

Developing an urban greening strategy for metropolitan Adelaide


DISCUSSION PAPER: to support the Stage 2 stakeholder engagement process | 2022



Urban green space and cover is a critical part of the infrastructure that supports cities to function.

An investment in urban greening is an investment in meeting the challenges of climate change, urban growth, health and wellbeing, biodiversity loss, and water.

**GREEN
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Updated in March 2023

Recognition of Kaurna Miyurna and Yarta

We acknowledge and respect the native title holders and traditional owners of the Green Adelaide region – the Kaurna Miyurna (Kaurna 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.



Overview

Introduction

Green Adelaide has been tasked with bringing together State agencies, local government, NGOs, industry peak bodies, Kaurna and the community to drive an ambitious and coordinated approach to greening metropolitan Adelaide.

In February 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 ambitious mission will also help deliver the Government's commitment to increase greening in our neighbourhoods, support biodiversity and address the issues around the protection of existing trees.

Numerous in-depth conversations have been held in recent years to identify the challenges and possible solutions to increase greening in metropolitan Adelaide¹, including the Parliamentary Natural Resources Committee's *Inquiry into Urban Green Spaces* and Green Adelaide's *Regional Landscape Plan 2021-2026*. These conversations have been led by Parliament, State agencies, Local Government Association of South Australia (LGASA), Regional Climate Partnerships, Councils, NGOs, peak bodies and research bodies, demonstrating the strong cross-sectoral interest in urban greening.

Green Adelaide acknowledges and values this important body of work, and will seek to build on it.

Purpose of this discussion paper

This discussion paper summarises potential themes, outcomes, actions and required evidence base arising from what Green Adelaide has learned from the previous work in this space and the early consultation¹ that was undertaken to scope an Urban Greening Strategy for metropolitan Adelaide.

These are not final and are subject to further stakeholder consultation.

This discussion paper has been prepared to be background primer material for stakeholder engagement activities to be undertaken in 2022 as part of the Stage 2 engagement process. Refer to page 5 for further information about these engagement activities.



¹ See the separate standalone [Stage 1: Scoping and Early Engagement Summary Report](#)

Why we need an Urban Greening Strategy



Greener cities are more liveable, resilient and prosperous

It is now widely recognised, supported by a substantial body of evidence², that urban greening delivers substantial benefits to people, economies and nature in cities. People are happier, healthier, more active, and more connected with their communities in greener cities. Water is cleaner and used as a resource, while storm water management costs and flood risks are reduced. Air quality is better, urban heat is reduced, and microclimates are more comfortable for people. Soil is healthier, and more food is produced locally. There is high market demand to live in green and leafy suburbs. People also spend more in local businesses, and jobs are created. Habitat is available to support biodiversity. Carbon is sequestered, emissions reduced, and climate change risks mitigated. In short, greener cities are nicer to live in, respond better to climate challenges and contribute to a healthier economy.



Long-term investments need long-term planning

Urban greening is a long-term investment – trees can take decades to reach maturity – so it needs long-term planning. The State Government does have a long-term *target* to increase urban green cover by 20% by 2045 (currently under review), however there is no dedicated, long-term strategy setting out how this will be achieved. The development of an Urban Greening Strategy for metropolitan Adelaide will aim to fill that gap.

The South Australian Government has made a range of commitments to increase urban greening, including in the 30-Year Plan for Greater Adelaide (2017 Update) and State Planning Policies, the 20-Year State Infrastructure Strategy (2020), the South Australian Government's Climate Change Action Plan 2021-2025, the Green Adelaide Regional Landscape Plan 2021-2026, and the Department for Infrastructure and Transport's Green Infrastructure Commitment (2021). Most metropolitan councils have a strategic direction for trees, while nine³ have a tree or urban forest strategy. Councils are responsible for looking after their street trees and open spaces and therefore these plans are important for long-term management.

Urban green space/cover is a critical part of the infrastructure that supports cities to function. An investment in urban greening is an investment in meeting the challenges of climate change, urban growth, human health and wellbeing, biodiversity loss, and water, energy and food security⁴.

Collaboration scales up impact

Urban greening is delivered and influenced by at least 120 diverse stakeholder groups in Adelaide⁵, including Kauria, local and state governments, not-for-profits, research bodies, private enterprise, community groups as well as individual households. Many are actively working to increase urban greening within their own patch. Even so, it is likely that we are not yet reversing losses and moving towards greening targets⁶.

By joining forces – having common goals, sharing knowledge and resources, collaborating and delivering complementary activities – we can achieve more than the sum of our parts. By creating a multi-sector strategy, we can facilitate collaboration, bridge gaps, and scale up our efforts.

² Summaries are available in [Options Analysis: Costs and Benefits of Urban Tree Canopy Options for Minor Infill Development in the Planning and Design Code](#) (AGD PLUS, 2020), [Green Infrastructure: Life support for human habitats](#) (Ely & Pitman for the Botanic Gardens, 2014), [Healthy Parks Healthy People](#) literature review, and [TreeNet Symposium](#) proceedings

³ As of June 2021

⁴ [From Grey to Green: Life Support for Human Habitats](#), Pitman & Ely, TreeNet Symposium 2012

⁵ For a full list, see the [Stage 1: Scoping and Early Engagement Summary Report](#)

⁶ The 2022 recapture of tree canopy data will assist government to confirm this

A staged collaboration approach

See the following sections for how the Strategy will be developed, overseen and approved.

Stage 1 – scoping and early engagement

Green Adelaide commissioned a scoping exercise in late 2021 which included a:

1. **Literature review** of the local context, relevant guidance, and best practice case studies.
2. **Practitioner survey** of diverse organisations with a role or interest in urban greening, covering stakeholder mapping, priority challenges, opportunities and outcomes, and input on the preferred type of strategy (127 respondents from over 65 organisations).
3. **Targeted conversations with key stakeholder groups** (including local and State Government, NGOs, peak bodies and research organisations) in November 2021. The aims of these conversations were to raise awareness of the proposed strategy, to test the outcomes of the scoping exercise, and to explore emerging ideas on what kind of strategy we might develop together, and how best to work together. See overleaf for a snap-shot of the key findings.

The literature review and practitioner survey reports were shared with the practitioners and organisations involved to date and are available on request.

A **summary** of the above and **key considerations** for the scale and scope, content and method for developing the strategy was also prepared. This [Stage 1: Scoping and Early Engagement Summary Report](#) has shaped this discussion paper and will be a key background document for the Stage 2 engagement phase.

Informed by the above activities, Green Adelaide has planned **engagement and governance approaches** to develop the Strategy together (as outlined overleaf), as well as developing this discussion paper.

The scoping and early engagement phase of the Strategy – **Stage 1 – is now complete.**



Key findings from Stage 1: targeted conversations

Stage 1 has involved iterative conversations and testing with key stakeholders, and our thinking has evolved as a result. Some key findings include:

- Stakeholders agree we need a way to address issues between jurisdictions, therefore **a cross-sector strategy is broadly supported**. However, there were mixed views about what a 'cross-sector' strategy means. Challenges identified include how to share costs, how to make joint decisions, how to plan together, and how to get accountability across sectors.
- **The proposed scope or criteria of what actions to include broadly hits the mark** and has been retained (see page 8).
- There are many challenges with developing a **detailed, joint cross-sector action plan**. There may be more benefit in developing **an agreed framework and process for collaboration and co-investment to better align the existing annual business plan processes of individual organisations** to identify, plan and fund shared priority projects. This will be further discussed during the Stage 2 consultation. An existing list of potential projects identified through research and previous consultation will be available to inform the framework and process, but to allow flexibility, may not sit within the strategy. The lists are provided in this paper, under each theme.
- There was considerable discussion about how to achieve representative engagement when the list of potential stakeholder groups is so large (over 120 groups). There was broad support for themed working groups, but challenges were flagged in how to achieve representation. It was clear that the approach needs to be efficient and agile, with good representation in advisory roles. Therefore, an EOI process will be used. The intended model for developing the strategy together is outlined in this paper.
- Emerging themes were broadly supported, with stakeholders confirming that **a focus on planning policy and community engagement will be critical**.
- There was **strong support for a solid evidence base** to support well-informed policy development and on-ground action. This would be critical in justifying any policy changes. People particularly want to see practical examples (case studies) and the spatial prioritisation work (Green Adelaide's Greening Prioritisation Pilot Study) to determine where to get the most 'bang for buck' from greening investment.
- People can't fundamentally decide if they support something until they can see it in some detail. This discussion paper seeks to provide that.



Figure 1: Role of the Strategy (from the Stage 1 Practitioner Survey results)

Stage 2 – developing the Strategy

The Stage 2 consultation process involves cross-sector collaboration to develop the Strategy and determine how best to work together to implement it. The process will be coordinated by Green Adelaide and overseen by a **Government Leadership Group**.

The key engagement activities will include:

Engagement activity	Invitees	Purpose
Greening Adelaide Leaders Event May 2022	State government executive, Warpulai Kumangka reps, council CEOs, research institutes and industry/NGO CEs	To foster urban greening leadership to identify new partnership opportunities for mutual benefit and drive commitment to collaborate on a shared practical Strategy.
Cross-sector practitioner summit May 2022	A gathering of diverse organisations and sectors who deliver, champion and/or influence urban greening e.g. 17 Green Adelaide councils, relevant government agencies, technical experts, peak bodies, NGOs and Kurna	To share progress to date, identify priorities for action and critical uncertainties and build momentum for shared action.
Technical Working Groups June 2022 to May 2023	Subject matter experts from across government (state and local), industry peak body, research institutes and NGOs	Cross-sector collaboration where more detailed discussion is needed to inform the Strategy and supporting evidence base, in particular: <ul style="list-style-type: none"> • Urban heat and tree canopy • Urban biodiversity • Quality green space and policy Membership was sought via an Expression of Interest process.
Scenario planning workshop October 2022	A gathering of diverse organisations and sectors who deliver, champion and/or influence urban greening e.g. Warpulai Kumangka, 17 Green Adelaide councils, relevant government agencies, technical experts, peak bodies, NGOs	Co-create scenarios, generate shared vision and develop action pathways to achieve the vision.
Sector discussions June 2022 to June 2023	State and local government, NGO, research institutes, development industry peak bodies and Kurna (through Warpulai Kumangka)	To identify areas of consensus, difference and where individual sectors and organisations could play the lead and their priorities for action
Partner conversations 2023	Conversations with different partner groups from across government (state and local), industry peak body, research institutes and NGOs.	To test draft shared vision, goals, directions and actions and identify best approach for cross-sector collaboration and implementation.

How the Strategy will be informed, overseen and approved

The engagement process described above will be coordinated by Green Adelaide and overseen by a **Government Leadership Group**.

Technical Working Groups (with cross-sector membership) have been set up to provide advice for the development of the Strategy and supporting evidence base content. Membership of these technical working groups was sought via an Expression of Interest process.

As Parliament tasked Green Adelaide with leading development of the Strategy, the **Green Adelaide Board** will **endorse the Strategy** and the **Minister for Climate, Environment and Water (and Cabinet)** will **give the final approval**. The proposed endorsement process may draw on the experience of [Living Melbourne](#), in which **interested organisations will be invited to endorse the final Strategy** – including its vision, outcomes, high-level actions and framework for collaboration. This is not final and will be subject to further discussion during the Stage 2 engagement process.

Setting a broad direction for the Strategy's content

Green Adelaide has set a broad direction for the Strategy's content, in order to facilitate progress on its development, noting that this may evolve as it is developed. Reflecting the available guidance from the literature review and practitioner feedback (to date), the Strategy may include:

- **Where we are now:** define urban greening, describe the historical context and the trends and pressures affecting urban greening, analyse current status and future potential for greening, and outline the administrative and policy framework
- **Where we want to be:** set a clear and indisputable vision that makes the 'why' clear, and secure commitment of stakeholders to work together towards a set of common high-level goals, indicators and targets
- **Why we want to get there:** provide evidence of the need for and benefits of urban greening, including cost-benefit analyses and community aspirations
- **What we'll do:** outline strategic directions, actions and outcomes
- **How we'll do it:** outline of the framework for multi-sector collaboration and co-investment (to be jointly determined as part of developing the Strategy).

It is proposed that a compelling **evidence base** be summarised in the Strategy, with a more comprehensive separate document to be produced and updated as more data and information comes to light through both local, national and international research and practice. Refer to page 35-37 for further information about possible inclusions. In response to early consultation, a joint cross-sector action plan may not be pursued as part of the development of this Strategy (at this time). Instead, the preferred model is likely to be a **flexible, efficient, collaborative action planning process** that aligns with partners' annual business planning processes.

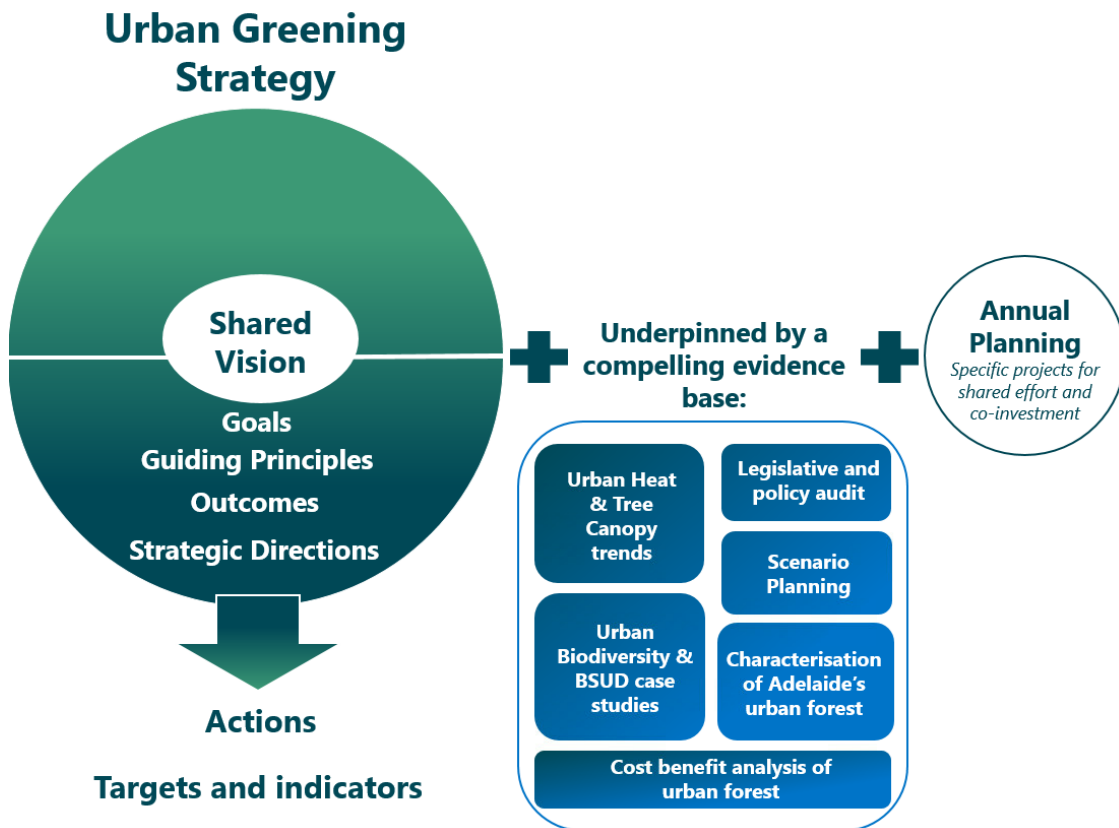


Figure 2: Mud map of the proposed structure for the Urban Greening Strategy

Developing a shared vision

When asked about their vision for urban greening in Adelaide, Stage 1: Practitioner Survey respondents said success would be:

- Meeting our urban green cover target (30-Year Plan for Greater Adelaide or higher), with mature trees protected and more planted
- Everyone working together effectively and proactively, with ongoing dialogue
- Community valuing trees and other vegetation as an asset and choosing to protect them
- Green and blue infrastructure is valued on par with, or ahead of, grey infrastructure
- Urban biodiversity is improved and urban greenery resilience is increased to respond to climate change
- A city that is globally recognised as green, liveable, biodiverse and climate resilient
- Urban greening investment is efficient and goes where it is most needed

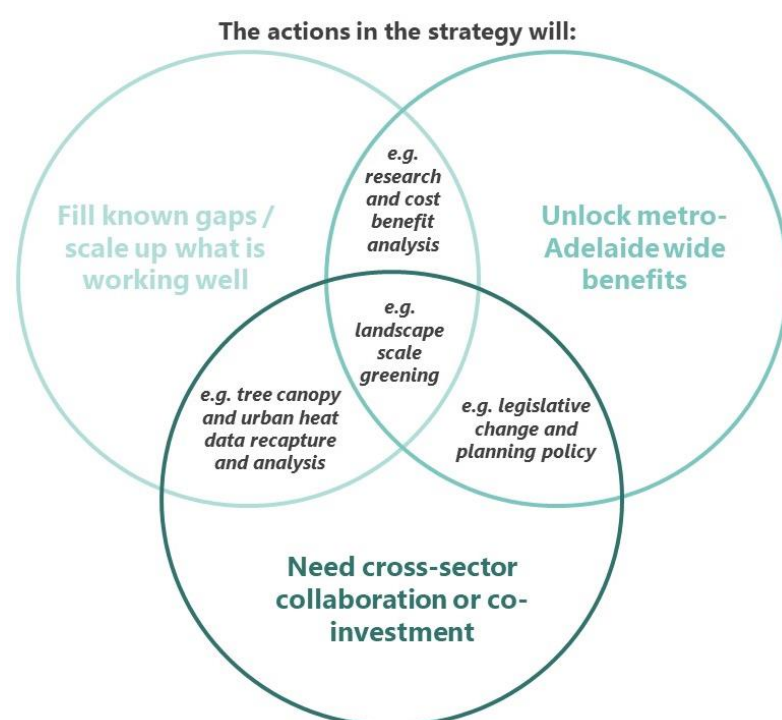


Figure 3: Desired outcomes from the Strategy (from the Stage 1 Practitioner Survey results)

Establish criteria for what type of actions to include in the Strategy

Solving the barriers to accelerating the delivery of a cooler, greener and more liveable Adelaide is challenging and there are already many government and non-government stakeholders actively working on this. It is not anticipated that the Strategy would capture all business-as-usual activity. We have heard from practitioners that they want new action to address the gaps that will unlock progress at the metropolitan scale. We think the Strategy could be an avenue for partners to achieve more by enabling the projects that share the load, create efficiencies, and fill the gaps beyond immediate jurisdictions. The following proposed criteria has been drawn from the outcomes of the Stage 1 consultation process to identify the types of actions that this might be best placed to focus on.

We propose the following 'rules of thumb' or criteria for what to include in the Strategy.



Ideally the majority of the actions in the Urban Greening Strategy will give genuine 'additionality', rather than re-badging of existing BAU. However, it will be important to also recognise existing initiatives where it would be beneficial to scale up, enhance or expand these.

Figure 4: Criteria for what to include in the Strategy



Summary of draft themes and supporting actions

Six draft themes (with supporting actions) emerged from Stage 1 consultation. These were then updated to reflect the outcomes of the Practitioner Summit. These draft themes and supporting actions are outlined below. These are not final and are subject to further consultation. Further detail about these, including potential initiatives or projects (that have been proposed during consultation to date) are outlined overleaf.

1. Strengthen government policy and tree protection laws	2. Lead by example with public infrastructure and projects	3. Shift behaviour through education, inspiration and incentives
<ul style="list-style-type: none"> • Develop design standards and guidelines to support greater uptake of urban greening, WSUD and BSUD • Strengthen tree protection legislation • Monitor and refine policy and schemes to support better soft landscaping, WSUD and BSUD outcomes • Review the Urban Green Cover Target (and policies) as part of the new Greater Adelaide Regional Plan • Holistic review of all relevant government legislation to identify opportunities to maximise greening, WSUD and BSUD outcomes 	<ul style="list-style-type: none"> • Accelerate greening and meet targets for greening, WSUD and BSUD delivery on government land (including infrastructure, public housing and other projects) • Create more space for trees by reducing conflicts in contested spaces • Deliver major landscape scale and flagship greening projects that cross boundaries and set new benchmarks • Integrate greening into public asset management systems, and account for trees as appreciating assets 	<ul style="list-style-type: none"> • Inspire community love of nature through metro-wide campaigns and events • Promote and champion Aboriginal cultural knowledge, values and lore • Strengthen education and stewardship programs for schools, communities and other sectors • Support and recognise innovation and adoption of best practice by the development sector • Identify and implement the most effective incentives to plant and retain greening on private land
4. Support decision-making with evidence and research	5. Build capability, coordination and co-investment	6. Demonstrate progress and impact
<ul style="list-style-type: none"> • Develop an applied research pipeline to identify and fill shared knowledge gaps and prioritise action • Provide access to quality information and guidance, based on best practice examples and the latest research • Determine an agreed method for applying economic valuations to trees and other green infrastructure 	<ul style="list-style-type: none"> • Build knowledge, motivation and capability to deliver better greening, WSUD and BSUD outcomes • Design a collaboration and coordination framework to implement the Strategy with all interested partners • Design a co-investment framework, aligned with partners' business planning processes • Form a collective leadership and governance approach to solve cross-sector challenges 	<ul style="list-style-type: none"> • Set practical targets and indicators for greening in metropolitan Adelaide, and integrate them across projects and policy • Identify and fill gaps in data for agreed indicators • Refine the Greening Prioritisation Pilot Study, and embed it in decision-making processes, to target investment where it is needed most • Regular reporting to identify and showcase success.

Exploring the draft themes – from what we have heard so far

1. Strengthen government policy and tree protection laws

Why this is important

The 30-Year Plan for Greater Adelaide (2017 Update) sets a target to increase urban green cover by 20 per cent by 2045. This target recognises the many benefits of green cover, such as urban cooling, enhancing the character, biodiversity and liveability of our suburbs, and improving people's physical and mental health.

However, **achieving this green cover target will require significant effort given recent observations** ⁷.

The 30-Year Plan also set a target for 85 per cent of all new housing to be built within the existing urban footprint, to help create walkable neighbourhoods, protect valuable farming and environmental land, and meet consumer demand for living close to jobs, shops, and services. Minor infill housing⁸ is now the single largest provider of new housing in Greater Adelaide, with a net annual increase of about 2,500 residential dwellings. This is a challenge for urban greening because currently **minor infill generally increases site coverage and driveway crossovers, creating up to 90% impervious surfaces**⁹. There is significant opportunity to improve the design of these types of development in terms of landscaping outcomes.

These trends are starting to change the distribution of green cover across Greater Adelaide, where **backyards historically contained significantly higher tree canopy than streets and parks**¹⁰. For example, the City of Campbelltown, which is experiencing high rates of infill development, lost 4.18% of its tree canopy on private land, compared to 1.62% on public land, between 2006 and 2016¹¹.

Key challenges of urban development to greening

- Trends towards **smaller blocks, larger houses and 'low maintenance' yards**
- Common approach of **clearing and levelling blocks boundary to boundary**, resulting in huge losses of mature trees
- Facilitating **good design outcomes that ensure new infill development provides sufficient space for urban greening** (i.e. onsite vegetation supported by soil and water infrastructure) – this is an opportunity
- **Changes to regulated and significant tree regulations in 2011** which introduced tree removal exemptions

These challenges have been consistently identified by practitioners and the community, including in the Practitioner Survey, previous consultation processes, community campaigns and the media.



⁷ Based on a loss of 1.92% green cover between 2013 and 2016 (Greener Spaces, Better Places, 2017), Council studies and anecdotal evidence. A new trend line for tree canopy cover will be available following the next LiDAR capture in 2022, with analysis expected to be complete in mid-2022.

⁸ Minor infill refers to 'sites less than 4,000m² involving the permanent removal of a dwelling (demolition), or re-subdivision of a parcel to create an additional allotment/s with the original dwelling retained (re-subdivision)'. It is estimated that minor infill represents around one-third of the total dwelling stock growth in metropolitan Adelaide each year. [PlanSA](#)

⁹ [Options Analysis: Costs and Benefits of Urban Tree Canopy Options for Minor Infill Development in the Planning and Design Code](#), BDO Econsearch for AGD-PLUS, 2020

¹⁰ For example, in the western suburbs of Adelaide, residential land represents 20% of urban land, but more than 40% of tree cover – a finding consistent with other metropolitan areas ([Macquarie University](#), 2020). Across metropolitan Adelaide, most LGAs are dominated by canopy cover over privately owned land, while only the LGAs with the highest canopy levels have majority cover over public green spaces like parks, reserves and conservation areas ([Aerometrex](#), 2020). The metro-wide distribution of canopy over private vs. public land is yet to be determined.

¹¹ [Canopy Cover Change in Campbelltown City Council 2006-2016](#), City of Campbelltown, 2018

The loss of mature trees is outpacing the growth of new trees. A significant proportion of our current tree canopy, and growth in tree canopy, is from large mature trees, rather than the smaller trees that have become more popular to fit smaller backyards and restricted spaces under power lines. There is also a lag time between a new tree being planted and the tree reaching a sufficient height and breadth to deliver canopy benefits¹². **This highlights the importance of retaining the trees we already have.**

Strengthening planning policy and tree protection policy is considered by stakeholders to be the number one opportunity to support better urban greening outcomes¹³. This is in part because greening gains on public land cannot keep up with greening losses due to infill development on private land¹⁴. **Land use planning policy and legislation are considered to be the strongest levers available** to support retention and expansion of greening on private land. However, we cannot stem the loss of trees through these levers alone – education, appropriate valuation of trees and other green infrastructure, incentives and new practices supported by strong evidence and data all play a critical role.

Where we are now and future opportunities

The South Australian Government has recently undertaken the largest reform of the planning system in twenty years. There are a number of recently introduced (or soon to be commenced) initiatives which it is hoped will support improved urban greening outcomes, including:

- The **State Planning Policies**¹⁵ (gazetted 23 May 2019) set out the overarching goals and directions for the State. They include a suite of policy directions for how climate change, biodiversity and design quality (among others) should be addressed and considered across the different instruments in the planning system (i.e. Regional Plans¹⁶, the Planning and Design Code, Design Standards).
- Under the **South Australian Government's Climate Change Action Plan 2021-25**, Planning and Land Use Services (PLUS) has committed to 'Develop improved policies, tools and guidance for the new planning system to achieve greener and cooler neighbourhoods', including through investigating an offset scheme that supports greening outcomes and improving minimum standards and incentives for green infrastructure in the Code.
- **The 30-Year Plan for Greater Adelaide** (adopted as the Greater Adelaide Regional Strategy under the *Planning, Development and Infrastructure Act 2016* (PDI Act)) has targets for green cover and walkable neighbourhoods. A 2021 Report Card¹⁷ indicated that those targets would be reviewed as part of the **broader review of the 30-Year Plan in 2022**. The green cover target has influenced a number of Councils to develop their own tree canopy targets, often included in strategic plans or standalone urban forest/greening strategies.
- **The new 'one tree rule' in the Planning and Design Code** (the Code) has introduced minimum tree planting requirements for infill residential developments, and an Urban Tree Canopy Off-set Fund, for the first time. Minimum landscaped area policies have also been strengthened. This was in response to significant community and local government concern about the impact of infill development on mature trees and other urban greening. **An [Expert Panel](#) review of the planning system is underway.**
- The PDI Act introduced **Design Standards, a new statutory instrument to prescribe ways that public realm and streetscapes should be designed**. The development of the first Design Standard for driveway crossovers is under development.

¹² Canopy benefits are widely considered to commence once a tree reaches 3m in height

¹³ This was the top opportunity ranked by respondents to the Urban Greening Practitioners Survey

¹⁴ [Perspectives on performance-based planning provisions and assessment frameworks for green infrastructure and WSUD](#), Seed Consulting Services, 2019

¹⁵ [State Planning Policies](#), May 2019

¹⁶ SPP 5.11: Regional Planning should include performance targets for urban greening and tree canopy enhancement in Greater Adelaide and regional townships

¹⁷ [30-Year Plan for Greater Adelaide – 2017 Update Report Card 2020-21](#), State Planning Commission

The new 'one tree rule' and associated off-set scheme only came into operation across Greater Adelaide on 19 March 2021, so **the effect of these policies on the urban environment cannot be fully measured yet.** However, the State Planning Commission has indicated it will monitor and report on the infill policy changes and will undertake targeted policy improvements where necessary¹⁸.

There has also been much discussion recently – in the community and by stakeholders – about **whether our tree protection laws are strong enough, including the fees associated with tree removal. The State Planning Commission has therefore commenced an open space and tree review project** which will be undertaken in stages in 2022:

- **Part 1:** Review of regulated tree species and off-set contributions (desktop review of the regulatory tree controls complete and [Arborist Report](#) commissioned)
- **Part 2:** Broader review of regulated and significant tree regulations (see the [Research Report](#) commissioned as well as the adjacent breakout box)
- **Part 3:** Review of urban greening and impact of infill development (on hold pending outcome of the planning system review by the Government's [Planning System Implementation Review](#))

It is also important to recognise the recommendations of the NRC Inquiry into Urban Green Spaces and consider any relevant findings by the NRC Review into the *Native Vegetation Act 1991*.

Tree protection laws

New evidence from a national review of tree protection rules by the Conservation Council of SA indicates that **South Australia's tree protection rules may be the weakest in the nation.** For example, other jurisdictions protect trees of a much smaller circumference (averaging 64cm, compared to SA's 200cm), and they protect trees based on tree height and canopy spread (while SA does not). The research also provides suggested amendments to the legislation to strengthen tree protections. These are in addition to the recommendations made for changes to tree protection laws and planning policy laid out in the 'A Call to Action' report, by a Conservation Council SA led coalition of NGOs and peak bodies.

Draft outcomes and actions

The following draft outcomes and actions have emerged from the consultation undertaken in Stage 1 as well as considering the outcomes from the NRC Inquiry into Urban Green Spaces (2021) and Green Adelaide's Regional Landscape Plan consultation process (2021). They are not final and are a starting point for discussions.

Draft outcomes	Draft actions
<ul style="list-style-type: none"> • More trees and other greenery are retained, especially on private land • New developments have sufficient vegetation, soil and water infrastructure to support greening and biodiversity outcomes • Policy and regulations are more consistent, and in line with national best practice 	<ul style="list-style-type: none"> • Develop design standards and guidelines to support greater uptake of urban greening, WSUD and BSUD • Strengthen tree protection legislation • Monitor and refine policy and schemes to support better soft landscaping, BSUD and WSUD outcomes • Review the Urban Green Cover Target (and policies) as part of the new Greater Adelaide Regional Plan • Holistic review of all relevant government legislation to identify opportunities to maximise greening, WSUD and BSUD outcomes

¹⁸ [State Planning Commission – Strategic Plan 2021-2022](#)

Project ideas for further exploration and scoping

Now that the architecture of the new e-planning system and the Code is in place for metropolitan Adelaide, the focus (and resources) can move more fully to policy improvements. Refer below for examples of potential opportunities to support better urban greening outcomes:

Planning System Instrument	Examples of ways to improve urban greening outcomes	Current work underway by PLUS
<i>Planning, Development and Infrastructure Act 2016</i>	<ul style="list-style-type: none"> Strengthen Significant and Regulated Trees legislation e.g. increase fees and criteria for protection 	<ul style="list-style-type: none"> Government's Planning System Implementation Review)
New Regional Plan for Greater Adelaide	<ul style="list-style-type: none"> Review Urban Green Cover Target (refer to Theme 6 for further detail) Include spatial mapping on urban heat and biodiversity 	<ul style="list-style-type: none"> Preparation of a Directions Paper (drawing on scenario development)
Design Standards	<ul style="list-style-type: none"> Ensure that the design standard for driveway crossovers supports WSUD and greening outcomes 	<ul style="list-style-type: none"> Early scoping and investigations
Planning and Design Code	<ul style="list-style-type: none"> Identify new opportunities to better support climate resilient and adaptation outcomes Strengthen water sensitive urban design and include BSUD policies Encourage allotment sizes, shapes, building setbacks and typologies that support the retainment of existing mature trees and new landscaping 	<ul style="list-style-type: none"> Government's Planning System Implementation Review) DEW's Climate Change Opportunity Review report
Urban Tree Canopy Off-set Scheme	<ul style="list-style-type: none"> Align the fee closer to what it costs councils to plant a new tree, especially in a constrained urban environment 	<ul style="list-style-type: none"> Government's Planning System Implementation Review)
Other	<ul style="list-style-type: none"> Identifying incentives that support better greening outcomes in the private realm Community led participatory approach to explore what green focussed urban infill could look like Develop supporting advisory material to illustrate how performance outcomes and deemed-to-satisfy policies can be best met. Refer to Theme 3 for further ideas about 'Shifting the culture through education, inspiration and incentives'. Improve mapping to identify urban biodiversity and remnant vegetation 	<ul style="list-style-type: none"> Green Adelaide has worked with the SPC to release the Adelaide Garden Guide for New Homes and is currently preparing supporting educational materials and incentives.

Other relevant government legalisation and policy

The land-use planning system is not the only policy and legislative lever that influences urban greening outcomes. Therefore, the Strategy could also consider challenges and opportunities within other relevant government policies and legislation. The Strategy will be supported by a Technical Working Group which will consider key challenges and opportunities in any policy or legalisation relevant to influencing urban greening outcomes. For example, there is an estimated 3% of remnant vegetation in metropolitan Adelaide – the Strategy could investigate the potential to extend the inclusion zone (under the *Native Vegetation Act 1991*) for the protection of remnant native vegetation into the metropolitan area supporting regeneration and revegetation.

2. Lead by example with public infrastructure and projects

Why this is important

Well vegetated streetscapes and other public areas are becoming increasingly important across metropolitan Adelaide as more people choose to live in neighbourhoods with small or no front and backyards. Public greenspaces provide many advantages including improved physical and mental health and wellbeing, improved community and social connectedness, opportunities for sport and recreation activities, preservation of natural environments and biodiversity, climate change adaptation, and urban stormwater management¹⁹.

However, the urban public realm is often a highly contested space. Conflicts for space are often not visible, with many of the restrictions below or above ground (i.e. utilities requirements); or from other competing needs (e.g. sight lines, safety, bin space on verges). There have been recent positive moves to reduce these conflicts, including efforts by SA Power Networks to involve arborists and council staff in decision-making, but challenges remain with balancing competing needs for public space.

Greening has often been seen as a 'nice-to-have' or an afterthought, rather than a critical piece of valuable 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 that there are adequate budgets to maintain green infrastructure assets has also been raised as a challenge. Practitioners have strongly expressed²⁰ that green and blue infrastructure needs to be considered through similarly defined and accepted mechanisms and methodologies, and with the same investment, as grey infrastructure. Some positive moves have been taken to address the imbalance, such as the DIT Green Infrastructure Commitment (2021), but much remains to be done.

The amount of public open space land available for greening is limited, especially in inner-city suburbs. Adelaide has the lowest percentage of public open space (excluding national parks) of the capital cities, at about 10%, compared with 57% in Sydney, 40% in Perth, 22% in Hobart, 20% in Melbourne and 18% in Brisbane²¹. This means public greening needs to be high quality, accommodate multiple uses, and be high-performing across multiple outcomes. Anecdotally, councils are now butting up against space limits, with space traditionally available for greening, such as on road verges and in public parks, already planted to capacity. Meeting tree canopy targets may therefore require substantial measures to reclaim or increase public space for greening purposes. For example, 'de-paving' road space (e.g. protuberances²² and offset verges²³)



¹⁹ [Creating Greener Places for Healthy and Sustainable Communities](#)

²⁰ Urban Greening Strategy Practitioners Survey Results, Jack Jensen, 2021

²¹ [Creating Liveable Cities in Australia](#), Centre for Urban Research, RMIT University, 2017. The definition of public open space used in this study was "freely accessible green open spaces catering for a range of active, passive and social recreational and play needs. This included parks, gardens, reserves, and recreational and sporting areas (excluding golf courses, which are not free) ... [and excluded] national parks, state forests and bushland."

²² [Street Trees in Challenging Spaces](#), City of West Torrens, 2021

²³ [Green Infrastructure Strategic Directions](#), City of Unley, 2015

and acquiring and demolishing residential properties at market rates²⁴. Such measures are becoming increasingly expensive. In new growth areas, the challenge is to build greening into the urban fabric as it is developed, rather than expensively retrofitting at a later date.

Where we are now and future opportunities

Planting trees in public spaces can be complex and expensive, due to the complex governance arrangements and limited and contested available space (including below and above ground). A range of research has been undertaken to better understand how to create more space for trees in contested spaces. This has been published in the form of a series of design guidelines and similar documents (e.g. City of West Torrens's [Trees in Challenging Spaces](#), City of Adelaide's [Adelaide Design Manual Greening](#), City of Unley's [Green Infrastructure Strategic Directions](#)), and research into "the complex processes involved in putting trees into the ground in Adelaide", in [Creating More Spaces for Trees](#) by Resilient East.

Past research into managing conflicts between green and grey infrastructure has focused on risk, with trees viewed as the problem. However, **new research has shifted its focus towards finding ways for trees, utilities and other hard infrastructure to share the available space.** This research has found that engineering solutions such as permeable paving and passive watering reduce damage to grey infrastructure, such as raising and cracking footpaths and roadways, while improving soil stability and enabling faster growing, deeper and healthier roots²⁵. There are opportunities to convert this existing knowledge into metro-wide design guides, for example the statutory Design Guidelines for public realm and streetscapes (under the PDI Act), and case studies and capacity building to enable and accelerate widespread adoption. State government agencies and individual councils are also increasingly committing to action in the public realm including the following:

- Through the State Government's **Climate Change Action Plan 2021-25**, and their own **Green Infrastructure Commitment**, the Department for Infrastructure and Transport (DIT) has committed to meeting a suite of greening targets in their projects (including canopy cover, WSUD and biodiversity measures), and to spatially prioritise greening investments on active travel corridors, new infrastructure projects, and areas prioritised by Green Adelaide. They have already updated DIT's Vegetation Policy and Master Specifications, including a new requirement to plan and budget for greening outcomes from the start of new projects.
- **Other state agencies have initiatives in place to increase greening:**
 - **Renewal SA** has 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.
 - **Department for Education** is seeking to incorporate and/or improve WSUD across new and renovated school sites.
 - **SA Water** has developed new guidelines to permit tree planting closer to water infrastructure than currently allowed under the *Water Industry Act 2012* if mitigation measures (tree root barriers/pit liners) are in place²⁶. SA Water has also partnered with councils to irrigate public spaces more efficiently with a combination of remote sensing technology and weather predictions, along with an interactive air temperature map to help residents find the coolest parks on a hot day.
- **SA Power Networks** works with an Arborist Reference Group and Local Government Working Group to improve the management of vegetation near power lines. They released a Powerline Friendly Trees

²⁴ [Options Analysis: Costs and Benefits of Stormwater Management Options for Minor Infill Development in the Planning and Design Code](#), BDO for AGD-PLUS, 2020

²⁵ [Creating More Spaces for Trees](#), 2021, Resilient East

²⁶ [SA Water Tree Planting Guide, 2021](#)

guide in 2018, and their revised Protocol for vegetation management near power lines (2019-2021) was endorsed by the LGA Board in May 2019.

- **Healthy Parks Healthy People is a well-established partnership between SA Health and the Department for Environment and Water that aims to improve the quality of public greenspace.** The Quality Green Open Space Principles (with sponsorship from AILA, ODASA and PLUS) were released under the partnership to guide local and State Government entities in achieving this goal.
- Many **councils have been ramping up on-ground efforts, strategic planning and setting targets to help accelerate urban greening increases.** There are examples of councils creating more space for trees by reclaiming or 'de-paving' roads and imposing design standards on new development. There are also examples of councils (and other state jurisdictions like Canberra) incorporating green infrastructure in asset management and financial management systems.
- In its **Regional Landscape Plan 2021-2026, Green Adelaide** has committed to 'Drive coordinated, accelerated greening of streetscapes and public spaces'; 'Identify priority locations for improved urban greening and define what success looks like in different contexts'; and 'Raise awareness and build capacity about Aboriginal cultural knowledge, values and lore'. Green Adelaide has also committed to **rewild coastlines and rivers**, as one of its 'iconic programs' – offering potential for major landscape scale and flagship projects that cross boundaries and set new benchmarks. Current projects underway include the construction of Breakout Creek Stage 3 and the restoration and enhancement of the Field River Valley.
- **The Natural Resources Committee Inquiry into Urban Green Spaces** recommended a number of initiatives to improve urban green outcomes which the State Government has accepted.
- The State Government has also recently released an [Urban Water Directions Statement \(2022\)](#) which includes key actions to encourage WSUD to support better greening outcomes.
- DIT applies the State Government's [WSUD performance targets](#) to stormwater design for new road projects – refer to [Master Spec RD-DK-D1](#).

Draft outcomes and actions

The following draft outcomes and actions have emerged from the consultation undertaken in Stage 1 as well as considering the outcomes from the NRC Inquiry into Urban Green Spaces (2021) and Green Adelaide's Regional Landscape Plan consultation process (2021). They are not final and are a starting point for discussions.

Draft outcomes	Draft actions
<ul style="list-style-type: none"> • State and local government policies are aligned • All public lands and projects deliver better greening outcomes where possible • Green, grey and blue infrastructure is integrated, and conflicts are reduced • On-ground landscape-scale greening projects are delivered 	<ul style="list-style-type: none"> • Accelerate and meet targets for greening, WSUD and BSUD delivery on government land (including infrastructure, public housing and other projects) • Create more space for trees by reducing conflicts in contested spaces • Deliver major landscape scale and flagship greening projects that cross boundaries and set new benchmarks • Integrate greening into public asset management systems, and account for trees as appreciating assets

Potential project ideas for further exploration and scoping

On-ground delivery

- **Pilot and scale up alternative approaches to installing utilities infrastructure**, such as root barriers, power line under-grounding, common service trenching and multi-utility tunnelling, to minimise streetscape impact and maximise space for urban greening.
- **Investigate under-grounding power lines in major arterial road projects** (where possible).
- **Review findings of recent work to identify opportunities for metro-wide initiatives**, for example the Creating More Spaces for Trees project (Resilient East), council Design Guidelines (e.g. Trees in Challenging Spaces, Adelaide Design Manual), SA Power Networks initiatives (following *Electricity (Principles of Vegetation Clearance Regulations 2021)*) and SA Water Tree Planting Guide updates.
- **Identify and pursue the most high-performing and feasible major greening project opportunities**, based on the mapping work described below.
- **Drive best practice through targeted trials that include development of case studies and capacity building initiatives.**
- Watercourse management and naturalising to **create green corridors** protected from development.
- **Government agencies** (Renewal SA, SA Housing Authority, DIT, Education and SA Health) **lead by example** (in terms of WSUD and BSUD) on their land and review their relevant policies and legislation to identify any improvements.
- **SA Housing and Renewal SA** demonstrates a better infill design typology that meet urban greening targets
- **Replicate developments** like Christie Walk, Aldinga Ecovillage, Lochiel Park – better design and manage services and utilities e.g. underground services and power lines.



Policy and legislative opportunities

- **Provide design guidance on best practice de-paving** to create more space for greening while prioritising active transport e.g. offset verges (e.g. Windsor Street, Unley), pocket parks, rationalised parking (with greening/WSUD between), narrower vehicle lanes and shared streets.
- **Map landscape scale linkages and strategic connections** (especially along wildlife, water and active transport corridors), prioritise against spatial data-based performance outcomes, and embed as urban greening priorities in the new Regional Plan for Greater Adelaide.
- **Treat green infrastructure as a critical asset (through similarly defined and accepted mechanisms and methodologies) as grey infrastructure, by integrating green infrastructure into public (local and state) asset management systems.**
- DIT to seek to include green **infrastructure requirements (including WSUD performance targets)** in the new **Sustainable Government Building requirements** (currently being developed, to replace the existing ESD Guide Note).
- **Account for trees as appreciating assets in public (local and state) financial management systems.** Consider accounting approaches developed by the ACT Government and the United Nations

System of Environmental Economic Accounting (SEEA), and ways to monetise green infrastructure (e.g. carbon credits).

- **Prepare a metropolitan-wide Open Space Strategy** to identify new locations for public open space including prioritisation of land acquisition, creation of quality green open space and investigation of opportunities to add in additional datasets into the Greening Prioritisation Pilot Study.
- Investigate whether there are **any opportunities under the Local Government Act 1991** and other local government strategies and plans to better support urban greening, WSUD and BSUD outcomes.



3. Shift behaviour through education, inspiration and incentives

Why this is important

Behaviour change programs are powerful tools to connect people with nature, green space and each other²⁷. There is widespread recognition that a multi-pronged approach is needed in behaviour change initiatives – including education, inspiration and incentives, alongside an enabling legislative and policy framework. Regulation is an important lever to help stem the loss of urban tree canopy, but it can only do so much – **education, inspiration and incentives are critical if we are to turn the tide.**



The importance of engaging community is reflected in a nationwide local government survey, which found that **'community attitudes toward the value of trees' are just as important as 'council's ability to plant and protect trees'** in ensuring the success of urban greening strategies²⁸. This is reiterated by local practitioners, who identified that 'working with the community to increase planting in the private realm' is one of their top three priorities for their own future greening work, and that one of the five roles of the Strategy should be to 'shift perceptions and actions of the community, developers and builders (including evidence-based education, inspiration, incentives)'²⁹. 'Inspire change in the community's perception and attitude towards greening' was also one of the top four opportunities identified by the Practical Greening Strategies sub-group of the Green Adelaide Board in their 2021 report.

Private land is responsible for the highest rates of canopy loss³⁰. So it is not surprising that **a desire to shift Adelaide's culture to encourage more greening on private land was one of the key threads running through the Practitioner Survey.** Practitioners indicated that the cultural shifts needed are across the community, as well as specifically within the development and building industries.

Raising understanding of Aboriginal cultural knowledge, values and lore is also seen as key to instilling values of caring for Country across the community. It will be important to liaise with the Warpulai Kumangka Kurna Advisory Group as part of developing the Urban Greening Strategy.

Biodiversity sensitive urban design (BSUD) is an emerging area of focus, and both practitioners and the community need education and capacity building to understand what BSUD is and how to deliver it on private land. Water sensitive urban design (WSUD) has advanced further than BSUD in terms of people understanding, accepting and delivering it, facilitated by organisations like Water Sensitive SA. But there is still much to be done to support local and state governments, private developers and the community to understand and maximise opportunities for its effective delivery.

Despite qualitative evidence (see below) that the overwhelming majority of people consider greening of public land to be critically important, **this appreciation does not always appear to translate to decisions made on private land.** Key drivers of greening loss on private land appear to include prioritisation of larger dwellings

²⁷ [Let's Scale Up! Urban Greening in the private realm: engaging and motivating community](#), EarthWatch, 2021

²⁸ [Where Will All the Trees Be? Local Government Survey Results](#), RMIT University and Greener Spaces Better Places, 2020

²⁹ Urban Greening Strategy Practitioners Survey Results, Jack Jensen, 2021

³⁰ For example, The City of Campbelltown, which is experiencing high rates of infill development, lost 4.18% of its tree canopy on private land, compared to 1.62% on public land between 2006 and 2016 ([City of Campbelltown](#), 2018).

and outbuildings, preferences for 'low maintenance' yards (including seeking to avoid leaf drop), and fears around the safety of trees (e.g. fire risk and dropping limbs)³¹.

Where we are now and future opportunities

There is growing community interest in protecting trees in Adelaide, reflected in The Advertiser's Green Zone campaign (since mid-2020), advocacy work by Conservation Council SA and metropolitan council elected members, and the successful bid to make Adelaide the world's second National Park City. There is also political interest in the issue, as evidenced through their Natural Resources Committee Inquiry into Urban Green Spaces and the Legislative Council motion that tasked Green Adelaide with developing the Urban Greening Strategy.

This interest is building on an **already strong community appreciation for public urban greening**. A 2016 survey found that 94% of South Australians considered conserving nature to be of critical importance³². A 2019 national community survey³³ found that urban green space is important to 85% of people (while 12% think it's a nuisance), with people appreciating it for its great aesthetic, for relaxation, health and wellbeing, and for wildlife. There is also emerging global evidence that the COVID-19 pandemic has driven a marked increase in the appreciation and demand for public open spaces³⁴. This provides an opportunity to build on and drive a deeper relationship of love, stewardship and pride in urban greening as part of Adelaide's collective identity, which could lead to immeasurable benefits to the community's health, wellbeing, connection and cohesion, as well as climate adaptation, environmental and biodiversity outcomes³⁵.

We can build on a **strong foundation of existing initiatives** to support a greening-oriented culture, including:

- The long-standing Adelaide and Mount Lofty Ranges Natural Resources Management Board (AMLR NRMB) Education program (now Green Adelaide Education), which is being broadened to connect further with the wider community
- Warpulai Kumangka (Kurna Advisory Group) working in partnership with Green Adelaide and others to support and restore Kurna ways of working across Yarta (Country), including through an Aboriginal fire management and an international indigenous knowledge-sharing symposium
- Existing efforts and enterprises raising awareness on Aboriginal cultural knowledge, values and lore
- Educational resources developed by the former AMLR NRMB (e.g. Trees are Cool), Water Sensitive SA, councils and other organisations
- The recent declaration of Adelaide as the world's second National Park City
- Conservation and greening groups³⁶
- Organisations connecting people with nature, like Nature Play SA, Nature Festival and Trees for Life³⁷

³¹ There is substantial anecdotal evidence but limited available research on what drives decision-making about greening on private land. The drivers mentioned are commonly cited in Council tree strategies and by practitioners.

³² South Australians and the Environment, Adelaide and Mount Lofty Ranges NRM Board, 2016

³³ [Who's With Us?](#), Greener Spaces, Better Places, 2019

³⁴ For example, an April 2020 'pulse check' survey found that 87% of Australian urban councils have noted a positive shift in community attitudes towards green space (Greener Spaces Better Places). A recent [NSW Government survey](#) found 45% of people are spending more time in public spaces than before COVID-19, 71% appreciate local parks more, and 94% are using public spaces for exercise³⁴. In South Australia, visitation to the state's parks and open spaces increased by 43% during the COVID-19 pandemic (Green Adelaide Regional Landscape Plan, 2021).

³⁵ [Regional Landscape Plan](#), Green Adelaide, 2021

³⁶ Such as [Conservation Volunteers Australia](#), [Friends of Parks](#), [Bush for Life / Bushcare / Bush Action Teams](#), [Landcare](#), [Coastcare](#), [Rail Care](#) community gardens, seed, plant and garden sharing communities like [Garden Share Adelaide](#) and [Unley Gardener's Plant Rescue](#), and Council-run programs like [Adopt a Tree](#).

³⁷ Such as [Nature Play SA](#), which runs education programs, community campaigns and events (including the annual Nature Play Festival) to engage children in outdoor learning and play; [Amongst It](#), which runs and supports creative projects including the annual [Nature Festival](#); [Trees for Life](#), whose volunteers grow seedlings to plant across the state; [Good Living](#), DEW's blog on what you can do in nature (among other things); and Sustainability and Environment Centres.

- Advisory material to support understanding and implementation of planning rules³⁸.

A number of opportunities exist to **build on, expand and strengthen these efforts**, and to reach new audiences, and have been highlighted in recent consultation processes. These include strengthening incentives and focusing on target audience groups, such as the development and building industries.

Draft outcomes and actions

The following draft outcomes and actions have emerged from the consultation undertaken in Stage 1 as well as considering the outcomes from the NRC Inquiry into Urban Green Spaces (2021) and Green Adelaide's Regional Landscape Plan consultation process (2021). They are not final and are a starting point for discussions.

Draft outcomes	Draft actions
<ul style="list-style-type: none"> • A shared community vision and narrative that supports a widespread greening movement • Increased community love of nature, starting at from a young age • Increased community and industry capacity to deliver best practice urban greening • Increased government capacity to deliver best practice community engagement promoting urban greening • Increased greening and greater retention of mature trees on private land • Aboriginal cultural knowledge, values and lore are more broadly respected and supported 	<ul style="list-style-type: none"> • Inspire community love of nature through metro-wide campaigns and events, including National Park City • Promote and champion Aboriginal cultural knowledge, values and lore • Strengthen education and stewardship programs for schools, communities and other sectors • Support and recognise innovation and adoption of best practice by the development sector • Identify and implement the most effective incentives to plant and retain greening on private land

Potential project ideas for further exploration and scoping

The below list of potential project ideas is a summary of what has been suggested through the series of recent consultation processes, including for the Urban Greening Strategy. It is included here to inform discussion.

- **Develop an innovative and wide-reaching communications campaign** that establishes a clear and consistent narrative aiming to raise the value which the community places on urban greening. To be deployed by multiple parties through multiple channels and target those not already engaged. Include messages on economic benefits, wellbeing, wildlife, climate resilience, and myth-busting concerns.
- **Keep greening issues in mainstream media**, using knowledgeable spokespeople with the right expertise and media ability, and potentially a movement of citizen advocates.
- **Support community meeting points and demonstration sites** to help facilitate community-led events which promote urban greening (e.g. community centres/gardens, Environment Centres).
- **Continue to support and cross-promote events and festivals**, including Nature Festival and Open Gardens, and explore opportunities to reach new audiences by integrating nature themes in other festivals like SALA, History Week, Adelaide Film Festival, Science Week, Sustainable House Day etc.

³⁸ For example, Green Adelaide has partnered with PLUS and ODASA to develop advisory material to support implementation of new tree planting and minimum landscaping requirements, including greening typologies for different block configurations, planting and deep soil zones. This work also involves identifying potential incentives to protect mature existing trees and plant more than the minimum number of trees.

- **Support Kurna and other Aboriginal people** to further develop their **enterprises, presence, capabilities and influence in the urban greening sector.**
- **Identify new opportunities to deliver citizen science projects** to get people active and involved in connecting with, learning about, and valuing nature in the urban environment.
- **Invite developers to document and showcase examples of their best practice** retention of mature trees and provision of green space in urban infill and large-scale developments.
- **Develop a catalogue of innovative, fully costed designs for housing developments that integrate best practice greening, WSUD and BSUD** on different size and shape blocks and different numbers of dwellings, made publicly available and promoted to developers as preferred standards, with an incentive to use (e.g. fast-tracked approvals, profitability).
- Metro-wide citizen science project to monitor street tree condition.
- Job program for revegetation (paid and volunteer).
- Work with the Real Estate Institute to create 'green flag' to promote climate friendly houses.
- Host events that bring diverse groups together for action e.g. plant giveaways, design and planning advice, input to place making.
- Engage with developers to understand drivers for green development.



4. Support decision-making with evidence and research

Why this is important

Having a solid foundation of credible, locally applicable knowledge **informs good policy and investment decisions** (including via robust cost benefit analyses and business cases), and can **optimise outcomes in on-ground works**. Data needs to be locally applicable but also scalable and relatable to the wider region / state. The data also has to be repeatable so that the influence of past strategies can be reviewed, and new strategies developed. Any messages coming from the data needs to be clear, based in the science, using consistent metrics and terminologies.

Having up-to-date, user-friendly and widely accessible tools and applications, based on data and information, can greatly accelerate uptake of knowledge, particularly by non-government users and the broader public. 'Knowledge, information and data must underpin greening efforts' was one of the top four opportunities to improve greening outcomes identified by the Practical Greening Strategies sub-group of the Green Adelaide Board in their 2021 report.

Through the recent series of consultations, a number of specific opportunities have been identified to fill in knowledge gaps. However, identifying a gap is not sufficient. **Proactive cross-sector and cross-disciplinary efforts need to be taken to clearly articulate knowledge gaps and identify research outputs that would be of use for policy development and on-ground action. Likewise, proactive efforts need to be undertaken to convert research outputs into a useful format (tools and applications) for practitioners.**

Where we are now and future opportunities

Respondents to the Practitioners Survey said that some immediate greening actions should and could be taken without awaiting new research, with a good body of knowledge and resources already available. However, a number of knowledge gaps were raised in the same survey and previous consultations that would support stronger policy and innovative practice. **This initial list of research ideas (see overleaf) could be further developed into a pipeline of research projects** to be coordinated between the Urban Greening Strategy partners.

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. But this work requires coordination. Green Adelaide has commenced scoping a research prospectus across its seven priorities, including greening. Other organisations will play a key role. Bridging organisations such as TreeNet and Water Sensitive SA have the skillsets and networks to assist as the link between research and practice. The Environment Institute of Adelaide University has an interest in urban greening research, including through its Green Urban Futures team who have recently run cross-sector forums seeking to understand knowledge gaps.

South Australian universities have supported student placements, including of PhD candidates, to deliver discrete greening research projects³⁹. This economical model⁴⁰ of undertaking research has been used to good effect by Regional Climate Partnerships, including Resilient East with their Creating More Spaces for Trees project. There is potential to expand student placement arrangements, using the network of partners as hosts. This would help to strengthen connections between research and practice, while cost effectively progressing a research pipeline.

South Australia already has a widely used and highly valued species advice guide, [Plant Selector+](#). This tool requires updating (both technology and data), which could see it become a one-stop-shop for the latest, comprehensive species advice. Potential improvements include integrating the latest research on climate resilience, local knowledge on risks and vulnerabilities (e.g. Resilient East Tree Species List), planting near infrastructure requirements (e.g. SA Water and SAPN species lists), and suitability for local microclimates, soil

³⁹ For example, through University of Adelaide's Industry Engaged Placement PhD internship scholarship program

⁴⁰ Student placements have low costs to host organisations – limited to supervision/guidance, desk space and IT support

conditions and water availability. There is also potential to add a search function so that Code infill development applicants can easily search for a tree that meets the size requirements that they are after.

A number of other tools and information sources exist, both locally and beyond. These include monetised benefits tools for WSUD assets, tree valuation tools, Green Adelaide's Greening Prioritisation Pilot Study⁴¹, research summaries collated by TreeNet, and numerous resources developed by councils and Water Sensitive SA. Some of these could be strengthened with new knowledge, or expanded or combined to reach a wider audience or have broader utility. Numerous ideas to do so have been raised in previous consultations⁴².

An area of particular interest for better knowledge and tools is **reflecting the true value of greening in planning, policy and investment.** 'The true economic value of trees is not considered in retention/removal decisions' was the top-ranked barrier to urban greening in the Practitioner Survey, and reflecting the true value of trees in removal fees and government investments, and in planning, policy and practice, were two of the four top-ranked opportunities to enable greening. 'Greening must be valued and prioritised appropriately (including funding)' was also one of the top four opportunities identified by the Practical Greening Strategies sub-group of the Green Adelaide Board in their 2021 report. Delivering on these opportunities is likely to require a more robust knowledge base and tools, based on credible quantitative economic valuations in the local context. This need is reflected in the very high frequency of requests for more economic valuation research and tools that have come through in previous consultations.

Draft outcomes and actions

The following draft outcomes and actions have emerged from the consultation undertaken in Stage 1 as well as considering the outcomes from the NRC Inquiry into Urban Green Spaces (2021) and Green Adelaide's Regional Landscape Plan consultation process (2021). They are not final and are a starting point for discussions.

Draft outcomes	Draft actions
<ul style="list-style-type: none"> Policy change is supported by a solid foundation of evidence Investment in research delivers practical on-ground outcomes Greening decisions reflect current best practice 	<ul style="list-style-type: none"> Develop an applied research pipeline to identify and fill shared knowledge gaps and prioritise action Provide access to quality information and guidance, based on best practice examples and the latest research Determine an agreed method for applying economic valuations to trees and other green infrastructure

Potential research priorities for further exploration and scoping

This list of potential research priorities is based on feedback in recent consultations and may not be exhaustive. It is anticipated that further knowledge gaps will continue to be identified as the Strategy is implemented. Ideally, the process for exploring, scoping and commissioning research will be an ongoing one, supported by an agreed framework and lead organisation(s) (yet to be determined).

- **Determine an agreed method for applying economic valuations for trees and other green infrastructure.** A number of well-established tree valuation tools exist (e.g. the Burnley Method, the City of Melbourne method, i-Tree Eco etc.), and there is an opportunity to ground-truth them in the local context and determine an agreed method for widespread local adoption, including for tree fees.

⁴¹ In 2021, Green Adelaide undertook a Greening Prioritisation Pilot Study to help spatially prioritise greening investment across metropolitan Adelaide (not yet publicly available). It is hoped this pilot study, and any future refinements, can be used as a tool to prioritise on-ground works, and enable tracking of impact over time, as new data becomes available. The study combined spatial data on tree canopy, urban heat and population vulnerability (age and socioeconomic disadvantage) to identify the areas of greatest need.

⁴² For example, updating i-Tree Eco with best available Adelaide data, to expand its utility (e.g. help homeowners understand the impact of trees on reduced power bills); and expanding the existing monetised benefits tools for water sensitive design assets to become a single tool for assessing the cost benefit of all greening projects.

- **Continue to expand the evidence base⁴³ of the financial value of green infrastructure in the local context.** This will provide support for adopting stronger financial incentives⁴⁴, strengthening planning policy, and other initiatives.
- Understand the **true risks of tree canopy and root systems to public safety and infrastructure**, and vice versa (e.g. quantify the likelihood and financial consequence of tree roots in water pipes).
- **Quantify the total value of metropolitan Adelaide's green infrastructure.** Other jurisdictions use the value of trees as a headline statistic supporting their tree strategies⁴⁵. Estimating the total value of Adelaide's trees could help to build support for other initiatives in the Strategy.
- **Identify new ways to make public greening and its maintenance more cost effective and sustainable.** This may include, for example, exploring options for better sharing the tree protection and maintenance load (and therefore cost) between councils and utilities providers, exploring options for greater involvement of citizens in maintaining public greening (e.g. volunteering, citizen arborists, participatory budgeting, streamlining verge gardening, stewardship programs etc.), and exploring options for alternative funding sources, including Federal Government and philanthropic investment, co-investment from across State Government (reflecting cross-jurisdictional financial benefits of greening) and engaging the private sector (e.g. public-private partnerships, regulation, taxes, user-pays, compensation schemes, business improvement districts, retail/commercial carparks etc.).
- Audit how much funding is actually spent on greening and its maintenance across metropolitan Adelaide now, and predict what the **investment gap** would be to deliver on urban greening targets. This would help to make the case for expanding contributions to urban greening offset funds, as well as informing the above research into alternative financing models. There is also the opportunity to identify any areas of duplication of effort and therefore potential areas for collaboration or co-investment for shared outcomes.
- **Investigate the benefits of giving trees statutory rights to underground space**, on par with the rights of utility services. Utilities are given statutory rights to both underground and above ground space, leaving councils with limited standing to protect their own green infrastructure, especially trees, from adverse outcomes.
- Develop best practice **engineering solutions and planting and maintenance techniques** to minimise risks of conflict between green, grey and blue infrastructure (including new and retrofitted solutions), including collating or expanding the use of existing guides⁴⁶.
- Ensure all regulated and significant trees are mapped.
- Use Artificial Intelligence to forecast population needs and green project impacts.

⁴³ Summaries are available in [Options Analysis: Costs and Benefits of Urban Tree Canopy Options for Minor Infill Development in the Planning and Design Code](#) (AGD PLUS, 2020), [Green Infrastructure: Life support for human habitats](#) (Ely & Pitman for the Botanic Gardens, 2014), [Healthy Parks Healthy People](#) literature review, and the latest TreeNet Symposium [Green is the New Gold](#) (2021).

⁴⁴ The [Options Analysis](#) commissioned by AGD-PLUS to inform the 'one tree rule' in the Planning and Design Code found that it had to exclude many well-researched benefits, as they could not be credibly financially quantified in the local context, resulting in conservative estimates of the benefits.

⁴⁵ For example, the [City of Melbourne](#) states that "With more than 75,000 trees valued at almost \$800 million, Melbourne's urban forest is one of our most important assets". The [City of Phoenix](#) (Arizona, US) has identified that their urban forest provides an annual benefits of \$40.25 million, the replacement cost would be \$3.84 billion, and the return on investment for each tree averages \$2.23.

⁴⁶ For example, [Trees in Challenging Spaces](#), City of West Torrens, 2021

- Map, analyse and project trends of **how urban infill is impacting canopy cover** and urban heat, now and into the future – to tell a data-driven story of how our city will look, and influence future planning policy and other responses.
- Other potential research priorities include:
 - Changing community attitudes, values and behaviours towards trees in Adelaide.
 - Barriers to greening on private land and how best to overcome them.
 - Barriers to access and availability of urban green spaces in the community.
 - Appropriate species for Adelaide's future climate and urban condition.
 - Value of understorey vegetation in cooling / amenity and identifying areas where low vegetation (shrubs / ground cover) is a more viable alternative than trees.
 - Return on investment for using water to support quality, cool green spaces, including the expansion of the alternative water network to support greening initiatives.



5. Build capability, coordination and co-investment

Why this is important

Urban greening is influenced by a huge range of sectors, organisations and disciplines such as urban planning, sustainability, assets and infrastructure, parks and gardens, water management, utilities, community engagement and education, academia, design, and maintenance and operations. However the roles and responsibilities of different actors are not always well-aligned towards optimal outcomes. **Bridging gaps in knowledge, motivation and capability between sectors can help improve greening, WSUD and BSUD outcomes.**

The impetus for urban greening action is strong and growing within the stakeholder base, including in the community. Many have already been involved in recent strategic thinking and planning activities, and there are many potential delivery partners for the Strategy. **What has been missing is a way for this work to be coordinated and enabled at a metropolitan scale – for the growing mutual momentum to translate into collective impact.** This is reflected in the finding that 'Collaboration across sectors is key to optimising greening' is one of the top four opportunities to improve greening outcomes identified by the Practical Greening Strategies sub-group of the Green Adelaide Board in their 2021 report.

The literature review and practitioner survey has highlighted that **some key issues are falling between jurisdictional gaps** – these are the issues highlighted in this paper. Greater coordination between stakeholders (including within and between agencies, councils and other stakeholders) could enable **accelerated action, reduced duplication, and more cost-effective projects.** This is particularly important where projects would benefit from co-investment of cash or resources – for example, metro-wide heat and canopy mapping. Where there are many beneficiaries for a project, it makes good economic sense for those beneficiaries to work together, share resources and knowledge, and to make substantial cost savings through joint procurement. **Therefore, effective delivery of the Strategy will depend on a clear and supported framework for collaboration and co-investment to occur.**

Where we are now and future opportunities

Practitioners have indicated **clear support for bridging organisations** like Water Sensitive SA and TreeNet to play a role in **collating and sharing evidence and delivering capability raising across disciplines.** This would help to bridge an identified gap of accepting and acting on existing knowledge.

Through the recent Stage 1 consultation processes, we identified an extensive and diverse list of at least 120 urban greening stakeholders in metropolitan Adelaide, and a **strong preference for developing and delivering a multi-sector strategy.** However, there is currently no platform for all stakeholders across several sectors to collaborate on urban greening across metropolitan Adelaide. **A collaboration and co-investment framework is proposed to be developed with partners alongside the Strategy.**

Development of that framework can be informed by the existing collaborative frameworks and networks that are already working well within sectors, disciplines, and for specific parts of the urban greening picture across Adelaide. These include:

- **Policy collaboration** – Health Parks Healthy People (DEW, SA Health, DIT, AILA, PLUS, ODASA) (state government, public green space).
- **Practice collaboration** – Regional Climate Partnerships (15 metropolitan councils, Green Adelaide, DEW, canopy mapping with PLUS) (local and state government, climate).
- **Advocacy collaboration** – A Call to Action (Conservation Council SA, AILA, Environmental Defenders Office, National Trust South Australia, Nature Conservation Society of South Australia, TreeNet and Trees for Life) (NGOs, urban greening).
- **Bridging research and practice** – Water Sensitive SA (cross-sector, WSUD), TreeNet (cross-sector, trees).

- **Networked learning** – LG Urban Forest Alliance (council, trees), Environmental Sustainability Network (council, environment), Adaptation Practitioners Network (cross-sector, climate).
- **Industry body committees** – e.g. UDIA has an Environment Committee.

Draft outcomes and actions

The following draft outcomes and actions have emerged from the consultation undertaken in Stage 1 as well as considering the outcomes from the NRC Inquiry into Urban Green Spaces (2021) and Green Adelaide's Regional Landscape Plan consultation process (2021). They are not final and are a starting point for discussions.

Draft outcomes	Draft actions
<ul style="list-style-type: none"> • Local government, development and community capacity to deliver optimal urban greening outcomes is increased, including through learning, collaboration, innovation and recognition. • Continuous communication is supported between sectors with a key role and or interest in urban greening. • Roles and responsibilities of relevant organisations and sectors are clear. • Co-investment is planned and streamlined. 	<ul style="list-style-type: none"> • Build knowledge, motivation and capability to deliver better practice greening, WSUD and BSUD outcomes. • Design a collaboration and coordination framework to implement the Urban Greening Strategy with all interested partners. • Design a co-investment framework (cash and in-kind), aligned with partners' business planning processes. • Form a collective leadership and governance approach to solve cross-sector challenges.

Potential project ideas for further exploration and scoping

The following list of potential project ideas is a summary of what has been suggested through the series of recent consultation processes, including for this Strategy. It is included here to inform discussion.

- **Deliver regular metro-wide, cross-sector greening forums, seminars and field trips** to build stakeholder capacity and support communication, shared learning, collaboration and innovation in urban greening.
- **Scale up existing capacity building channels that are already working well, for example:**
 - Water Sensitive SA to also cover BSUD
 - TreeNet to extend its reach
 - Regional Climate Partnerships to focus more on greening.
- **Work with industry peak bodies** (such as UDIA) to identify ways to work together on better supporting urban greening outcomes in small scale infill developments.
- **Ensure appropriate recognition to the progression of greening best practice**, by sponsoring awards in existing programs.
- **Introduce minimum qualifications to operate as an arborist** (for the purpose of local and state government approvals), and standardise the assessment process for tree removals, requiring arborists to use a reputable assessment tool (e.g. Quantified Tree Risk Assessment (QTRA) and Tree Risk Assessment Qualification (TRAQ)).
- **Learn from the findings of the Greening Marion pilot project** in how to collectively address the complex challenge of urban greening using a multi-sector, multi-disciplinary platform.
- **Establish an interdisciplinary Greening Advisory Board** to provide unbiased expertise into decision-making. This group could be responsible, for example, for identifying key challenges and

opportunities, identifying strategic initiatives to fill knowledge gaps, and developing the research pipeline (beyond the work underpinning the Strategy).

- **Identify priority areas for co-investment**, including spatial data collection. Ideally, map a pipeline of known projects over the first five years of the Strategy.
- **Map out an agreed process for efficiently seeking co-investment from potential partners**, which may include a biannual priority setting and agreement seeking workshop. The streamlined process should align with business planning processes of core partners and determine methods to agree on cost-splitting approaches (e.g. how to equitably split costs between councils).
- DIT and local government discussion and agreement on a potential **new co-investment** for planting new trees on arterial roads (which are not part of an infrastructure upgrade project). DIT could potentially share its priority planting locations with councils and invite them to submit planting proposals for these 'pre-approved' locations.
- Establish a new fund to support action.
- Appoint a green commissioner to drive a collective leadership and governance approach.
- Provide more resources for maintenance of green infrastructure.
- Create communities of practice to share knowledge and learnings.

Considerations in designing a collaboration and co-investment framework

In the Practitioners Survey, respondents identified that their preferred mechanisms to work together were:

- **Networked collaboration** – where partners regularly share their progress towards goals, and identify opportunities for joint projects, in a coordinated network. There was strong support for this, likely reflecting the success of existing frameworks mentioned above.
- **A co-investment framework** – where partners set agreed funding responsibilities and specific priorities. Practitioners were keen to see a co-investment framework, but had reservations about how this could practically work.

A collaboration and co-investment framework is proposed to be developed by a cross-sector think tank, informed by partners and for their consideration. Below are some of the issues the cross-sector group will need to consider.

- Who will do what (roles and activities)?
- How do we identify shared gaps, then prioritise and decide?
- How do we plan for and coordinate co-investment?
- How do we share knowledge and continuously improve?
- How do we build and maintain momentum?
- How do we hold each other accountable?
- How do we measure and evaluate success?

6. Demonstrate progress and impact

Why this is important

Tree canopy targets are commonly used as powerful tools to set and demonstrate a specific ambition to increase greening. They help to **prioritise and galvanise greening actions**, they inspire the community, and they encourage appropriate resource allocation. For example, the introduction of a green cover target in the 2017 update of the 30-Year Plan for Greater Adelaide has helped focus efforts by a range of partners (including stage agencies, councils and NGOs) on achieving that goal. **Tree canopy is ideal for target setting because it can represent the complex distribution and benefits of urban trees within a single metric.**

In recent years, there have been significant advances in the availability and capability of spatial data capture and analysis. This means we can advance from the broad-brush canopy-focused approach to a more refined decision-making model. **We can now identify the specific locations where investment will deliver the most benefit towards desired outcomes** – such as strengthening the climate resilience of vulnerable populations. This kind of spatial prioritisation requires policy decisions to be made about which outcomes are most important, and it requires spatial data to be gathered on a recurring basis to track progress towards those outcomes.

Where we are now and future opportunities

There are greening targets in two state government documents – the [30-Year Plan for Greater Adelaide](#) (2017 Update) and the [DIT Green Infrastructure Commitment](#) (as illustrated below). Ten metropolitan councils have set their own canopy targets, five of which are aligned with the 30-Year Plan.

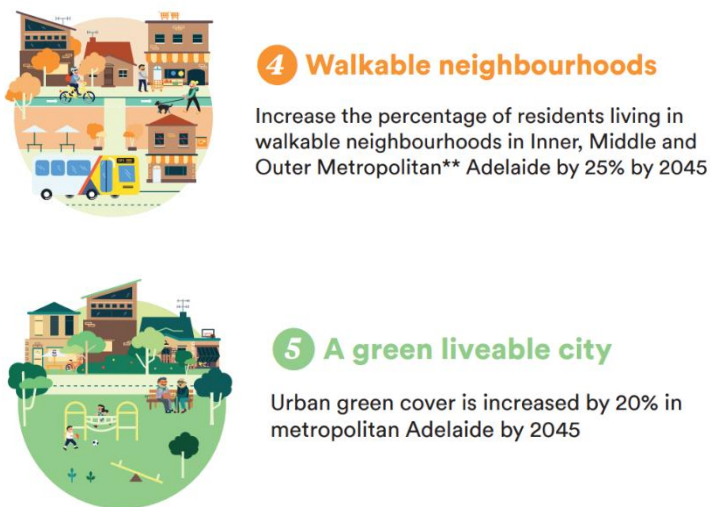


Figure 5: Walkable neighbourhoods and greening targets (Source: 30-Year Plan for Greater Adelaide – 2017 Update)

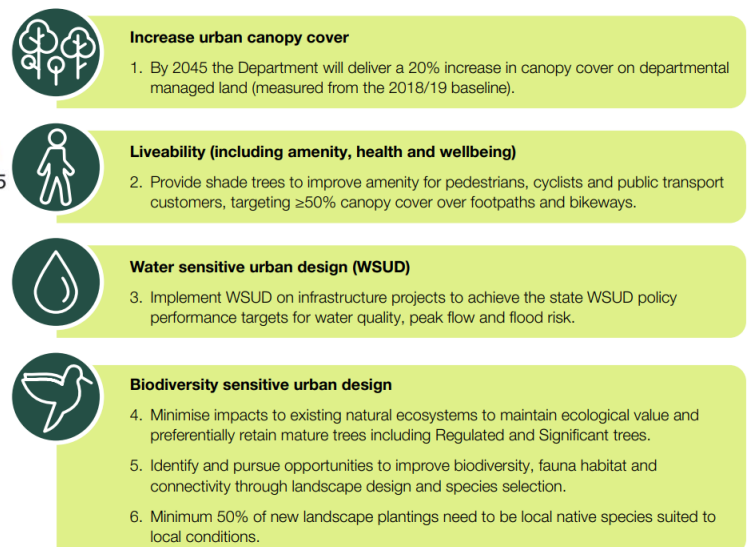


Figure 6: Green infrastructure focus areas and commitments (Source: DIT Green Infrastructure Commitment)

As well as a target to increase green cover by 20% by 2045, the 30-Year Plan has a target for increasing walkable neighbourhoods by 25%, which includes a criterion on access to public open space (spaces >4000m²) within a 5min walk. Both targets will be reviewed as part of the broader 30-Year Plan review in 2022, including a review of monitoring and data arrangements⁴⁷. The DIT targets have only recently been set.

Our understanding of which public greening assets exist where, and of their condition and performance, is growing. The 2020 LiDAR analysis project (using data captured in 2018/19) delivered 3D tree canopy cover maps for the first time in most areas. The second data capture and analysis in 2022 will deliver

⁴⁷ [30-Year Plan for Greater Adelaide – 2017 Update Report Card 2020-21](#), State Planning Commission

for the first time an understanding of tree canopy distribution and trends over the public realm, across the entire Greater Adelaide region. Resource-intensive bottom-up data (e.g. tree inventories, economic valuations, biodiversity, and asset condition and performance assessments) is increasingly being collected or collated by councils into a format that can be shared, for example through tree inventories, and economic valuations like the study of trees in Hazelwood Park, Burnside⁴⁸. However, the data collection standards (i.e. what is collected and how) are not necessarily the same across councils. Green Adelaide's Water Sustainability Grants have funded WSUD asset audits, including a comprehensive audit across the Resilient East councils. DIT has committed to baselining and tracking green infrastructure in their sites and projects against the targets in their Green Infrastructure Commitment. However, existing data remains patchy and inconsistent across the metropolitan area.

In 2021, Green Adelaide undertook a **Greening Prioritisation Pilot Study** to help spatially prioritise greening investment across metropolitan Adelaide (not yet publicly available). It is hoped this pilot study, and any future refinements, can be used as a tool to prioritise on-ground works. The study combined spatial data on tree canopy, urban heat and population vulnerability (age and socioeconomic disadvantage) to identify the areas of greatest need. These metrics are in line with what has been done regionally⁴⁹ and elsewhere in Australia⁵⁰. **Stakeholders have expressed a strong interest in this spatial prioritisation work** as a means of maximising outcomes from greening investment. For example, DIT and Renewal SA have both committed to identify opportunities to expand green infrastructure on public land, focusing on priority areas identified by Green Adelaide⁵¹. Once the recaptured urban heat and tree canopy data is available in mid-2022, Green Adelaide will re-run this pilot study in liaison with councils and relevant state agencies.

Draft outcomes and actions

The following draft outcomes and actions have emerged from the consultation undertaken in Stage 1 as well as considering the outcomes from the NRC Inquiry into Urban Green Spaces (2021) and Green Adelaide's Regional Landscape Plan consultation process (2021). They are not final and are a starting point for discussions.

Draft outcomes	Draft actions
<ul style="list-style-type: none"> • Targets and indicators demonstrate more holistic progress. • Greening investments are targeted where they are needed most. 	<ul style="list-style-type: none"> • Set practical targets and indicators for greening in metropolitan Adelaide, and integrate them across projects and policy. • Identify and fill gaps in data for agreed indicators. • Refine the Greening Prioritisation Pilot Study, and embed it in decision-making processes, to target investment where it is needed most. • Regular reporting to identify and showcase success.

⁴⁸ [Valuing the Trees of Hazelwood Park](#), Tree Assessment – City of Burnside, 2018

⁴⁹ For example, the [Western Adelaide Heat Mapping Report](#)

⁵⁰ For example, the Greener Spaces Better Places [VHHEDA Index](#)

⁵¹ Implementation Schedule for the South Australian Government Climate Change Action Plan (not publicly available)

Potential opportunities to better demonstrate progress and impact

Understand how tree canopy is distributed

Analysis of canopy cover by land use type and land ownership type (including separating roads and other land) will be completed for the entire metropolitan area, using both the 2018/19 and the 2022 LiDAR captures (this was done for individual LGAs but not the entire metropolitan area in 2018/19). This will set both a baseline and trend line for canopy cover over different land use types and tenures e.g. schools and active transport routes. For example establish increasing canopy cover for school sites.

Audit the potential for change

An audit of the *actual* opportunities for planting new trees on state-controlled, council-controlled and private land would assist with setting realistic greening targets, and understanding where the best opportunities are to deliver greening outcomes. Such analysis would need to exclude contested space to be useful. Some analysis tools are available to help ascertain this⁵², noting that they have their limitations.

Extend the pilot spatial prioritisation study

There may be opportunities to expand on the Greening Prioritisation Pilot Study, for example by learning from the [Sydney Green Grid](#). This may include combining existing data on greening assets from a number of sources and identifying areas with the greatest potential for connecting up those assets. It may also include introducing other data layers to add new metrics to the prioritisation process.

Measure other metrics

If outcome-based targets are to be set, other metrics could be measured. For example, there would be liveability benefits if we targeted greening where people walk, but no widespread data on foot traffic is available. Other metrics include species diversity, vegetation age and condition, and access to alternative water sources. Resolving gaps will require an iterative conversation between what we want to measure, what is possible, and what is cost effective to measure.

Considerations in setting greening metrics, targets and indicators

Parliament tasked Green Adelaide with preparing a strategy that meets the 30-Year Plan target of a 20% urban green cover increase by 2045 at a minimum. The target in the current 30-Year Plan will be reviewed as part of a broader review of that document (to be commenced during 2022).

When setting targets, there are, broadly, **two different approaches – being realistic and being ambitious.** The first approach requires a careful study of the current context, community needs, and potential for change. The second involves making some assumptions about an ideal number, setting ambitious targets, and then mobilising efforts to meet them⁵³. In the context of metropolitan Adelaide, the data to inform the first approach is inconsistent and could be quite difficult or expensive to obtain. Setting realistic targets will be more difficult and costly⁵⁴ than setting ambitious targets, which may in turn be less grounded in reality and come with greater uncertainty regarding their ability to be achieved.

There is a growing trend in Adelaide and elsewhere to set **targets that relate to a particular functional outcome, to hone action and prioritise investment** (see overleaf for examples). Understanding the desired outcomes can influence, for example, how many trees are needed, what height and species they should be, and where to plant them. In the Practitioner Survey, there was a clear preference for the Urban Greening Strategy's main outcome to be **making our city climate resilient**. Cooler suburbs, biodiversity and liveability followed, and were closely ranked. These have been built into the draft goals of the Strategy (see first page). Other outcomes could include, for example, equitable access to public green space (as per the 30-Year Plan and recommendations of the NRC Inquiry into Urban Green Spaces), health and wellbeing, and economic uplift.

⁵² For example, permeability analysis and the Tree Planting Predictor Tool™ by Edge Environment

⁵³ [Canopy Goals for US Cities](#), Vibrant Cities Lab, 2014

⁵⁴ See for example, [Interim Water Sensitive Urban Design Targets for Greater Adelaide](#), Goyder Institute, 2011

Below are some real examples of outcome-oriented targets:

Biodiversity outcome-oriented targets examples

- The City of Unley has a goal for street and park tree populations to not comprise more than 40% any particular family, 30% any genus and 10% any species⁵⁵.
- The Town of Walkerville has a target of at least 90% of the trees on public land being maintained at a useful life expectancy of more than 20 years, to protect the overall tree population from threats and loss⁵⁶.
- The DIT Green Infrastructure Commitment has a minimum standard of 50% of new plantings being local native species.

Liveability outcome-oriented targets examples

- A study by the City of Gold Coast⁵⁷ suggested a 'liveable neighbourhood' canopy target of 30% for the city, based on research finding that 30% nearby tree cover is associated with significant positive health benefits.
- The DIT Green Infrastructure Commitment has a target of ≥50% canopy cover over footpaths and bikeways to provide shade and amenity.

There is merit in investigating whether additional targets and indicators such as permeability, biodiversity and access to public open space are needed in this Urban Greening Strategy and/or the Greater Adelaide Regional Plan. Having scalable targets is also another potential consideration e.g. geographical areas with very low baseline (<5%) tree canopy cover could have specific target to increase to 10%, rather than only a 20% increase. There may be merit in setting up a cross-sector technical working group or think tank to discuss this further.

There are numerous **potential metrics to consider**. These include:

- **Tree canopy cover** (>3m) (by suburb, local government area, private vs public realm, land-use and ownership) and/or **green cover** (trees, shrubs and grass), **number of trees planted**.
- **Tree age** (e.g. >40% trees juvenile, 90% with ULE >20 years), **species diversity** (e.g. no species >10% of population), **structure** (e.g. % height distributions, measure % or 15m tall), other biodiversity metrics (e.g. % of local native, Australian native & exotic species).
- **Permeability** (% of hard vs. permeable surfaces), **volume of stormwater detained** etc.
- **Public green space cover** (i.e. % of metropolitan area), **accessibility** (e.g. % of homes with within 400m walk), **quality** (e.g. % of open spaces meeting performance metrics) or **availability** (e.g. % of open spaces which accommodate different types of users and uses).
- **Vulnerability**, including urban heat, flood risk, social disadvantage, demographics (e.g. age), rental %, health, existing green cover etc. (e.g. VHHEDA index).
- **Movement**, connectivity & useability (e.g. % canopy over bike and footpaths, or % of high-access and use areas like shopping strips and playgrounds UHI<11C).

⁵⁵ The above Guide recommends as a 'good' tree species diversity target that no single species represents more than 5% of the total population; no genus more than 10%; and no family more than 15%.

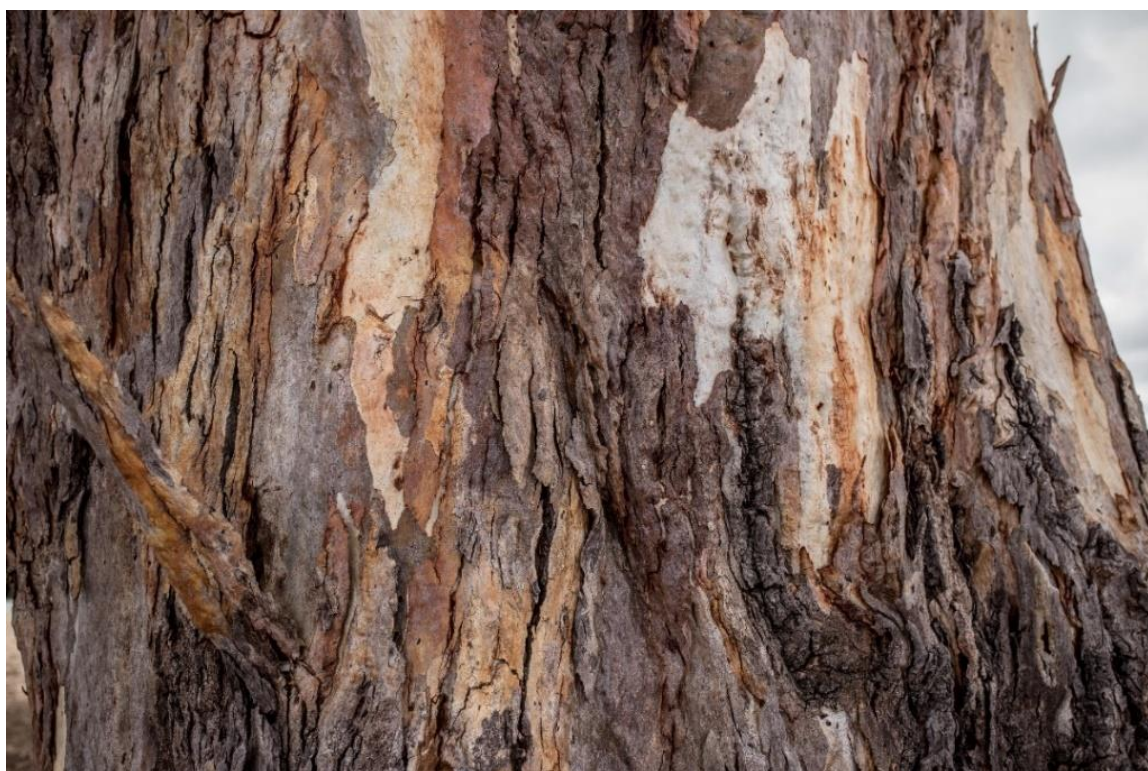
⁵⁶ According to the US Forest Service's [Sustainable Urban Forest Guide](#) (2016), the ideal age distribution of trees is 40% juvenile, 30% semi-mature, 20% mature and 10% senescent.

⁵⁷ The award-winning [Gold Coast Urban Tree Canopy Study](#) (January 2020)

- **Economic impact**, including ecosystem services, property values, commercial/retail uplift etc.
- **Community perspectives and attitudes**, including social cohesion and connectedness, valuing nature etc.

Other considerations in setting targets

- How realistic or ambitious they should be.
- Setting a target that represents a range of benefits, such as % tree canopy, reduction or no net increase in impermeable surface etc.
- Whether a baseline is available.
- The projected effects of threats and trends (e.g. development, natural die-off, climate change).
- The potential for change (e.g. available uncontested land, land that could be reclaimed for greening, and the extent of potential direct and indirect influence of partners).
- How readily and cost-effectively tracking data can be captured, and at what resolution.
- Whether the target is to increase *by* an amount or *to* an amount. This is an important distinction as there are a number of suburbs with canopy <5%, effectively a 20% increase doesn't amount to much. Would it be worth setting a target of 10% canopy for these suburbs?
- Whether targets should vary over different land use types/areas (e.g. residential, commercial, parks, streets) or land tenures (e.g. private vs public).
- Whether the focus is on quantity or quality, or both.



Evidence base snapshot

What we already know

Key facts from recent studies are provided below. A more comprehensive analysis is proposed to be undertaken in the second piece of commissioned work described above.

- Overall canopy cover across metropolitan Adelaide is 23.37%⁵⁸.
- The only available trend lines of tree canopy across metropolitan Adelaide come from nationwide statistical analyses in 2013 and 2016⁵⁹. They show that in that time, tree canopy fell by 1.92% (with 43% of LGAs experiencing a significant loss), while hard paved surfaces increased by 2.57% (with 36% of LGAs experiencing a significant gain)⁶⁰. A new trend line for tree canopy cover will be available following the next LiDAR capture in 2022. That analysis is expected to be complete in mid-2022.
- Most LGAs are dominated by canopy cover over privately owned land. For the four LGAs with the highest levels of canopy cover, tree canopy predominantly covers common green spaces such as parks, reserves and conservation areas⁶¹.
- Adelaide has the lowest percentage of public open space of the capital cities, at about 10%, compared with 57% in Sydney, 40% in Perth, 22% in Hobart and 20% in Melbourne⁶².
- Trees and vegetation can lower local land temperatures by up to 5-6°C on days of extreme heat⁶³.
- 79% of urban LGAs in South Australia were rated as vulnerable on the VHHEDA index in 2017, with Charles Sturt, Gawler, Playford, Port Adelaide Enfield and West Torrens some of the most vulnerable LGAs in the nation to heat, health and low canopy (rated 0.5 out of 5 in the VHHEDA Index – only four other LGAs nationally rated this low)⁶⁴. Green Adelaide's 2021 Greening Prioritisation Pilot Study confirmed that very high priority suburbs for urban greening are typically clustered in the northern and north-western suburbs, and high priority suburbs tend to be located in the western, northern and north-eastern suburbs⁶⁵. Localised high priority areas can be found throughout the metropolitan region, with significant variation within suburbs⁶⁶. This analysis was based on green cover⁶⁷, urban heat and population vulnerability⁶⁸.
- Total impermeability (ground and above-ground) across metropolitan Adelaide is 25.4%. In the denser urban areas (the 2018 LiDAR capture area), impermeability is 44%⁶⁹.

⁵⁸ [Metropolitan Adelaide Tree Canopy Report](#), 2020, Aerometrex

⁵⁹ The 2018/19 LiDAR-derived tree canopy maps cannot be compared with the previous statistical analysis, due to their different methodologies and results. The previous study was undertaken at a national level, and would be difficult to replicate accurately locally. We are therefore awaiting the heat and canopy data recapture in 2022 to have an accurate, up to date trend line.

⁶⁰ [Where Should All the Trees Go?](#), Greener Spaces Better Places, 2017

⁶¹ [Metropolitan Adelaide Tree Canopy Report](#), 2020, Aerometrex

⁶² [Creating Liveable Cities in Australia](#), Centre for Urban Research, RMIT University, 2017. The definition of public open space used in this study was "freely accessible green open spaces catering for a range of active, passive and social recreational and play needs. This included parks, gardens, reserves, and recreational and sporting areas (excluding golf courses, which are not free) ... [and excluded] national parks, state forests and bushland."

⁶³ [Urban trees and people's yards mitigate extreme heat in western Adelaide](#), Ossola et al. Macquarie University, 2020

⁶⁴ [Where Should All the Trees Go?](#), Greener Spaces Better Places, 2017. VHHEDA stands for Vulnerability to Heat, poor Health, Economic Disadvantage and Access to green spaces.

⁶⁵ Metropolitan Adelaide Greening Prioritisation Pilot Study, Green Adelaide, 2021 (not publicly available)

⁶⁶ The analysis resolution was a 50m grid

⁶⁷ The three metrics under green cover were canopy cover, green cover and permeable surfaces

⁶⁸ The two metrics under population vulnerability were vulnerable age groups (elderly and early childhood) and socio-economic disadvantage (based on the SEIFA Index)

⁶⁹ [Permeable and impermeable ground surface classification](#), Aerometrex – this assessment is across five classifications

- The predominance of hard surfaces will present a challenge for urban greening in South Australia. Holdfast Bay, Norwood, Payneham, Prospect and St Peters all feature hard surface proportions in excess of 60%⁷⁰.

There is no consistent tool or approach across metropolitan Adelaide for councils to understand and track urban tree populations (beyond the 2020-produced canopy map). The new, locally developed Forestree tree inventory system (including user-friendly interactive public maps) has been adopted by some metropolitan councils – Burnside, Campbelltown, Holdfast Bay, Marion, Mitcham, Playford, Prospect, Tea Tree Gully, Walkerville and West Torrens. There may be other systems that councils are using to undertake tree inventories. WSUD audits have also been undertaken by some councils, including a comprehensive regional review by [Resilient East](#).

Other relevant metro-wide spatial data is available on:

- Urban heat (captured between 2016 and 2018), on the Urban Heat and Tree Mapping Viewer.
- LiDAR and NDVI derived data on vegetation greenness and building footprints.
- Canopy %, tree height, permeable and impermeable cover % statistics are available by suburb and LGA [here](#).
- Vegetation mapping on Nature Maps SA. This includes local, state and federal parks, IBRA bioregions (the Green Adelaide region features 10 associations across 2 sub-regions), areas of pre-European vegetation, native vegetation patches >50ha, water corridors, dune boundaries, and some roadside vegetation mapping.
- Point locations of fauna observations on Atlas of Living Australia.
- Spatial population statistics (e.g. vulnerable age groups and socioeconomic disadvantage) via the Census. Current data is from 2016. Data from the 2021 census is expected to be released in mid-2022, which will include for the first time data on long term health conditions, including mental health.
- Quarterly median house sales for metropolitan suburbs via Data SA.

Recent locally relevant greening research

- [Heat and canopy maps and reports, available on the urban heat and tree canopy mapping viewer](#) (published by DEW)
- [Options Analysis: Costs and Benefits of Urban Tree Canopy Options for Minor Infill Development in the Planning and Design Code](#) (2020, BDO Econsearch)
- DIT Green Infrastructure Commitment (2021) – including a review of greening governance
- [Creating More Spaces for Trees](#) (2021, Meyer-McLean, B. for Resilient East)
- [Green Infrastructure: Life support for human habitats](#), Ely & Pitman, Botanic Gardens of South Australia, 2014
- [What's Happening to Adelaide's Trees](#) (2020, Conservation Council SA)
- [A Call to Action: Protecting Adelaide's Tree Canopy](#) (2021, Conservation Council SA)
- [Comparison of Australia's Tree Laws](#) (2021, Conservation Council SA)
- [Urban trees and people's yards mitigate extreme heat in western Adelaide](#) (2020, Macquarie University)
- [Which Plant Where program](#) (Macquarie University and University of Western Sydney)
- Approaches to increase acceptance of public trees (currently under development by Resilient East)
- [Let's Scale Up! Urban Greening in the Private Realm: Engaging and Motivating Community](#) (2021, EarthWatch for Living Melbourne)
- Studies undertaken at the council level to better understand tree canopy trends and the economic value of trees within their LGA

⁷⁰ [Where Are All the Trees?](#), Greener Spaces Better Places, 2014

Commissioning new evidence

To support development of the Strategy, Green Adelaide is commissioning a background evidence base which will provide a:

1. **Review of urban greening benefits** – a 2014 paper comprehensively documented the benefits of urban greening. The evidence base will draw on this report along with other recent publications and newly commissioned studies. Outputs will include a list of key messages on the local benefits of greening, preferably credibly financially quantified, for inclusion as an infographic in the Strategy.
2. **Review of the local context, baselines, pressures and trends** – building on this snapshot and a review of recent locally-relevant greening research, the review will comprehensively present what we know about the status of greening in metropolitan Adelaide, about how it has changed, and how it is expected to change. The review is expected to cover some key gaps, which may include an analysis of canopy cover by land use type and land ownership type across metropolitan Adelaide, and an audit of the potential for change.





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