prepare 4 State Planning Policies. This included one for biodiversity, with a requirement to 'enhance biodiversity and minimise the adverse effects of development on biodiversity within the state'.

In recognition of the important role the planning system plays in helping to conserve biodiversity and mitigate the impacts of new development biodiversity loss, the objective of **SPP 4: Biodiversity** is to 'maintain and improve our state's biodiversity and life supporting functions'.

This objective is implemented through the Planning and Design Code by multiple policies and overlays. However, there are some gaps between the scope of SPP 4 and the code. For example, the concept of 'critical habitat' (see **Breakout Box 3**) is recognised in SPP 4 but is not yet represented in the code. The state government is currently investigating the development of a 'critical habitat' spatial layer using available existing data to feed into the new regional plans (which are currently under development).

Breakout Box 3

What is critical habitat?

Critical habitat is habitat that is essential to the persistence of 'conservation values'.

Conservation values may refer to threatened or declining species or ecological communities, or those that are particularly vulnerable to future change.

Habitat is deemed critical where any loss or degradation of such habitat would threaten the persistence of the conservation values.

There are a number of other State Planning Policies that refer to urban greening and the contribution greening makes to more liveable and resilient communities. For example, **SPP 2: Design Quality** seeks to

'elevate the design quality of South Australia's building environment and public realm'. The provision of high-quality green public open spaces will help to achieve this. The purpose of the policies in **SPP 5: Climate Change** is to improve resilience and mitigate the impacts of a changing climate. Mitigating the impacts of increasing temperatures relies on, amongst other things, providing irrigated green infrastructure. There is also a requirement for Regional Plans to include targets for enhancing urban greening and tree canopy, including in regional towns (see below for more detailed information on Regional Plans). Providing quality open spaces for healthy neighbourhoods is also an objective of **SPP 6: Housing Supply and Diversity**.

SPP 11: Strategic Transport Infrastructure highlights the opportunity to promote the greening of strategic transport corridors to encourage carbon banking. Greening strategic transport corridors can also have other benefits such as enhancing biodiversity, improving amenity, and contributing to shading, air quality and cooling. More detail on the work the Department for Infrastructure and Transport is doing to support greening outcomes is provided in Section 4.1 of this report.

3.2 Regional Plans

The [30-Year Plan for Greater Adelaide \(2017 Update\)](#) guides the growth and development of Adelaide and has transitioned as a Regional Plan under the Planning, Development and Infrastructure Act (until the Greater Adelaide Regional Plan is developed). The vision of the 30-Year Plan is for a more liveable, sustainable and competitive urban form, and it includes chapters on biodiversity, open space, health, wellbeing and inclusion, which are all relevant to improving greening outcomes.

The State Planning Commission has commenced the development of new Regional Plans for South Australia, which will include a new plan for Greater Adelaide. As discussed above, these Regional Plans will need to be consistent with State Planning Policies, including **SPP 5: Climate Change**, which requires Regional Plans to include a target for enhancing urban greening and tree canopy. The existing 30-Year Plan target, which looks to increase urban green cover by 20% by 2045, will be reviewed and updated as part of the development of the Regional Plans. The State Planning Commission is already reviewing this target in Part 3 of its Open Space and Tree Project, so this is an opportunity to review some of the challenges associated with achieving the current target, such as lack of data to measure quality and species of trees, and not measuring trees under 3 metres in height.



Regional Plans will also include:

- a long-term vision (over a 15-to-30-year period) for the region or area, including provisions about the integration of land use, transport infrastructure, and the public realm
- maps and plans that relate to the long-term vision
- contextual information about the region or area, including forward projections and statistical data and analysis (as determined by the State Planning Commission or required by a Practice Direction)
- recommendations about the application and operation of the Planning and Design Code
- a framework for the public realm or infrastructure within the region or area.

An open space strategy will be prepared as part of the new Regional Plan for Greater Adelaide. The open space strategy could focus on improving accessibility and setting aside space for greening outcomes. There might be an opportunity to reintroduce a framework similar to the old Metropolitan Open Space System, but in a way that includes new thinking, such as incorporating wildlife corridors and [quality green open space](#) principles. This strategy could also help to identify priority areas for restoration.

3.3 Planning and Design Code

The Planning and Design Code sets out the policies, rules and classifications for the purpose of development assessment. It contains zones showing what land uses are appropriate in an area, overlays to reflect state interests (a spatial expression of State Planning Policies), and general policies that apply functional requirements to particular development types. The code contains policies that include urban greening requirements across a number of zones and overlays, for example in:

Natural Resources and Environment Zones:

- Conservation Zone
- Hills Face Zone
- Open Space Zone
- Recreation Zone

Landscape and vegetation overlays:

- Native Vegetation
- State Significant Native Vegetation
- Scenic Quality
- Regulated and Significant Trees
- Urban Tree Canopy (see **Breakout Box 4**)

General provisions:

- Design in Urban Areas
- Open Space and Recreation
- Land division

The Planning and Design Code's policies support urban greening outcomes in a number of ways, for example the Open Space Zone's desired outcome is for 'areas of natural and landscaped open space provide for biodiversity, tree canopy cover, urban cooling and visual relief to the built environment for the health and enjoyment of the community'. The code's Design in Urban Areas General Provisions and Open Space and Recreation Overlay contain development assessment policies requiring the provision of open space in the public and private realm. This open space can house a tree, assist with managing water runoff, contribute to the urban tree canopy, urban cooling and biodiversity, and improve visual amenity.

The code also contains provisions for protecting large trees and retaining existing or planting new trees in infill developments. See **Breakout Box 4** (overleaf) for more detail on the policy requirements of the Urban Tree Canopy Overlay.

While the code includes tree planting requirements, there are no compliance checks to identify whether these trees are planted, and if planted, whether they are maintained to ensure long-term survival. As mentioned, the Development Assessment Processing system is being updated so that better data can be retrieved about tree removal and planting requirements. This will enable better tracking of what is happening to trees in the urban environment. Consideration could also be given to using other tools, such as Decision Notification Forms, to ensure better compliance with tree retention and planting.

Additionally, structural engineers can discourage developers from planting trees a closer distance to houses than the height of the tree at maturity. This can be difficult to achieve on smaller blocks with less space to allow for this distance. Species selection can also be limited because trees planted under overhead powerlines must be selected from the Office of the Technical Regulator's approved species list.

While the code does include policies that recognise the importance of urban greening and trees for cooling, it does not currently map urban areas at risk from heat hazards. As more data is captured and

there is a better understanding of heat hazard risk over time, there is an opportunity to develop a Heat Hazard Overlay, so that future development in these areas can prioritise urban cooling investments.

Breakout Box 4

Urban Tree Canopy Overlay

The Urban Tree Canopy Overlay applies to several residential zones across metropolitan Adelaide and requires one small, medium or large tree to be planted per new dwelling, depending on allotment size. If any existing trees are retained on the property, fewer new trees need to be planted. The retained trees must meet certain criteria as set out in the Urban Tree Canopy Overlay. For further information visit the: [Adelaide Garden Guide for](#)



3.4 Design standards

The Planning, Development and Infrastructure Act provides for the development of Design Standards to support the Planning and Design Code. These standards would provide design guidance for public realm developments or infrastructure – for example, a standard could be developed for the design of streets and parks.

The State Planning Commission is responsible for preparing Design Standards, and while none are currently in operation, the development of a Design Standard for Driveway Crossovers is underway. This Design Standard is expected to include requirements for footpath verges.

Design Standards, which only apply to the public realm, are likely to have implications for the delivery and maintenance of greening. Therefore, they need to be developed in a way that enhances greening opportunities.

3.5 Advisory material

The land use planning system provides for a range of documents to support the Planning and Design Code. Green Adelaide, in partnership with the State Planning Commission, has published advisory material that supports the application of the tree planting and soft landscaping policies within the code. The [Adelaide Garden Guide for New Homes](#) provides advice on how infill developments can meet the minimum tree and soft landscaping requirements under the code, but also suggests ways to maximise the benefits from such plantings.

Advisory material to support stormwater management and Water Sensitive Urban Design policies in the code is also being prepared. There are also opportunities to prepare advisory material to support greening outcomes or build on existing guidelines. For example, the species list in the Adelaide Garden Guide for New Homes could be expanded to include more locally indigenous plant species and to integrate biodiversity-sensitive urban design principles (see **Breakout Box 5**).

Breakout Box 5

What is Biodiversity Sensitive Urban Design?

Biodiversity Sensitive Urban Design (BSUD) is a framework that aims to create urban areas that have a net benefit to native species and ecological communities, through the provision of essential habitat and food resources for native animals and birds.

BSUD links urban design to measurable biodiversity outcomes, providing a flexible framework for developers and planners to consider provision for biodiversity alongside socio-economic considerations, early in the development process. This supports natural ecological processes by providing resources for target species, beyond traditional 'green infrastructure'.

Green Adelaide, in partnership with RMIT, has produced the *Blueprint for a Nature Positive Adelaide* report to provide relevant information about BSUD in the Adelaide context.

There is an opportunity to explore whether an assessment tool inclusive of greening outcomes could be developed for use in South Australia, to complement Planning and Design Code policy. Assessment tools have been developed and are being used to support greening outcomes in interstate jurisdictions. For example:

- the Town of Bassendean in Western Australia has introduced a new [local planning policy](#) for sustainable development, which requires new dwellings to provide a raingarden that is no less than 2% of the size of the new dwelling's roof area.
- the City of Melbourne has developed the [Green Factor Tool](#) to be used when designing and constructing new buildings (see **Breakout Box 6**, overleaf). Green Factor-type tools have also been developed by other cities, like Seattle, Helsinki, Malmö and Singapore, and sometimes seek to simultaneously contribute to BSUD and WSUD outcomes.

Breakout Box 6

Green Factor tool

[Green Factor](#) is a green infrastructure assessment tool developed by the City of Melbourne to help with designing and constructing new buildings that are environmentally friendly and include green infrastructure.

This online tool is designed to help landscape designers, architects, planners and developers benchmark and improve the effectiveness of their greening designs for new buildings. The objective is to respond to the climate and biodiversity emergency by increasing the amount of vegetation cover on private land.

Green Factor will help new buildings to deliver benefits in the following areas:

- urban heat island effect reduction
- biodiversity and habitat provision
- stormwater reduction
- social amenity such as recreation and mental wellbeing
- urban food production
- aesthetic values.

3.6 Potential opportunities for land use planning

Based on this audit, the following should be considered:

- Fully implement **SPP 4: Biodiversity** through the new Regional Plan for Greater Adelaide (under development in 2023), which would involve:
 - preparing a spatial layer for 'Urban biodiversity (critical habitat)' for metropolitan Adelaide.
 - developing a critical habitat spatial layer and supporting policies that can be used in Regional Plans and the Planning and Design Code.
- Prepare a regional open space strategy for metropolitan Adelaide, including:
 - enhanced utilisation of linear open spaces such as riparian corridors along urban watercourses
 - open space for dual use flood protection, as per the Urban Water Directions Statement.
- Review the State Planning Policies and identify opportunities for improvement, particularly regarding Biodiversity Sensitive Urban Design.
- Review the current urban tree canopy target as part of the development of GARP.
- Consider if and how the Planning and Design Code could link to a voluntary assessment tool for urban greening outcomes (such as the Green Factor Tool).
- Investigate how urban greening opportunities can be facilitated through the Planning and Design Code and supporting advisory material.
- Review and consider whether compliance related to tree planting and maintenance for ongoing tree survival of the planted trees is occurring for trees tied to development approvals.
- Include a new chapter on urban biodiversity and Biodiversity Sensitive Urban Design in the Adelaide Garden Guide for New Homes.
- Develop guidelines to help facilitate Biodiversity-sensitive Urban Design as a useful tool for all scales and types of development (such as from master planned to individual allotments).

4 State government projects and public infrastructure upgrades

Green streetscapes and other public spaces are becoming more important across metropolitan Adelaide, as increasingly, neighbourhoods have properties that have small, or no, front and back yards.

Additionally, the public realm in urban environments is often a highly contested space, with restrictions due to below or higher above ground factors (i.e. utilities requirements), or from other competing needs (e.g. sight lines, safety, bin space on verges).

Green spaces are often seen as a 'nice-to-have' or an afterthought, rather than a critical piece of essential public infrastructure. This is compounded by the fact that trees are often left out of asset management registers and systems, and there is no agreed mechanism to account for trees as appreciating assets in financial systems. Ensuring adequate budgets to maintain green infrastructure assets has also been raised as a key challenge.

It is important for the state government to show leadership and demonstrate how to deliver greening outcomes. This section describes work being undertaken by the state government to improve urban greening outcomes in government projects and infrastructure, and explores where these could be expanded and where future improvements could be made.

4.1 Major transport corridors

The Department for Infrastructure and Transport has an important role to play in contributing to meeting the 30-Year Plan for Greater Adelaide's urban green cover target, both by greening land with existing infrastructure and as part of new major infrastructure projects or upgrades. It has control over transport corridors, some greenways and associated facilities (such as 'park and rides' and train/tram stations), and it also manages substantial landholdings on behalf of government. All of these collectively provide opportunities for the department to deliver increased green infrastructure.

In recognition of the contribution it can make to greening, the department developed a [Green Infrastructure Commitment](#) (Figure 1).



Increase urban canopy cover

1. By 2045 the Department will deliver a 20% increase in canopy cover on departmental managed land (measured from the 2018/19 baseline).



Liveability (including amenity, health and wellbeing)

2. Provide shade trees to improve amenity for pedestrians, cyclists and public transport customers, targeting ≥50% canopy cover over footpaths and bikeways.



Water sensitive urban design (WSUD)

3. Implement WSUD on infrastructure projects to achieve the state WSUD policy performance targets for water quality, peak flow and flood risk.



Biodiversity sensitive urban design

4. Minimise impacts to existing natural ecosystems to maintain ecological value and preferentially retain mature trees including Regulated and Significant trees.
5. Identify and pursue opportunities to improve biodiversity, fauna habitat and connectivity through landscape design and species selection.
6. Minimum 50% of new landscape plantings need to be local native species suited to local conditions.

Figure 1: Department for Infrastructure and Transport Green infrastructure focus areas and commitments
(Source: *Green Infrastructure Commitment*, 2021)

Through this commitment, the Department for Infrastructure and Transport (DIT) aims to meet a suite of greening targets in its projects, including canopy cover, water sensitive urban design and biodiversity measures, and to spatially prioritise greening investments on active travel corridors, new infrastructure projects, and areas prioritised by Green Adelaide. Updates have also been made to its Vegetation Policy and Master Specifications to support delivery of increased canopy cover, including a new requirement to plan and budget for greening outcomes at the commencement of new projects – such as including sufficient budget for landscaping in the project estimate and sufficient space for trees in land acquisition plans.

The Office for Design and Architecture SA is also working with the department to consider how increased greening outcomes can be designed into major transport corridors at the start of new projects (such as on the South Road River Torrens to Darlington upgrade).

Preliminary mapping has shown significant potential for the planting of more canopy trees on public land, but it is crucial that the right kind of trees are used to provide the best outcomes – for example, species that contribute to biodiversity, will be resilient to climate change, and will meet any safety requirements. There is an opportunity to increase the diversity of plantings along transport corridors, however there are a number of challenges to overcome, including maintaining sight lines and maintenance of vegetation.

The DIT currently uses [Operational Instruction 19.8 – Trees in Medians and Roadsides in Urban Environments](#), which specifies requirements for setbacks from roads to trees in order to achieve a balance between road user safety and community expectations. However, these setbacks can act as an impediment to increasing tree canopy cover along the road network. It is recommended that this operational instruction is reviewed to see if the minimum setbacks can be reduced along road corridors. A further barrier is the lack of funding for planting new trees or maintaining existing mature trees. Funding a program of planting on road corridors (prioritising areas with high pedestrian and cyclist activity) and public transport interchanges could be investigated.

DIT is also leading the development of a new guideline for Sustainable Government Building Requirements in collaboration with other government agencies such as the Department for Health and Wellbeing. This aims to ensure that new government buildings, such as hospitals, have sustainability outcomes – a component of which is greening. The intent is for these requirements to replace the state government's current Ecologically Sustainable Development Guide.

4.2 Public infrastructure works and utilities

There are a number of other government agencies (Department for Education, SA Health and the Office for Recreation, Sport and Racing) and essential service utilities (SA Water and SA Power Networks) that lead the development and upgrade of major infrastructure projects across South Australia, such as:

- schools

- health facilities
- sport and active recreation facilities
- water and sewer systems
- electricity network.

These agencies/utilities all include requirements/targets that support greening, which are detailed below.

4.2.1 School infrastructure

The Department for Education is working to improve sustainability outcomes across its sites, with the co-benefit of utilising stormwater to maintain green spaces. Planning priorities include using smart technologies to better understand water use patterns, vegetation health, and heat island effects.

The Department for Education's [Education Facilities Design Standards](#) and [Outdoor Learning Environments Standards](#) support water sensitive urban design and connections between natural environments and outdoor learning environments. The standards are intended to support children and young people to develop connections with, and respect for, the environment and natural world, and highlight relationships between the environment and human activities.

The Education Facilities Design Standards outline a set of design principles to guide planning for new building work and refurbishment projects, and ensure they are connected to their community, safe, accessible, inclusive, and environmentally responsive. For example, new building work and refurbishment projects should (amongst other things):

- consider the landscape design as an integral part of the project, providing amenity and comfort, contributing to the streetscape, and connecting the site with its immediate context
- consider native flora and fauna including significant trees
- integrate landscape, planting and WSUD to enhance amenity and building performance
- maximise retention of existing vegetation on site
- target certain Green Star² points in relation to landscaping irrigation, such as:
 - landscape design must enhance existing site biodiversity and replace any lost biodiversity due to site construction work (if possible)
 - plant selection must be from local native vegetation as they have adapted to local soil and climatic conditions.

There is an opportunity for a funded program of planting across all school sites, including the identification of plantable spaces and centrally coordinated project management to deliver greening outcomes. This could be delivered in consultation with individual schools' governing bodies/environment committees.

Design principles for outdoor learning environments prioritise managing child safety. However, they also consider the value that plants and trees can provide. Decisions related to plants and trees should consider safety, health, shade provision, visual quality, maintenance, longevity and environmental sustainability, amongst other things.

4.2.2 Health infrastructure

The Department for Health and Wellbeing (DHW) has a role in the development of new public health infrastructure (such as the new Women's and Children's Hospital) as well as the retrofit of existing hospital sites. Department for Environment and Water (DEW) and Green Adelaide have been working collaboratively with the health department to help establish a set of environmental health and wellbeing outcomes that could be incorporated into the master plan principles for the new hospital, including:

² [Green Star](#) is an internationally recognised Australian sustainability rating and certification system.

- innovative design of the new Women's and Children's Hospital that incorporates green space and the use of sustainable building materials
- reduction of hot spots in the urban environment
- access to green space for health and wellbeing
- ensuring development enhances the ecologically sustainable use and management of the Park Lands
- retention of vegetation that provides an active and appealing edge to the River Torrens and contributes to biodiversity
- ensuring that landscaping associated with the development adopts biodiversity sensitive urban design principles and contributes to enhancing biodiversity
- integration of onsite stormwater detention and water quality improvement through the implementation of water sensitive urban design / biodiversity sensitive urban design principles, such as raingardens and landscaping, wherever possible.

The new Women's and Children's Hospital offers a unique opportunity to deliver these principles, given its co-location with an existing green space that has significant values to South Australia. There is an opportunity to showcase how to maximise the interface between development and green spaces in a way that results in multiple benefits.

Additionally, there is the opportunity to refine the Department for Health and Wellbeing's In-house Green Rating Tool (IGRAT) that is applied to all its capital projects that are greater than \$5 million. This work could potentially focus on incorporating nature-positive design elements that deliver better outcomes for native flora and fauna, whilst also generating positive benefits for building users and building operations as well as reducing the urban heat island effect. There is also the opportunity to investigate and potentially help deliver strategies for existing hospital sites that could benefit substantially from biodiversity sensitive urban design retrofits and landscaping strategies to help take heat loads off buildings, cool the surrounding environment and deliver healthier more resilient environments for staff and patients.

4.2.3 Sport and active recreation infrastructure

The Office for Recreation, Sport and Racing is responsible for planning the provision of places and spaces for active recreation. It also supports the delivery of the state's significant sport and recreation facilities and venues.

It has developed a [State Sport and Infrastructure Plan 2020-40](#) to support the provision of sport and recreation facilities, from grassroots to elite level, that fill current gaps, are accessible, and encourage all South Australians to live an active and healthy lifestyle. The plan does not currently identify guidelines or targets for greening in recreation facility development or upgrade projects. However, one of the identified priorities within the plan is 'improvements in access to green spaces in built up communities across the state' to increase community use'.

There is an opportunity for increased greening outcomes in the development of new sporting facilities. For example, Green Adelaide is currently working collaboratively with the Office for Recreation, Sport and Racing on the redevelopment of the State Sports Park at Gepps Cross to provide a green, activated, connected sports and recreation park by providing opportunities for:

- biodiverse blue and green spaces that enhance the quality and sustainability of water resources
- best-practice water sensitive urban design and biodiversity sensitive urban design outcomes in both the private and public realm
- strategic, high-quality greening, reflective of local context and need
- increased community awareness, understanding, and inspiration to connect with and care for nature

- increased environmental values and broad participation in nature stewardship, and sustainable activities across diverse communities.

This work can be used as a framework for the delivery of future sport and recreation facilities to ensure that greening is factored in early as one of the key outcomes.

4.3 Other Government projects

4.3.1 Major government land releases

Renewal SA is the state government's urban development agency that provides land, funding, and direction for urban renewal projects as part of delivering the 30-Year Plan. Through contractual agreements with developers, designers, and architects, Renewal SA is in the unique position to require outcomes, such as greening, that go beyond what is required by the Planning and Design Code. This could include, for example, providing for greater than 12.5% open space. Renewal SA uses the [Green Star – Communities](#) rating tool to guide the sustainability requirements of each large-scale project. These requirements are then built into any future contractual agreements for the delivery of that project.

Renewal SA has a history of developing well-designed green spaces as part of their master-planned communities (such as Lightsview and Bowden). They have also recently begun introducing tree canopy targets (aligned with the 30-Year Plan) into project objectives for private developers, locking these greening requirements into development agreements. For example, Renewal SA required that the private developer for the Oakden development maintain or exceed the existing tree canopy coverage.

Renewal SA also applies the same approach to industrial and commercial development. For example, the [Tonsley Innovation District](#) includes an urban forest that creates increased access to green space.

Renewal SA is already working to go beyond the State Government's tree canopy target, but there is also an opportunity to build biodiversity outcomes and requirements into these projects via the development agreements.

Renewal SA is in a unique position to exemplify development that represents best-practice for liveable communities, demonstrating how it can become common practice to go beyond compliance.

4.3.2 Social housing

Greening is particularly important for social housing, due to factors like increased vulnerability of residents, lack of resources to invest in housing improvements, and financial impediments to residents being able to have and utilise sufficient air conditioning.

The SA Housing Authority is undertaking a significant urban renewal project to replace old houses with new homes, creating better quality social housing, increasing housing choices and affordability, and enhancing the liveability of South Australia.

There are several [Design Guidelines for Sustainable Housing and Liveable Neighbourhoods](#) that provide guidance on the shape and form of future social housing. These guidelines include minimum requirements for housing design, site layout, amenity targets and environmental sustainability. However, the requirements for retaining regulated and significant trees, planting new trees, and landscaping are more focused on minimising the impact on future development opportunities and ensuring there is no significant restriction on housing densities being achieved.

A better balance is required so that housing densities and greening outcomes can be complementary. The benefits that greening adds to a development – such as amenity, climate resilience, and wellbeing – should be considered early in the design phase, so that it is possible to find the right balance between economic and liveability outcomes for each urban renewal site.

4.3.3 National and recreation parks

DEW is responsible for establishing and managing the protected area system (parks), which includes all reserves proclaimed under the *National Parks and Wildlife Act 1972*, the *Wilderness Protection Act 1992* and conservation reserves dedicated to the Minister under the *Crown Land Management Act 2009*.

[Conserving Nature 2012-2020: A strategy for establishing a system of protected areas in South Australia](#) is the strategic framework for the establishment of protected areas on public and private land in South Australia. It guides targeted additions to the protected area system, to improve the long-term sustainability of South Australia's environment. This strategy identifies priorities for conserving the full range of land-based ecosystems, and building the capacity of natural systems to adapt to climate change and other stressors, aiming to increase:

- the area protected within under-represented Interim Biogeographic Regionalisation for Australian bioregions and subregions
- the area protected for freshwater and groundwater dependent ecosystems
- connectivity of fragmented habitat across South Australia's landscapes
- the diversity of species and ecological communities represented in the protected area system
- the area of healthy, well-functioning ecosystems represented in the protected area system.

There are a number of parks within, or at the edge of, the urban environment that have significance for Adelaide's residents. South Australia's oldest national park, Belair National Park, is a good example of one of these special places. These parks are not only important for urban biodiversity and conservation, but are critical to enable people in urban areas to connect to nature.

These existing parks provide the opportunity to conserve and enhance existing biodiversity. Other parks, like the relatively new Glenthorne National Park-Ityamaiitpinna Yarta, offer the opportunity for revegetation and restoration. This park is also a good example of how strategically linking green spaces can create an urban green corridor. This park is situated between the Happy Valley reservoir, a number of other parks, and the Field River catchment, which together contribute to urban green space and a biodiversity corridor – known as the Glenthorne Precinct (**Figure 2**). This is a good example of how greening outcomes can be maximised through collaboration and partnership between state and local government and the community. The identification of similar opportunities for capitalising on the linking of large parcels of open space for greening and biodiversity could form a component of the preparation of a regional open space strategy for metropolitan Adelaide.



Figure 2: Glenthorne Precinct
(Source: <https://www.glenthorne.sa.gov.au/>)

While the protected area system provides for the conservation of remnant native vegetation as well as further planting, the removal of woody weeds (such as olives) can, in some instances, reduce local tree canopy. There is an opportunity to scale up weed removal in combination with revegetation, which will increase tree canopy while improving resilience to fire and reducing weed seed loads moving into adjacent land.

4.4 Nature and public health promotion

4.4.1 Healthy Parks Healthy People

The *South Australian Public Health Act 2011* and the State Public Health Plan introduced the ability for entities to become Public Health Partner Authorities. This provides the opportunity for collaboration to improve public health.

DEW and DHW currently maintain a Public Health Partnership to promote collaboration between the health and environment sectors, and to build the public value of parks in South Australia.

A key outcome of this partnership has been the development and implementation of the [Healthy Parks Healthy People](#) initiative. This well-established partnership between Wellbeing SA, DEW, and Green Adelaide recognises the fundamental connections between human health and environmental health and aims to ensure all South Australians experience the health and wellbeing benefits of nature.

A central goal of the Healthy Parks Healthy People approach is conserving, protecting, and promoting the benefits of connecting with nature, especially parks. This relies on strong partnerships with different community sectors – First Nations, education, environment, health, primary industries, social inclusion and urban planning.

The Healthy Parks Healthy People program includes a number of supporting action plans – in particular the [Quality Green Open Space Action Plan 2020-2022](#), the second iteration of its type, which falls under the program's 'Green infrastructure in urban settings' focus area. This recognises the importance of including high-quality and accessible green spaces in urban areas. As mentioned previously, the principles underpinning [quality green open space](#) have recently been relaunched.

4.4.2 Adelaide National Park City

Adelaide was officially declared a National Park City (the second in the world, after London) in December 2021. The global National Park City movement seeks to connect people with each other and nature – for everyone, everywhere, everyday. It's a status that demonstrates a commitment to creating cities rich with nature, where wildlife flourishes and people enjoy the benefits of the natural world without having to travel away from the urban environment. Adelaide's journey to become a National Park City was led by Green Adelaide, with the organisation looking to further explore the benefits of creating partnerships to promote the connection of people with nature. Having this status reinforces the need for better open space planning and promotion of biodiversity urban sensitive design for both public and private land.

4.5 Governmental policy advice

There are a number of areas in state government that have policy expertise in urban greening. These areas are able to advocate for greening in a wide variety of ways – such as the development of guidelines, development application referrals, grant assessments, Ministerial advice and formulation of government policy positions. Some relevant examples of this are provided below.

4.5.1 Department for Environment and Water

In administering the various legislation and policy that falls under its responsibility, DEW leads the state's environmental and natural resources management to conserve and restore ecosystems, both on and off

protected areas, and sets priorities across government for climate change and the environment. The department can provide strategic advice across a range of areas relevant to urban greening including:

- water resource management
- climate change
- native vegetation
- urban biodiversity.

DEW is referred a variety of matters for advice. In providing this advice, DEW is a strong advocate for incorporating green infrastructure early in the planning and design phase of any project. Greening outcomes are a key component of this.

DEW has also led the preparation of the [Urban Water Directions Statement](#) as an overarching policy statement for urban water. The document discusses the critical role that water plays in keeping green infrastructure alive and in a healthy state.

4.5.2 Office for Design and Architecture SA

Led by the Government Architect, the Office for Design and Architecture SA provides advice to government agencies on planning, design and delivery of major projects and policy, including through the State Design Review process. A key aspect of this advice relates to landscaping and how to improve greening outcomes.

As described in more detail below, the support provided by the Office for Design and Architecture SA helps to ensure compliance with government standards, guidelines and policies, and may include post-project evaluation workshops to determine whether project objectives have been met.

Design Review

The Office for Design and Architecture SA provides independent expert advice for landscape and architectural designs in larger scale developments through the [State Design Review](#) process. Its review services are available to all development proposals that will be assessed by the State Commission Assessment Panel and referred to the Government Architect. The State Design Review is a process that occurs prior to lodging a development application to encourage high quality design outcomes. It is guided by South Australia's Principles of Good Design, which aim to make buildings and places better for people, the environment and economy. Under the 7 principles, 'good' design is:

- 1) context specific
- 2) inclusive
- 3) durable, adaptable and long-lasting
- 4) provides social and cultural value
- 5) maximises potential for benefit of all users
- 6) sustainable (and builds resilience to climate change).

Local Design Review Scheme

The Local Design Review Scheme was established under the Planning, Development and Infrastructure Act in 2021 and provides a consistent statewide approach for councils to provide Design Review for local development proposals with the aim of:

- supporting high-quality design
- improving access to independent and expert advice early in the planning and design process
- supporting consistent and informed planning decisions
- facilitating collaboration between allied professionals
- supporting the state's planning system to meet objects and principles in the Act.

While the design review processes include the general principles of sustainability, more could be done to consider how greening outcomes can more explicitly become part of these considerations so that greening is integrated into the design process early.

4.6 Arboriculture industry professional standards

Demand for services from people with arboriculture skills is increasing and there is a shortage of experienced qualified arborists. For example, attracting and retaining skilled staff, particularly those with qualifications, that is, a Certificate III or Diploma, has been challenging for councils.

Arboriculture is a specialist field that requires expert knowledge of tree management and the development of skills that are acquired through on-ground training and mentoring, and through qualifications taught in Practising (AQF Level 3 qualified) and Consulting (AQF Level 5 Diploma qualified) courses. Arborists also need to develop a range of ancillary skills, like tree climbing, habitat pruning, and tree valuation, and hold specialist insurance to operate safely. Despite the extensive skills and training required, the arboriculture industry is largely unregulated and unqualified people can label themselves as an arborist. Introducing a register of suitably qualified arborists, along with a requirement for professional training and development, in order to be called an arborist would improve professional standards.

There are only 2 South Australian based registered training providers able to deliver the Diploma in Arboriculture, so despite the increasing demand for arborist services not all are trained in South Australia. Providing additional TAFE SA training places and pathways to undertake the foundation Certificate III and Diploma of Arboriculture that do not require experience could be an option for addressing the current skills shortages.

This is an area where the state government could potentially work with councils and industry leaders to investigate the best options for addressing skills shortages, local arboriculture industry training and development, and opportunities for arboriculture professional standards/accreditation.

4.7 Water and sewer systems

Trees are seen as a risk to critical water infrastructure (notably sewerage infrastructure). However, SA Water is currently investing heavily in research and on-ground projects to determine the best way for it to deliver integrated greening outcomes. Some of these projects include:

- combining remote sensing technology and weather predictions to irrigate public spaces efficiently
- preparation of new [guidelines](#) to permit tree planting closer to water infrastructure than allowed under the *Water Industry Act 2012* if mitigation measures (tree root barriers/pit liners) are in place.

SA Water has considerable technical expertise in removing the potential conflicts between water utilities and green infrastructure to maximise space for urban greening in Adelaide. This includes providing advice on placement of utilities but also plant species selections that are compatible with water sensitive urban design and provide habitat benefits, particularly locally native species.

SA Water has compiled several plant selection guides and established several demonstration sites using locally indigenous plant species on SA Water land to provide examples of how to use these species in urban greening projects. SA Water is actively collaborating with Renewal SA and other developers to increase the success of urban greening in new developments, and infrastructure upgrades through use of best-practice retention and reuse of water, and well-designed placement of new utilities.

4.8 Potential opportunities for state government projects and public infrastructure

Based on this audit, the following should be considered:

- creating a standard methodology for the capitalisation of trees and other urban greening for addition to asset registers and for potential linkage to off-setting schemes
- introducing a policy that ensures that any programs to increase greening (with supporting water resources) on state government land across metropolitan Adelaide are appropriately funded
- including green infrastructure requirements in the state government's new Sustainable Government Building requirements
- ensuring that the Greater Adelaide Regional Plan include provisions to map landscape-scale linkages and strategic connections, especially along wildlife, water and active transport corridors
- reviewing the Department for Infrastructure and Transport's 'Operational Instruction 19.8: Trees in Medians and Roadsides in Urban Environments' to identify opportunities to increase roadside vegetation planting safely
- reviewing master specifications and other relevant policies to improve the urban greening outcomes in school infrastructure projects
- ensuring the master planning processes for health and sporting infrastructure incorporate the provision of, and access to, green space as well as biodiversity sensitive urban design
- investigating the opportunity to strengthen DHW's in-house Green Rating Tool
- broadening approved lists for planting under powerlines to meet community and environmental needs and priorities
- exploring whether the Power Line Environment Committee can use greening as one of the assessment criteria for powerline undergrounding projects
- setting more ambitious and consistent greening objectives and key performance indicators for Renewal SA projects
- undertaking a review of opportunities to provide better outcomes for urban greening within housing design and neighbourhood renewal for SA Housing Authority projects
- investigating options for addressing skills shortages, training, and professional standards in the arboriculture industry
- investigating what could be done to better integrate greening into the local design review scheme process early.

5 Summary of future opportunities

This audit has shown that much work is already underway regarding legislation and policy for greening outcomes. It has also highlighted areas for improvement and opportunities to scale up existing work, acknowledging that these opportunities may require further feasibility assessments. This information will help to inform the implementation of the Urban Greening Strategy, which aims to identify and prioritise next steps on the path to achieving a greener and more resilient Adelaide. Further, any changes to legislation and policy need to be backed up by good evidence and research. Some examples of research in the urban greening space are included in **Appendix B**.

The following consolidates all the potential opportunities Identified through the development of this audit.

Category	Opportunity	Existing or new (e.g. legislation, policy or initiative)	Underway?
Legislation	Investigate expanding the Native Vegetation Act to cover strategic locations in metropolitan Adelaide.	Amend existing	No
	Strengthen existing tree protection laws, including: - Protect a wider range of trees – tighten protection criteria (e.g. height, crown spread, lower circumference) and remove exemptions allowing removals. - Review off-set and tree valuation calculation methods for trees to ensure they act as an appropriate deterrent and better reflect the true value of the tree. - Reviewing off-set scheme fees.	Amend existing	Yes (Under investigation)
	Investigate if criteria for funding from both the Planning and Development Fund and Urban Tree Canopy Off-set Fund can better support biodiverse plantings.	Amend existing	No
	Investigate opportunities for grant programs (e.g. Planning and Development Fund) to encourage developers to co-contribute to upgrades to streetscapes adjacent to their development to improve greening outcomes at the private and public realm interface.	Amend existing	No
	Provide definitions for the terms “Avenues” and “Stands” of trees in the <i>Electricity (Principles of Vegetation Clearance) Regulations 2021</i> .	Amend existing	Yes (Under investigation)
	Introduce new biodiversity legislation	New	Yes

	Investigate the introduction of biodiversity net gain legislation for new development – create on-sets rather than off-sets.	New	No
Land use planning system	Fully implement SPP 4: Biodiversity through the new Regional Plan for Greater Adelaide (under development in 2023) and: - prepare a spatial layer for Urban biodiversity (critical habitat) in metropolitan Adelaide - develop a critical habitat spatial layer and supporting policies that can be used in Regional Plans and the Planning and Design Code.	Amend existing	Yes (Under investigation)
	Prepare a regional open space strategy for metropolitan Adelaide.	New	Yes
	Review the SPPs and identify opportunities for improvement, particularly regarding biodiversity sensitive urban design.	Amend existing	No
	Review the current urban tree canopy target as part of the development of the Greater Adelaide Regional Plan.	Amend existing	Yes
	Consider if and how the Planning and Design Code could link to a voluntary Green Factor Tool.	Amend existing	No
	Investigate how urban greening opportunities can be facilitated through the Planning and Design Code and supporting advisory material.	Amend existing	No
	Review and consider whether compliance related to tree planting and maintenance for ongoing tree survival of the planted trees is occurring for trees tied to development approvals.	New	No
	Include a new chapter on urban biodiversity and biodiversity sensitive urban design in the Adelaide Garden Guide for New Homes.	Amend existing	No
	Develop guidelines to help facilitate biodiversity sensitive urban design as a tool for all scales and types of development (e.g. from master planned to individual allotments).	New	No

State government projects and public infrastructure	Investigate the creation of a standard methodology for the capitalisation of trees and other urban greening for addition to asset registers and for potential linkage to off-setting schemes.	New	No
	Seek funding to roll out programs to increase greening (with supporting water resources) on state government land across metropolitan Adelaide.	New	Yes
	Include green infrastructure requirements in the new Sustainable Government Building requirements.	Amend existing	Yes
	Map landscape-scale linkages and strategic connections, especially along wildlife, water and active transport corridors, prioritised against spatial data-based performance outcomes, and embed as urban greening priorities in places such as the Greater Adelaide Regional Plan.	New	No
	Review Operational Instruction 19.8 Trees in Medians and Roadsides in Urban Environments to identify risks and benefits of reducing setbacks.	Amend existing	Yes
	Review master specifications and other relevant policies to improve the urban greening outcomes in school infrastructure projects.	Expand existing	No
	Investigate opportunities to better incorporate the provision of, and access to, green space as well as biodiversity sensitive urban design into the master planning process for health infrastructure projects.	Expand existing	No
	Investigate the opportunity to strengthen the Department for Health and Wellbeing's in-house Green Rating Tool.	Expand existing	No
	Develop guidelines for the Office for Recreation, Sport and Racing, which include targets for greening of recreation facilities using the master plan for State Sports Park as a model framework.	Expand existing	No
	Establish clearer planting guidelines and permitted vegetation lists to meet community and environmental needs and priorities.	New	No

	Explore whether the Power Line Environment Committee can use greening as one of the assessment criteria for powerline undergrounding projects.	Amend existing	No
	Set more ambitious and consistent greening key performance indicators and objectives for Renewal SA projects.	Amend existing	No
	Undertake a review and update of the Design Guidelines to provide better outcomes for urban greening within housing design and neighbourhood renewal for SA Housing Authority projects.	Amend existing	No
	Integrate greening principles into the Office for Design and Architecture SA's Design Review assessment.	Amend existing	No
	Investigate the Office for Design and Architecture SA in preparing a sustainability handbook for commercial development.	New	No
	Investigate and identify the best approach for a biodiversity sensitive urban design capacity-building delivery model.	New	Yes
	Investigate options for addressing skills shortages, training and professional standards in the arboriculture industry.	New	No

6 Appendix A: Understanding our context – legislation, policy, schemes and plans

	Urban Green Space and Biodiversity	Land Use Planning and Buildings	Climate Change	Infrastructure and Transport	Water	Recreation and Nature Education	Health, Wellbeing and Culture
Legislation³	<i>Native Vegetation Act 1991</i> <i>National Parks and Wildlife Act 1972</i> <i>Linear Parks Act 2006</i> <i>Adelaide Park Lands Act 2005</i> <i>Landscape South Australia Act 2019</i> <i>Coast Protection Act 1972</i> <i>Environment Protection and Biodiversity Conservation Act 1999 (CW)</i> <i>Environment Protection Act 1993</i>	<i>Planning, Development and Infrastructure Act 2016*</i> <i>Planning, Development and Infrastructure Regulations 2017</i> <i>Urban Renewal Act 1995</i>	<i>Climate Change and Greenhouse Emissions Reduction Act 2007</i> <i>Planning, Development and Infrastructure Act 2016*</i> <i>Climate Change Bill 2022 (CW)</i> <i>Environment Protection and Biodiversity Conservation Act 1999 (CW)</i>	<i>Planning, Development and Infrastructure Act 2016*</i> <i>Planning, Development and Infrastructure Regulations 2017</i> <i>Infrastructure SA Act 2018</i> <i>Electricity Act 1996 and the Electricity (Principles of Vegetation Clearance) Regulations 2021</i>	<i>Water Industry Act 2012</i> <i>Landscape South Australia Act 2019</i> <i>Environment Protection Act 1993 (legislated goals)</i> <i>Local Government (Stormwater Management Agreement) Amendment Act 2016)</i>		<i>Public Health Act 2011</i> <i>Aboriginal Heritage Act 1988</i> <i>Native Title Act 1993</i>
	<i>Local Government Act 1999</i>						
	<i>(Note: CW = Commonwealth)</i>						

³ For further information on Ministers responsible for South Australian legislation please visit: [2023.12.14-Acts-Committed-to-Ministers.pdf \(legislation.sa.gov.au\)](https://legislation.sa.gov.au/2023.12.14-Acts-Committed-to-Ministers.pdf)

	Urban Green Space and Biodiversity	Land Use Planning and Buildings	Climate Change	Infrastructure and Transport	Water	Recreation and Nature Education	Health, Wellbeing and Culture
State	State Planning Policies State Landscape Strategy Planning and Development Fund* Urban Tree Canopy Off-set Scheme*	State Planning Policies Planning and Design Code* Design Standards*** Renewal SA – Project Principles, Objectives and KPI's (draft) National Construction Code (SA Ministers Specifications) ODASA Design Review Healthy by Design SA toolkit	State Planning Policies Directions for a Climate Smart SA Climate Change Science and Knowledge Plan for SA Climate Change Action Plan (2021-2025)	State Planning Policies 20-Year State Infrastructure Strategy (2020) Integrated Transport and Land Use Plan (2013) DIT Green Infrastructure Commitment DIT Master Specification (Parts PC-PL2,PC-PL3) Operational Instruction 19.8 Trees in Medians and Roadsides in the Urban Environment DIT Sustainability Manual SA Power Networks Powerline Friendly Trees Guide (2018) ODASA Design for Government SA Water Tree Planting Guide (2021)	State Planning Policies Blue Carbon Strategy for SA (2020-2025) Water for Good (2010) WSUD Policy (2014) Urban Water Directions Statement	Recreation, Sport and Racing Strategic Plan (2021-2025) Game ON (2020) Dept for Education Outdoor Learning Environments Standard & Education Facilities Design Standards	State Planning Policies SA Public Health Plan (2019-2024) Walking Strategy (2022-2032) Healthy Parks Healthy People framework (2021-2026) Wellbeing SA Strategic Plan 2020-2025

	Urban Green Space and Biodiversity	Land Use Planning and Buildings	Climate Change	Infrastructure and Transport	Water	Recreation and Nature Education	Health, Wellbeing and Culture
				SA Power Networks Protocol for vegetation management near powerlines (2019-2021)**			
Regional	Green Adelaide Regional Landscape Plan (2021-2026) Green Adelaide Annual Business Plan (2022-2023) Park Management Plans	The 30-Year Plan for Greater Adelaide (2017 Update) * (to be replaced for Regional Plan for Greater Adelaide) Renewal SA – Project Principles, Objectives and KPI's (per individual project) ODASA Design Review	Regional Climate Change Adaptation Plans – Resilient East , Resilient South , Adapt West , Adapting Northern Adelaide			Department for Education Outdoor Learning Environments Standard & Education Facilities Design Standards	Warpulai Kumangka Advisory Group Strategic Plan RAW SA HER Strategy (under development) Reconciliation Action Plans Open Space policies ERA Health Plan (Regional, covers 6 councils) National Park City
Local	Strategies and plans E.g. Environment, park management, biodiversity, open space, environmental, public realm, urban forest, trees, parks and playgrounds, asset management Urban Tree Strategies	Strategies and master plans E.g. Local Design Review Community Land Management Plans ESD Guidelines Precinct Plans	Strategies and plans E.g. Net Zero Climate Change risk, mitigation and adaptation policies, plans etc.	Strategies and plans E.g. Transport, Section 221 Permit – process to alter a road, verge or footpath Verge and Tree Management Policies	E.g. ERA Water Charter and policies, Salisbury Water Water Sensitive Urban Design – some have council wide plans or policies	Strategies and plans E.g. Recreation and sport strategies Sport and Recreation Plan Community Land Management Plan	E.g. Regional Public Health Plans, disability and inclusion Reconciliation Action Plans Disability Access and Inclusion Plan

	Urban Green Space and Biodiversity	Land Use Planning and Buildings	Climate Change	Infrastructure and Transport	Water	Recreation and Nature Education	Health, Wellbeing and Culture
	Watercourse policies Biodiversity policies and plan Open Space Strategies Living Streets /Pocket Parks	Adelaide Design Manual		Walking and Cycling Plans Main Street / Public Realm Design Guidelines Verge Policies & Guidelines Asset Management Plans	Environmental Strategy (WSUD)		Living Well – Plan for Health and Wellbeing

* [Expert Panel Planning System Implementation Review](#) and/or [State Planning Commission Open Space and Trees Project](#)

** [Regulatory Reset 2025-2030](#)

*** Design Standard for driveway crossovers is under development

7 Appendix B: Evidence and Research

A solid foundation of credible, locally applicable knowledge and evidence base is needed to inform good policy development and investment decisions (including via robust cost benefit analyses and business cases), so that on-ground outcomes can be optimised. Evidence needs to be locally applicable but also scalable and relatable to the wider region/state. Research projects also have to be repeatable so that the influence of past strategies can be reviewed, and new strategies developed; for example, the LiDAR canopy cover and heat mapping that is discussed in more detail below. Any evidence derived from the data needs to be clear, scientifically sound and use consistent metrics and terminologies.

Practitioners have expressed a strong interest in collaboratively developing an applied research pipeline and working together to resource the research projects required to fill knowledge gaps. This work requires coordination. Bridging organisations such as TREENET (Tree and Roadway Experimental and Educational Network) and Water Sensitive SA could be utilised as they have the skillsets and networks to be the link between research and practice.

It is important that a strong evidence base is used to underpin and drive the policy or legislative changes needed to deliver greening outcomes. Consolidating the information we currently have will be important in supporting any changes, and will ensure that research outputs are provided in a user-friendly, fit-for-purpose format (such as tools and applications). It will also be important to identify and fill knowledge gaps. The following section includes some examples of work currently being undertaken that may inform changes:

Research commissioned by state and local government

The state government has commissioned some key pieces of relevant research including:

- a summary of the benefits of green infrastructure ([Green Infrastructure - life support for human habitats](#))
- a detailed analysis of tree species exemptions ([Arborist Report](#))
- a broader review of regulated and significant tree regulations to provide data and analysis of South Australia's tree protections, as compared to other Australian states and territories – including the size of trees protected and the various exemptions that currently apply ([Research Report](#)).

Significant relevant research has also been undertaken by, or commissioned by, local governments across metropolitan Adelaide. This includes research on canopy cover, urban heat, valuing trees, creating more space for trees, planting trees in challenging spaces, managing tree risks, and designing urban spaces with green infrastructure.

State and local governments have co-invested in [tree canopy and urban heat LiDAR-derived data](#) across the metropolitan area. A study of permeable versus impermeable cover was also undertaken using the LiDAR data.

Research commissioned by other organisations

Some of the research commissioned by other organisations is outlined below. There is an opportunity to create a pipeline of research so that all of the information available can be found in one place.

[The Ian Potter Foundation](#)

- Provides grants nationally to support charitable organisations working to benefit the community across a wide range of sectors and endeavours. It has awarded RMIT's [Interdisciplinary Conservation Science Research Group](#) (ICON Science) a 4-year research grant to mainstream the biodiversity sensitive urban design framework with the aim of translating it from theory to practice; documenting methods and developing metrics to measure success.

[Which Plant Where](#)

- A 5-year research program funded by [Hort Innovation](#) and delivered by Macquarie University and Western Sydney University, investigating how current landscaping species will cope under more extreme climates, and identifying new varieties for cities.

[Green Urban Futures](#)

- A multidisciplinary team of researchers in Adelaide University's [Environment Institute](#), aiming to establish South Australia as a global leader in providing 'green urban futures' such as trees, green walls and roofs, cool surfaces, and associated infrastructure.

[Green Infrastructure Research Group](#)

- An interdisciplinary team of green infrastructure experts at the University of Melbourne, where the well-known 'Burnley Method' for tree valuation was created. The University opened [The Australian School of Urban Forestry](#) in November 2018, and is currently offering masterclasses.

[Centre for Urban Research](#) at RMIT

- This research centre has been involved in the [Greener Spaces Better Places](#) research. It runs a number of relevant research programs, focusing on health and wellbeing, liveability and climate resilience. Some current projects of interest are [Onsets not off-sets for real biodiversity gains](#), [Communities for Walkability](#) (citizen science), a [scorecard for liveable cities](#), and a simple questionnaire for cities to assess if they have the success factors to deliver greening.

[Cities Research Institute](#)

- This research institute at Griffith University has a green infrastructure stream, focusing on health and 'biophilic urbanism'.

[Low Carbon Living Cooperative Research Centre \(CRC\)](#)

- This ran from 2012 to 2019, aiming to drive the built environment sector towards a globally competitive low carbon future. Relevant resources include the 2017 [Guide to Urban Cooling](#) and the 2018 [Guide to Low Carbon Precincts](#).

[Clean Air and Urban Landscapes \(CAUL\) Hub](#)

- This ran from 2015 to 2021, aiming to assist decision-makers to understand, manage and conserve Australia's environment with biodiversity and climate science. Relevant [resources](#) include brief advice on [monitoring and evaluating urban greening](#), a 2017 report [Risks to Australia's urban forest from climate change and urban heat](#), an expansion of the Public Open Space Desktop Auditing Tool to cover all types of green infrastructure, and the canopy cover work translated by Greener Spaces Better Places

Bridging organisations

A number of bodies connect Adelaide practitioners with the latest urban greening and water sensitive urban design research, including:

- [TREENET](#), a national urban tree research and education body originating from the Waite Arboretum, is dedicated to improving the urban forest and runs an annual Street Tree Symposium.
- [Water Sensitive SA](#) (previously a local link to the Water Sensitive Cities Cooperative Research Centre) drive uptake of research by translating and sharing resources, and running training and best-practice sharing forums.
- The [Institute of Public Works Engineering Australasia](#) is the peak body for public works and engineering professionals, and runs regular professional development events.
- [Greener Spaces Better Places](#) translate research undertaken by the [Clean Air and Urban Landscapes Hub](#).

Utilising the expertise and networks of these groups will be essential for sharing knowledge, building capacity, and developing the best collaborations and partnerships for promoting and delivering greening outcomes. There is an opportunity to capitalise on those organisations that have already undertaken successful capacity building, and scale that up for application to a wider audience.



Photo: DIT

8 Abbreviations and acronyms

BNG	Biodiversity Net Gain
BSUD	Biodiversity Sensitive Urban Design
CRC	Cooperative Research Centre
DEW	Department for Environment and Water
DHW	Department for Health and Wellbeing
DIT	Department for Infrastructure and Transport
LGA	Local Government Association
NGOs	Non-government organisations
ODASA	Office for Design and Architecture SA
ORSR	Office for Recreation, Sport and Racing
PLUS	Planning and Land Use Services
SEB	Significant Environmental Benefit
SPC	State Planning Commission
SPPs	State Planning Policies
P&D Code	Planning and Design Code
WSUD	Water Sensitive Urban Design

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