



INQUIRY INTO
URBAN GREEN SPACES

7th Report

of the

NATURAL RESOURCES COMMITTEE

Tabled in the House of Assembly and ordered to be published on Thursday 27 May 2021

Second Session, Fifty-Fourth Parliament

TABLE OF CONTENTS.....	2
PRESIDING MEMBER'S FOREWORD	3
COMMITTEE'S RECOMMENDATIONS	5
TABLE OF FIGURES	7
ABBREVIATIONS.....	7
GLOSSARY.....	8
INTRODUCTION	9
1.1 Membership of the Committee.....	9
1.2 Terms of Reference.....	9
1.3 Ministerial responses to Standing Committee reports	10
1.4 Conduct of the inquiry.....	10
1.4.1 Methodology.....	10
DISCUSSION	11
2.1 Understandings of "urban green spaces" are multifaceted.....	11
2.1.1 Urban green spaces as components of 'green infrastructure'	12
2.1.2 Urban green spaces within the context of the Committee's inquiry	12
2.2 Urban green spaces are framed by legislative, strategic and policy reform.....	13
2.2.1 Natural Resources Management reform in South Australia	13
2.2.2 Planning reform in South Australia.....	14
COMMITTEE'S FINDINGS.....	15
3.1 Terms of Reference 1.....	15
3.1.1 Urban green spaces support communities.....	15
3.1.2 Urban green spaces and heat mitigation	19
3.1.3 Tree canopy as a component of green spaces	22
3.1.4 Strategic planning and design of open space	27
3.1.5 Urban water management and urban green spaces	29
3.1.6 Integrated landscape management: green and blue spaces.....	32
3.1.7 Urban green spaces and biodiversity.....	33
3.1.8 Urban green spaces associated with primary production.....	36
3.1.9 Governance of urban green spaces.....	38
COMMITTEE'S FINDINGS.....	40
4.1 Terms of Reference 2.....	40
4.1.1 Resourcing and funding urban green spaces.....	41
COMMITTEE'S FINDINGS.....	46
5.1 Terms of Reference 3.....	46
APPENDIX A: LIST OF SUBMISSIONS	48
APPENDIX B: LIST OF WITNESSES	49
APPENDIX C: RESPONSES TO QUESTIONS ON NOTICE.....	50

APPENDIX D: TABLED DOCUMENTS	52
APPENDIX E: TREE REMOVAL AND INFRASTRUCTURE PROJECTS	53
APPENDIX F: GREEN ADELAIDE 2020-21 EXPENDITURE	54
BREAKDOWN ACROSS 7 PRIORITY AREAS.....	54

PRESIDING MEMBER'S FOREWORD

On 5 March 2020, and pursuant to section 16(1) (c) of the *Parliamentary Committees Act 1991*, the Natural Resources Committee resolved:

1. To inquire into urban green spaces, and in particular the benefits, opportunities, challenges associated with urban strategic planning, biodiversity, water management, primary production, climate change impact projections;
2. To investigate as to what extent of resources are allocated to urban green spaces in comparison to similar projects being undertaken interstate and internationally, in relation to coastal management, water resources and wetlands, green streets and flourishing parklands, biodiversity sensitive and water sensitive urban design, controlling pest plants and animals, nature education and fauna, flora and ecosystem health in the urban environment; and
3. Any other matter.

The Committee received 40 written submissions and conducted six public hearings between September 2020 to March 2021. During these hearings, the Committee heard from witnesses from the South Australian Government Department for Environment and Water, the SA Chapter of the Australian Institute of Landscape Architects, Resilient East, Urban Development Institute of Australia (SA), AdaptWest, Dr Sheryn Pitman, and members of the Green Adelaide Board.

The Committee's inquiry into urban green spaces occurred within the context of significant reform in landscape management and planning, presenting opportunities and challenges from the perspectives of stakeholders. The Committee received a range of comprehensive and detailed submissions and oral evidence, which together conveyed that "urban green spaces" are highly valued resources in the community and can be broadly interpreted across different stakeholders.

Throughout its inquiry, the Committee examined the benefits, opportunities, and challenges as experienced by stakeholders, relating to urban green spaces. Specifically, the Committee heard that urban green spaces support communities and liveability, have an important role in mitigating urban heat in Adelaide suburbs, support biodiversity outcomes, and are complemented through strategically planned and designed open space. Green spaces and green infrastructure are of vital importance to health, wellbeing, resilience and productivity of urban areas.

The Committee heard that most green spaces in Adelaide are located on private land, such as front and backyards, and gardens. The importance of green space on private land was a clear concern from written and oral evidence, particularly given the observed loss of green space on private land. Throughout the inquiry, the Committee heard that one of the main factors contributing to loss of green space on private land is patterns of development, including individual, "ad hoc" subdivisions within existing suburbs. The Committee heard of the complexities in balancing urban infill requirements, providing housing, housing affordability, and mitigating the risks of increased urban heat for communities.

Overall, submissions and oral evidence to the Committee's inquiry suggested that the issue of supporting urban green spaces for improved liveability involves many sectors and disciplines, and many stakeholders. The Committee considered how some of the opportunities and challenges associated with urban green spaces could be supported through actions undertaken by the State Government. As such, the Committee has proposed 11 recommendations for the consideration of the State Government, that can support greater

coordination and collaboration across sectors, enabling a more integrated approach to supporting urban green spaces within the context of planning and development.

I thank all those who gave their time to assist the Committee with this inquiry. I commend the members of the Committee, Hon David Basham MP, Hon Nicola Centofanti MLC, Dr Susan Close MP, Hon John Darley MLC, Mr Nick McBride MP, Mr Adrian Pederick, Hon Josh Teague MP and Hon Russell Wortley MLC for their contributions to this report. I also thank the Committee's staff Mr Shannon Riggs and Ms Kate Bryson for their assistance throughout.



Ms Paula Luethen MP
Presiding Member
27 May 2021

COMMITTEE'S RECOMMENDATIONS

Based on evidence received throughout its inquiry into urban green spaces, the Natural Resources Committee has made the following recommendations to the State Government:

- Recommendation 1:** Establish a multi-agency work group to identify barriers to accessing urban green spaces in the community. The work group should identify options supporting increased access to urban green spaces, specifically in areas of low socio-economic disadvantage and low coverage of green space. Multi-agency representation should include:
- Department for Environment and Water;
 - Office for Planning;
 - Department for Health and Wellbeing;
 - Department for Infrastructure and Transport;
 - Department for Human Services; and
 - Non-government sector stakeholders
 - Local Government.
- Recommendation 2:** Establish, in consultation with stakeholders, a state-wide strategy for the integrated management of green and blue spaces, including:
- an agreed definition of urban green spaces to enable clearer monitoring of losses and increases in urban green spaces;
 - clearly defined roles and responsibilities for the management of blue and green spaces; and
 - stakeholder communications and engagement to promote clear understanding about the governance arrangements.
- Recommendation 3:** Through collaboration between the Green Adelaide Board and the Department for Planning, find opportunities to prioritise green infrastructure, and its retention and creation within State Government jurisdiction. Furthermore, monitor issues and identify solutions to address the declining amount of space available for planting of trees on newly created, smaller allotments. This is in recognition that privately owned land comprises 80 per cent of the land available for the planting of any new trees.
- Recommendation 4:** Urgently progress the collection and use of data and evidence to underpin the inclusion of urban green space in state and local government planning. Data sources may include:
- thermal heat mapping;
 - tree canopy assessment;
 - soil moisture; hazard mapping (including powerlines);
 - indicators of socio-economic disadvantage;
 - number of people visiting areas where greening is an opportunity;

- vulnerability of people using the space where greening is proposed; and
- equitable access to quality public green space across urban South Australia.

- Recommendation 5:** Undertake a review, with industry stakeholders, of public infrastructure projects and urban greening outcomes, that:
- identifies options for incorporating greening targets into projects that can enable monitoring against agreed performance indicators;
 - reviews current methods of stakeholder engagement as part of public infrastructure projects;
 - identifies options for incorporating stakeholder engagement earlier in the project cycle;
 - reviews the process of approval of tree removal in public infrastructure projects and offsets required; and
 - Make public the process for approval of green infrastructure transparent.
- Recommendation 6:** Conduct a review of the guidelines for the contribution of developable land to open space, in consultation with industry and non-government stakeholders. The review should consider qualities that contribute to quality open space for different stakeholder groups.
- Recommendation 7:** Collaborate with federal, state and local government and other stakeholders to develop a state-wide urban water strategy, and review increase investment funding and infrastructure for access to recycled water by local councils.
- Recommendation 8:** Investigate options to incentivise the maintenance of tree canopy and garden green cover on private land.
- Recommendation 9:** Continue to support local government in accessing grant funding for greening activities including improving and increasing tree planting.
- Recommendation 10:** Developing an overarching plan guiding tree selection across metropolitan Adelaide.
- Recommendation 11:** Review the projects funded to date by the Planning and Development Fund against the Fund's purpose and provide a report to the Natural Resources Committee.

TABLE OF FIGURES

Figure 1 Urban heat mapping for Fulham and Lightsvie suburbs of Adelaide	20
Figure 2 Estimated monetised benefits calculated in 2019 for five WSUD projects in the Resilient East region.....	31
Figure 3 Green Adelaide budget breakdown per priority area for 2020-21 FY.....	40
Figure 4 Local government annual expenditure for parks and gardens.....	41

ABBREVIATIONS

AILA (SA)	Australian Institute of Landscape Architects, South Australian Chapter
BSUD	Biodiversity Sensitive Urban Design
DEW	South Australian Government Department for Environment and Water
GARWS	Glenelg Adelaide Recycled Water Scheme
Landscape SA Act	<i>Landscape South Australia Act 2019 (SA)</i>
LGA	Local Government Association of South Australia
NRM Board	Natural Resources Management Board
PDI Act	<i>Planning, Development, and Infrastructure Act 2016 (SA)</i>
UDIA (SA)	Urban Development Institute of Australia (South Australia) Inc.
WHO	World Health Organisation
WSUD	Water Sensitive Urban Design
SA Water	South Australian Water Corporation
SA	South Australia(n)

GLOSSARY

The following definitions are for the purposes of this report only and are informed by evidence received as part of the Committee's inquiry.

Infill development – a pattern of redevelopment occurring in existing suburbs whereby a house on one allotment of land may be demolished, and in its place, two, three or more new houses are built.¹

Greenfield development – in general, areas in which there may have been previously agricultural land or farmland, or where there were previously no suburbs, and new developments are being created.²

Green infrastructure – the network of green spaces and water systems that delivers multiple environmental, social and economic values and services to urban communities.³

Green open space – areas of public and private land that contain trees, watercourses and other landscape elements that make up resilient ecological systems.⁴

Green public space – vegetated land freely available for the public to access including parks, public gardens, playgrounds, sporting fields, waterways, lakes, wetlands, conservation areas, civic squares and plazas, accessible school grounds, some community gardens and rooftop gardens in the public realm, greenways and many streetscapes.⁵

Public open space – an open piece of land that is undeveloped and is accessible to the public. Open space usually refers to green space: land that is partly or completely covered with grass, trees, shrubs, or other vegetation.⁶

Urban form – can refer to the general pattern of building height and development intensity, and the structural elements that can define a city physically, such as natural features, transportation corridors (including the fix rail/tram transit system), open space, public facilities, as well as activity centres and focal elements.⁷

Urban greening – activities such as planting on green open spaces and streetscapes/street trees.⁸

Urban Green Spaces – areas of vegetated public open space, such as ovals, public parks and gardens, as well as front and backyards/gardens on privately owned land, and street verges and community gardens. Urban green spaces are those within the Greater Adelaide Capital City region.

¹ This definition is informed by oral evidence as part of the Committee's inquiry, from Pat Gerace, UDIA (SA), *Committee Hansard*, p. 30.

² This definition is informed by oral evidence as part of the Committee's inquiry, from Pat Gerace, UDIA SA, *Committee Hansard*, 3 December 2020, p. 30.

³ Definition from *Creating Greener Places for Healthy and Sustainable Communities*, SA Government, 2019, p. 39 (Refer Appendix D: Tabled documents).

⁴ Definition from *Creating Greener Places for Healthy and Sustainable Communities*, SA Government, 2019, p. 39 (Refer Appendix D: Tabled document).

⁵ Definition from *Creating Greener Places for Healthy and Sustainable Communities*, SA Government, 2019, p. 39 (Refer Appendix D: Tabled document).

⁶ Definition from *Creating Greener Places for Healthy and Sustainable Communities*, SA Government, 2019, p. 39.

⁷ Definition from the 30-Year Plan for Greater Adelaide, 2017 Update, last viewed on 12 March 2021 from: https://livingadelaide.sa.gov.au/_data/assets/pdf_file/0003/319809/The_30-Year_Plan_for_Greater_Adelaide.pdf

⁸ This interpretation, for the purposes of the Committee's inquiry, is informed by Submission 37, SA Active Living Coalition, p. 5.

INTRODUCTION

This chapter of the report provides information about the Committee's inquiry, Terms of Reference and an overview of the evidence received in terms of written submissions and oral evidence at public hearings.

1.1 Membership of the Committee

The Natural Resources Committee of the Parliament of South Australia was established pursuant to Section 15J of the *Parliamentary Committees Act 1991*. The membership throughout the inquiry into urban green spaces included:

Ms Paula Luethen MP, Presiding Member from 9 September 2020
 Hon Josh Teague MP, Presiding Member to 8 September 2020
 Hon Nicola Centofanti MLC, from 7 April 2020
 Hon David Basham MP, to 7 September 2020
 Dr Susan Close MP
 Hon John Darley MLC
 Mr Nick McBride MP
 Mr Adrian Pederick MP, from 8 September 2020
 Hon Russell Wortley MLC

Parliamentary Officer to the Committee: Mr Shannon Riggs

Research Officer to the Committee: Ms Kate Bryson – from 3 August 2020
 Dr Monika Stasiak – to 8 June 2020

1.2 Terms of Reference

At its meeting on 5 March 2020, and pursuant to section 16(1) (c) of the *Parliamentary Committees Act 1991*, the Natural Resources Committee resolved:

4. To inquire into urban green spaces, and in particular the benefits, opportunities, challenges associated with urban strategic planning, biodiversity, water management, primary production, climate change impact projections.
5. To investigate as to what extent of resources are allocated to urban green spaces in comparison to similar projects being undertaken interstate and internationally, in relation to coastal management, water resources and wetlands, green streets and flourishing parklands, biodiversity sensitive and water sensitive urban design, controlling pest plants and animals, nature education and fauna, flora and ecosystem health in the urban environment.
6. Any other matter.

1.3 Ministerial responses to Standing Committee reports

Pursuant to section 19 of the Parliamentary Committees Act, if a report contains recommendations, the Minister with responsibility in the area concerned is required to respond within four months and include in the response statements as to: (a) which (if any) recommendations of the Committee will be carried out and in the manner in which they will be carried out; and (b) which (if any) recommendations will not be carried out and the reasons for not carrying them out. The Minister must cause a copy of the response to the Committee's report to be laid before the Committee's appointing House within six sitting days after it is made.

1.4 Conduct of the inquiry

The Natural Resources Committee placed an advertisement inviting submissions in The Advertiser, on Saturday 4 April 2020, with a closing date of 24 July 2020. The Committee received 40 written submissions (refer Appendix A). The Committee held 6 public hearings in Old Parliament House, from September 2020 to March 2021, which were attended by a total of 20 witnesses (refer Appendix B). The Natural Resources Committee published official Hansard reports and tabled documents from public hearings on the Committee's website at: <https://www.parliament.sa.gov.au/en/Committees/Committees-Detail>

1.4.1 Methodology

Evidence to the Committee including written submissions, Hansard reports, tabled documents and responses to questions on notice were analysed according to the Terms of Reference for the Committee's inquiry. Content was mapped underneath each Terms of Reference to identify common and overlapping themes, and stakeholders' recommendations for change. This enabled discussion of both quantitative indicators and qualitative descriptors from the data.

DISCUSSION

This section of the report establishes that “urban green spaces” can be broadly interpreted across different stakeholders and provides a brief outline of the broader reforms in landscape management and planning occurring at the time of the Committee’s inquiry.

2.1 Understandings of “urban green spaces” are multifaceted

Submissions to the Committee’s inquiry interpreted urban green spaces in varied ways. Some submissions interpreted urban green spaces to include public and private land, whereas other submissions interpreted urban green spaces as public land. The Environmental Defenders Office’s submission adopted the definition of urban green spaces as “..any urban land covered by vegetation of any kind, public and private, irrespective of size and function.”⁹ The SA Active Living Coalition’s submission was framed around the following adopted definitions:

- **Public open space** encompasses the variety of spaces within the urban environment that are readily and freely accessible to the wider community for recreation and enjoyment.
- **Green public open space** is a subset of public open space. In public health research there is no universally used definition of green public open space. However, it typically refers to areas that are publicly accessible, have some greenery, and generally support some recreational activity. This usually includes parks, sports fields and nature reserves. Some studies have also included vegetated streetscapes, street trees and public school grounds. Note: private green spaces such as residential gardens and private golf courses are not included in green public open space.¹⁰

A cohort of submissions adopted a broad understanding of urban green spaces to include both public and private green spaces:

“I would like to state at the outset that I consider “urban green spaces” to include both public and private green spaces, and the role that private gardens play in relation to biodiversity, water management and climate change is equally important as that of public spaces.”¹¹

The term “urban green spaces” can be interpreted to focus on Metropolitan Open Space such as parks and sporting grounds, as well as private land and street verges.¹² Some submissions referenced a 2016 review in an Australian context that identified urban green space to include all the vegetated areas occurring in cities, including private and public land.¹³

Further, the World Health Organisation (WHO), has defined urban green space to include “...all urban land covered by vegetation of any kind. Includes vegetation on private and public grounds, can also include small water bodies (blue spaces).¹⁴ This somewhat overlapping nature of public open space and green space was identified in a 2016 literature review on the extent that green spaces contribute to health, wellbeing and biodiversity outcomes.¹⁵

⁹ Submission 09, Environmental Defenders Office, p. 1.

¹⁰ Submission 37, SA Active Living Coalition, p. 5.

¹¹ Submission 39, Faulkner.

¹² Submission 01, Croft and Wharton.

¹³ Kendal, D. Lee, K., Ramalho, C., Bowne, K. and Bush, J. 2016, *The Clean Air and Urban Landscapes Hub, Benefits of Urban Green Space in the Australian Context*, final report, p.5, last viewed 22 January 2021 from: <https://minerva-access.unimelb.edu.au/bitstream/handle/11343/122914/2016-CAUL-Benefits+of+Urban+Green+Space.pdf;jsessionid=AB895A3DB61D57C85C3FC03B34C9B3BC?sequence=1>

¹⁴ WHO, *Urban Green Spaces: a brief for action*, 2017, last viewed 22 January 2021 from: https://www.euro.who.int/_data/assets/pdf_file/0010/342289/Urban-Green-Spaces_EN_WHO_web3.pdf%3Fua=1

¹⁵ Davern, M., Farrar, A., Kendal, D. & Giles-Corti, B. (2017). *Quality Green Public Open Space Supporting Health, Wellbeing and Biodiversity: A Literature review*. Report prepared for the Heart Foundation, SA Health, Department of Environment, Water and Natural Resources, Office for Recreation and Sport, and Local

Findings from this literature review, which was referenced by submissions 37 and 33, included that “green space” and “public open space” were overlapping constructs. A tabled document received as part of the inquiry referred to public open space and green open space as:¹⁶

Public open space *Open space is any piece of land that is undeveloped and is accessible to the public. Open space usually refers to green space i.e. land that is partly or completely covered with grass, trees, shrubs, or other vegetation.*

Green open space *are areas of public and private land that contain trees, watercourses and other landscape elements that make up resilient ecological systems. They include areas we traditionally see as open space such as parks, gardens and sports ovals. Green open spaces may also include other areas of public land such as streets and highways, other infrastructure corridors, water courses, nature conservation reserves, National Parks, community gardens, school grounds and buildings with green walls, facades, veneers and roofs. On private land, green open spaces include residential gardens, golf courses, agricultural lands and planting treatments (greening) on and around private buildings.”*

2.1.1 Urban green spaces as components of ‘green infrastructure’

Submissions to the Committee’s inquiry indicated that ‘green infrastructure’ was another concept generating slightly different meanings from different stakeholders:

“Green infrastructure is a catch-all term for rethinking our urban green spaces at all scales, from our networks of natural systems, parks and open spaces, streets and roads, and infrastructure elements such as pipelines, easements and water supply elements.”

- Submission 6, AILA (SA).

Oral evidence from Dr Sheryn Pitman described green infrastructure in the following terms:

“The most useful definition of green or living infrastructure is a synthesis of the ecosystem services delivered by nature and natural cycles with the linking of green and blue spaces—including wildlife habitats, nature corridors and water networks—with specialised forms of engineering infrastructure, such as green roofs, living walls and water-sensitive urban design. It is really a synthesis of all those things that we are talking about.”¹⁷

Similarly, the City of Adelaide’s submission described “green infrastructure” to include natural systems and elements such as street trees, community gardens, verge gardens, parks and park lands and green walls and roofs.”¹⁸

2.1.2 Urban green spaces within the context of the Committee’s inquiry

Urban green spaces, for the purpose of the Committee’s report, refer to areas of vegetated public open space, including ovals, public parks and gardens, as well as front and backyards/gardens on privately owned land, and street verges and community gardens. “Urban green spaces” are those areas located in the Greater Adelaide Capital City region, and urban green spaces are understood to be a component of “green infrastructure”.

Government Association (SA). University of Melbourne: Victoria. Last viewed: https://www.healthyactivebydesign.com.au/images/uploads/Green_Spaces_Evidence_Review_FINAL_website.pdf

¹⁶ SA Government, *Creating Greener Places for healthy and Sustainable Communities, Ideas for Quality Green Public Space in South Australia*, 2019, p. 7 (refer Appendix D: Tabled documents).

¹⁷ Dr Sheryn Pitman, Programme Manager, Inspiring South Australia, SA Museum, *Committee Hansard*, 4 February 2021, p. 48.

¹⁸ Submission 38, City of Adelaide, p. 4.

2.2 Urban green spaces are framed by legislative, strategic and policy reform

The Committee's inquiry occurred within a context of significant reform to how South Australia's landscapes are managed, as well as consultation for a new set of planning rules for the state. The following section intends to provide a succinct but not exhaustive, overview of the legislative, strategic and policy context framing the Committee's inquiry into urban green spaces.

2.2.1 Natural Resources Management reform in South Australia

From July 2020, the *Natural Resources Management Act 2004* (SA) was replaced by the *Landscape South Australia Act 2019* (Landscape SA Act), in turn providing a new framework for managing land, water, pest animals and biodiversity in South Australia. The previous Natural Resources Management (NRM) Boards were dissolved, and nine new Landscape Boards, including Green Adelaide, were established to manage the Landscape SA Act.

The new Green Adelaide region includes 17 metropolitan local government areas. The overarching aim of the Green Adelaide Board is to "...transform Adelaide into a world leading, sustainable, green and climate resilient city."¹⁹ The Board aims to achieve its work through delivering a range of projects and programs across the following seven identified priorities:

- Coastal management;
- Water resources and wetlands;
- Green streets and flourishing parklands;
- Biodiversity sensitive and water sensitive urban design;
- Controlling pest plants and animals;
- Nature education; and
- Fauna, Flora and ecosystem health in the urban environment.²⁰

¹⁹ Submission 34, Green Adelaide Board, p. 2.

²⁰ Submission 34, Green Adelaide Board, p. 2.

2.2.2 Planning reform in South Australia

First Nations people of South Australia have a long history of integrating society with sustainable food and water resource management, health and well-being and adapting to changing climates and landscapes.

Subsequent settlement also had initial detailed regard to the provision of safe and secure water supplies, and the productive capacity of the landscape when identifying suitable locations for establishing townships. Townships throughout South Australia to this day retain the original spatial layout which includes park lands as a key feature.

Current planning frameworks allocate land for urban, rural, industrial, open space, retail and community uses, as articulated within existing Development Plans and are also incorporated within the new Planning and Design Code (to come into full operation later in 2020)

- Submission 17, Planning Institute of Australia, South Australia, p. 3.

South Australia's overarching framework for planning and development was previously provided by the *Development Act 1993*. At the time of the Committee's inquiry, this legislation was being repealed in stages and replaced with a new planning system under the *Planning, Development and Infrastructure Act 2016* (PDI Act). The new planning system includes a range of planning instruments:

- State Planning Policies
- Regional Plans
- Planning and Design Code
- Environment and Food Production Areas
- Design Standards
- Land management agreements.

The Committee's inquiry occurred during the consultation period for the draft Phase Three (Urban Areas) of the Planning and Design Code. Public consultation for the draft Planning and Design Code closed on 18 December 2020. On 19 March 2021, the Planning and Design Code was officially launched, as well as an Engagement Report incorporating stakeholder feedback and recommended changes.²¹ As such, references to changes to the draft Planning and Design Code in this report refer to a point in time.

²¹ SA Government, Our Planning System, last viewed 19 March 2021 from: <https://plan.sa.gov.au/our-planning-system/south-australias-new-planning-and-development-system-is-now-live/>

COMMITTEE'S FINDINGS

3.1 Terms of Reference 1

Evidence to the Committee's inquiry reflected many issues of importance that intersected and overlapped with urban strategic planning, biodiversity, water management, climate change projections and food production. As such, evidence in response to this component of the Terms of Reference is presented thematically, to clearly represent the range of associated benefits, opportunities, and challenges within that theme.

3.1.1 Urban green spaces support communities

"Heat mapping, irrigating green spaces and greening streets are important public health measures to mitigate heat and support active transport and health equity."

- Submission 37, SA Active Living Coalition, p. 4.

"Urban green spaces have been shown to improve health and well-being through conferring several ecosystems including buffering noise pollution, improving air quality and reducing the urban heat island effect. A further ecosystem service is the proposed ability of biodiverse urban green spaces to improve psychological well-being."

- Submission 26, Parks and Leisure SA NT.

"Green spaces in our urban environment are important for cooling, recreation and mental health, as well as for wildlife."

- Submission 18, Nature Conservation Society of SA.

Submissions referenced research findings that discussed health and wellbeing outcomes from access to, and time spent in, urban green spaces. This included associated benefits to population health and wellbeing from public green spaces (for example parks and reserves) and private green spaces (for example home gardens, vegetable patches). Some submissions indicated that access, as well as quality and design, were important factors that contributed to the benefits associated with urban green spaces.

Submissions reflected the benefits of public open green spaces as important resources for people to undertake physical activity, in turn important for increasing and maintaining physical and mental health and wellbeing.²² Referencing a 2016 review by the World Health Organisation (WHO), the LGA's submission outlined that:

"It is well researched and documented that urban green spaces such as parks, playgrounds and residential greenery can promote mental and physical health and reduce morbidity and mortality in urban residence by providing;

- *psychological relaxation;*
- *stress alleviation;*
- *stimulating social cohesion;*
- *supporting physical activity; and*
- *reducing exposure to air pollutants, noise and excessive heat."*²³

²² Submission 37, SA Active Living Coalition, p. 5.

²³ Submission 20, LGA, p. 5., which in turn referenced the World Health Organisation, *Urban green spaces and health – review of evidence*, (2016), last viewed 3 March 2021 from: https://www.euro.who.int/data/assets/pdf_file/0005/321971/Urban-green-spaces-and-health-review-evidence.pdf

Improved amenity and liveability, and increased opportunities for social connectedness

One of the benefits of urban green spaces in terms of urban strategic planning is improvements to, and enhanced liveability for the community who spend time in these spaces. This is achieved through enhancing liveability through improving amenity and air quality, and the effect of urban green spaces to decrease surrounding noise in the area.²⁴ Submissions suggested that urban green spaces are important amenities for occupants of high density buildings, with limited access to private gardens/green space, and can look out through their building windows to view surrounding public greenery.²⁵

Other submissions referenced the opportunities that urban spaces can provide for improved social connectedness. For example, the Department for Environment's (DEW) submission included findings from a 2016 synthesis review on the benefits of urban green spaces within an Australian context. Findings included that urban green spaces have been found to increase social cohesion, including neighbourhood and community connection and may contribute towards reduced levels of crime.²⁶

Benefits for improving and maintaining psychological health and wellbeing

Submissions described how urban green spaces can contribute to measures of individual and population health and wellbeing. The SA Active Living Coalition's submission quoted a 2015 literature review on the mechanisms through which the level of surrounding greenness in an individual's environment can contribute towards health and wellbeing outcomes.²⁷ This submission, which defined urban green spaces to refer to green public open space and streetscapes/street trees, concluded that:

"In general, greater neighbourhood greenness or access to green space was associated with a reduced risk of stress, propensity to psychiatric morbidity, psychological distress, depressive symptoms, clinical anxiety and depression prevalence, and mood disorder treatment in adults."

Submissions mentioned the *Healthy Parks and Healthy People 2016-2021* partnership in terms of reviewing the evidence base around urban greening and improved health and wellbeing outcomes.²⁸

Urban green spaces can support individual and community resilience

Written and oral evidence expressed that the importance of urban green spaces to human health and wellbeing was demonstrated during the restrictions imposed by the state government in response to the COVID-19 state emergency.²⁹ These social and physical distancing restrictions occurred mainly in March – May 2020 and involved restricted movement for persons outside the home and in the community:

"Common garden areas provide for a sense of community and bring people together. This is backed up through findings showing that people who garden on the verge have a much stronger sense of community than those who don't. This was starkly illustrated recently during the COVID lockdown when people flocked to gardens close to home, such as national and recreation parks, the Waite Arboretum and other such areas to walk and to find community."

- Submission 15, Wells.

²⁴ Submission 34, Green Adelaide Board, p. 3.

²⁵ Submission 37, SA Active Living Coalition, p. 4.

²⁶ Submission 35, DEW, p. 5.

²⁷ Submission 37, SA Active Living Coalition, p. 11.

²⁸ Submission 37, SA Active Living Coalition, p. 11; Submission 34, Green Adelaide Board; Submission 35, DEW, p. 15; Submission 38, City of Adelaide, p. 11.

²⁹ Submissions 21, Woodlands; Submission 26, Parks and Leisure Australia SA NT; Submission 35, DEW, p. 3; Submission 37, SA Active Living Coalition, p. 2; Submission 34, Green Adelaide Board, p. 4; Submission 20, LGA, pp. 6-7; Submission 15, Wells.

Submissions referred to the value of urban green spaces as sources of refuge for people during challenging times, including as a resilience measure during extreme weather events such as heatwaves:

"Our green public open spaces and streets are vitally important public health assets; as well as active living they promote mental health and wellbeing and reduce urban heat due to increasing density and changes to our climate."

- Submission 37, SA Active Living Coalition, p. 2.

"The need for urban greening as a resilience measure is extremely important as climate projections forecast the City will experience 25-30 days of over 35°C Degrees by 2040 and a high population growth (workers, visitors and residents)."

- Submission 38, City of Adelaide, p. 11.

Benefits from time spent in urban green spaces can be limited by access. For example, where people live in proximity to urban green spaces, and the inherent quality of these spaces. Some submissions identified a perceived inequity in access to urban green spaces based on where people lived.³⁰ One submission described that the least equitable distribution of green space of all capital cities was Adelaide, with 20 per cent of land covered by green space in the most affluent suburbs compared to 12 per cent in the least affluent.³¹ At an inquiry hearing, the Committee heard that AdaptWest had overlaid various data sources with measures that indicated areas of socio-economic disadvantage. This research found that areas of significant social disadvantage correlated with areas of low green vegetation and canopy level.³²

The Committee asked witnesses from the Green Adelaide Board if any actions could be undertaken to address the distribution of urban green spaces, such as some lower socio-economic areas having fewer trees and tree canopies. In response, Professor Chris Daniels explained:

*"We need to really be careful about not getting too specific and too directed but rather work with each of the local government areas to support them in what they see as their imperatives. We have been doing this with the groups, with the west, south, north and east groups of councils as well, because there are some areas that cross several. We can have some of these larger iconic programs also that are really going to be able to deliver big change because what happens upstream, for example in the River Torrens, affects councils downstream as well. There is that sort of dynamic going on."*³³

Submissions included suggestions to redress some of the identified challenges with the distribution and access to urban green spaces. These included targeted investment of greening activities in areas considered to be most at need, and greater consideration of public green space located within walking distance to where people lived:

"...there is clear inequity and poor distribution of urban tree canopy, with wealthier areas in general blessed with more cover, and poorer areas more exposed to urban heat island effect through less cover. Green Adelaide is well placed to help address this imbalance through targeted greening in areas of greatest need."

- Submission 12, Conservation Council of SA.

³⁰ Submission 11, AdaptWest; Submission 12, Conservation Council SA.

³¹ Submission 21, Woodlands.

³² Abby Dickson, Director, Corporate Services, City of Port Adelaide Enfield, *Committee Hansard*, AdaptWest, 4 February 2021, p. 41.

³³ Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 62.

"Council areas could be required to have a minimum percentage of open green space and encouraged to have more than this minimum through an incentive scheme. Skewing this incentive scheme so that incentives are greater in lower socio-economic areas, where there is less green space would be a means of balancing equity of access. It simply should not be more readily available for those of us living in wealthier areas than for those living in poorer areas. We need to recognize that green space should be accessible not only by car, but ideally should be within walking distance of home for all of us."

- Submission 15, Wells.

The LGA's submission described the protective benefits that spending time in urban green spaces can provide for people within the context of coping with recent challenging times,³⁴ and included the following suggestion:

"Consider the strategic connection and benefits between urban green spaces and placemaking to reinvigorate and revitalise community spaces as a tool for building economic and community resilience."

- Submission 20, LGA, p. 7.

Green spaces are important for placemaking and provide connection with traditional owners

The opportunities provided by urban green spaces to contribute towards placemaking, featured in oral and written evidence.³⁵ The Committee heard from Professor Chris Daniels about the importance of green spaces to impart a sense of place within a community. A sense of place is important because it supports the development of ownership and care towards the places in which people live:

"To me perhaps the most important thing about green space is its creation within the community of a sense of place -that we are Adelaideans, South Australians and Australians because of the nature of our outdoors. We recognise Adelaide, South Australia and Australia immediately when we hear the sound of a kookaburra or a magpie, for example. A lot of that sense of place also comes from smell, touch, sound –a whole array of different forms of stimuli that tell us who we are and why we are here.

*That sense of place is incredibly important, and nature has played a huge part in creating that sense of place. If we have it, we have ownership of our community, which means we take care of our community. If we don't have it, we have what's called placelessness. We don't actually care. We could be anywhere, so why should you care about it?"*³⁶

³⁴ Submission 20, LGA, p. 7.

³⁵ Submission 20, LGA, p. 7.

³⁶ Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 55.

Professor Chris Daniels further explained to the Committee that one of the important benefits of green spaces is that they connect country with traditional owners, with green space an opportunity to tell the stories of Kaurna people:

“So we look at green space in all of these areas, not just trees and tree canopy, although that is obviously a vital part of the whole process, and we look at that to see what benefits this green space will give the city. There is really a number of important ones. The first one is that it connects directly with traditional owners. We know that we occupy this space now having arrived here as European-based migrants initially and then subsequently from all around the world. We have only been here 200 years. There have been occupiers of this area for at least 40,000 years if not 50,000 years, and the Kaurna people have a lot to tell us about how to engage with the land.

The amazing thing about the Kaurna storytelling and their participation, engagement and feel of sense of place, is that it is something we can all share. So we can be here from five generations, like I am, or we can have just got off the plane last week; we can all share the Kaurna stories, the Kaurna heritage, the Kaurna sense of place.

We have seen where communities have adopted the first owners' connections that there has been a tremendous improvement in the sense of place; the New Zealanders and the Maori culture is a really good example. So using the green space to connect and tell the stories of Kaurna people and their occupation and use of land is incredibly powerful.”³⁷

The Committee heard that embracing Aboriginal connection to country and efforts to strengthen individuals' connection with nature and place were key drivers in the development of Green Adelaide's 5-Year Plan.³⁸

3.1.2 Urban green spaces and heat mitigation

Submissions frequently commented on the cooling ability of urban green spaces, for example reducing the surrounding air temperature,³⁹ and thereby mitigating the urban heat island effect. An area that generates heat and stays warmer than its surrounding areas can be described as a “hot spot” or “urban heat island”. In general, these hot spot areas are characterised by the removal of smaller connected areas of vegetation (front/backyards) and replaced with harder surfaces (driveways, paved yards, roofs).⁴⁰ On warmer days, the surrounding temperatures from hot spots can be up to 3 to 4 degrees Celsius hotter.⁴¹

Hard surfaces and heavy weight materials can generate heat due to such materials absorbing and retaining heat during the day, with the heat then radiated at night. Consequently, people may need to maintain their thermal comfort through increased use of air-conditioning.⁴² The Committee heard from AdaptWest witnesses about “heat mapping”, a process whereby thermal data from suburban areas is collected to identify heat at a point in time. Figure 1 compares an image of the Adelaide suburb of Fulham alongside the suburb of Lightview. Fulham was described as a low-density suburb with wider streets, backyard space and footpaths with plantations, and Lightview described as a suburb with a high-density infill development.⁴³

³⁷ Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 54.

³⁸ Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 56.

³⁹ Submission 37, SA Active Living Coalition, p. 9.

⁴⁰ Submission 37, SA Active Living Coalition, p. 9.

⁴¹ Submission 09, Environmental Defenders Office, p. 1.

⁴² Submission 11, AdaptWest.

⁴³ Abby Dickson, Director, Corporate Services, City of Port Adelaide Enfield, *Committee Hansard*, 4 February 2021, p. 41.

Figure 1 Urban heat mapping for Fulham and Lightsview suburbs of Adelaide

Urban infill



Fulham

Lightsview

Source: Slide from Adapt West's PowerPoint presentation to the Committee, 4 February 2021 (refer Appendix D: Tabled Documents).

Note: Red shading in both images indicates the heat impact on each area.

Heat mitigation opportunities through green spaces, building and design

The Committee heard how data is collected through heat mapping to assist local Councils identify and strategically target areas for planting street trees.⁴⁴ Submissions also suggested opportunities to respond to, and mitigate, the effects of heat generated in urban areas through building and design. For example, two submissions recommended advocacy within the National Construction Code to include greater inclusion of design and construction features that can contribute to addressing the impacts of heatwaves.

Suggested features included material choice, energy efficiency, passive design/orientation, permeable surfaces, deep root zones and green infrastructure.⁴⁵ One submission identified a need for funded stakeholder engagement with both the development industry and individuals living in residential developments. This engagement could assist towards incorporating climate adaptation within design and decision-making for development.⁴⁶

Overall, evidence to the Committee's inquiry broadly focussed on infill development and associated impacts on urban green spaces. Some submissions expressed concerns that if not done well, infill development and higher-density living have the potential to exacerbate the urban heat island effect.⁴⁷ DEW's submission expressed the view that improvement in infill development was a key focus for the State Planning Commission. DEW's submission

⁴⁴ Cate Hart, Executive Director, DEW, 24 September 2020, *Committee Hansard*, p. 5.

⁴⁵ Submission 40, Town of Gawler.

⁴⁶ Submission 11, AdaptWest.

⁴⁷ Submission 37, SA Active Living Coalition, p. 9.

highlighted work by Water Sensitive SA on the different types of development that can support layout incorporating more green space.⁴⁸ The Committee was informed that Water Sensitive SA "...is a capacity building program that provides government, industry and the community with the support they need to deliver greener, more liveable communities sustained by water sensitive urban design."⁴⁹

Green spaces on private land

"An issue on private land is a reduction in private open space available for greening due to increased urban density as population increases."

- Submission 38, City of Adelaide, p. 4.

The Committee heard that most green spaces in Adelaide are located on private land,⁵⁰ for example in front and backyard residential gardens. The importance of green space on private land was a clear concern from written and oral evidence, particularly given the observed loss of green space on private land.⁵¹ One of the main factors contributing to loss of green space on private land is patterns of development, including individual, "ad hoc" subdivisions within existing suburbs.⁵² For example, where one block of land is subdivided into two or three new housing allotments, the new driveways can effectively take over much of the verge, including the trees previously there, as well as trees lost on the block of land.⁵³

Planning and design of infill development and urban green spaces

Evidence to the Committee's inquiry highlighted the complexities of balancing urban infill requirements, providing housing, housing affordability, and mitigating the risks of increased urban heat for communities. For example, there is an ongoing infill target of having 85 per cent of development in the current metropolitan area of Adelaide.⁵⁴ Notwithstanding the type or nature of development, evidence to the Committee's inquiry acknowledged that Adelaide has a population growth rate which must be catered for by providing residential housing.⁵⁵

Submissions described opportunities within material and design choices to mitigate the urban heat island effect, such as a heat reflective road sealing product.⁵⁶ High quality design for infill development can reduce proportions of hard surfaces and thereby reduce additional stormwater run-off. High quality design can also include more passive cooling for infill developments which reduces heat and thereby lessens financial stress for individuals.⁵⁷

Another consideration to this issue is individual design preferences for smaller housing blocks with larger houses on them, and less landscaping. These preferences can be supported through smaller make-ups of households, preferences for lower maintenance yards and for cost reasons.⁵⁸ In addition, one submission suggested that some Strata groups limit the ability to grow green infrastructure, and that there is a need for greater support and guidance for

⁴⁸ Submission 35, DEW, p. 5.

⁴⁹ Submission 33, Resilient East, Appendix 2, p. 26.

⁵⁰ Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 61.

⁵¹ Submission 13, Norwood Residents' Association.

⁵² Submission 01, Croft and Wharton; Submission 09, Environmental Defenders Office, p. 2; Submission 25, City of Port Adelaide Enfield, p. 2.

⁵³ Submission 01, Croft and Wharton.

⁵⁴ Pat Gerace, UDIA SA, *Committee Hansard*, 3 December 2021, p. 31.

⁵⁵ Pat Gerace, UDIA SA, *Committee Hansard*, 3 December 2021, p. 30.

⁵⁶ Submission 11, AdaptWest.

⁵⁷ Submission 25, City of Port Adelaide Enfield, p. 4.

⁵⁸ Pat Gerace, UDIA SA, *Committee Hansard*, 3 December 2020, p. 30.

higher density communities to implement urban greening.⁵⁹ The Committee heard that balancing individual design preferences, urban green spaces and heat mitigation is complex:

“Densification and urban infill, while providing some benefits and opportunities for active living, if not done well can exacerbate urban heat, and reduce access to private and public green space with resultant public health impacts.”

- Submission 37, SA Active Living Coalition, p. 4.

“We can’t just all say, ‘Let’s not do infill. Let’s not have development at all on the fringe. Let’s not have high buildings in suburbs because they are not attractive.’ If we don’t do anything then we are not going to cater for growth. I think it is important to keep that in mind when we look at the kinds of policy levers that we have and don’t have.”

- Pat Gerace, CEO, UDIA SA, *Committee Hansard*, 3 December 2020, p. 30.

The Committee asked witnesses from the Green Adelaide Board about the draft Planning and Design Code, and the implications from subdivision on the amount of green space on private land. In response, Professor Chris Daniels explained that the Green Adelaide Board had been actively involved in responding to the draft Code and intended to continue an ongoing dialogue with relevant stakeholders to work through further issues to deliver better outcomes.⁶⁰

3.1.3 Tree canopy as a component of green spaces

“The most important component of high quality green space is trees.”

- Submission 21, Woodlands.

“Increasing canopy cover and green cover is a proven strategy to cool our microclimates significantly. Our greenest suburbs are the coolest places on hot days, particularly in the absence of a sea breeze.”

- Submission 33, Resilient East, pp. 5-6.

Written and oral evidence reiterated the importance of different types of green space, beyond the issue of planting more street trees,⁶¹ as well as the importance of developing healthy tree canopies. Some submissions referred to existing collaborative work that has described the gradual loss of trees in Adelaide over a certain period, including the report, *What’s Happening to Adelaide’s Trees? (June 2020)*.⁶² This report by professional, community and non-profit organisations highlighted consistent reductions in tree numbers across Adelaide suburbs over time and called for action to stop the loss of mature trees across suburbs.⁶³

The state’s planning framework includes a target to increase Adelaide’s urban tree canopy cover or green cover by 20 per cent, by 2045. This target is based on a statistical method of measuring trees, and each Council had a baseline from which to grow 20 per cent tree canopy in proportion to its baseline.⁶⁴

⁵⁹ Submission 38, City of Adelaide, p. 15.

⁶⁰ Professor Chris Daniels, Presiding Member Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 58.

⁶¹ Professor Chris Daniels, Presiding Member Green Adelaide Board, *Committee Hansard*, 4 March, 2021, p. 57.

⁶² Submission 31, National Trust of South Australia; Submission 13, Norwood Residents’ Association; Submission 33, Resilient East, p. 6.

⁶³ Conservation Council SA, *What’s Happening to Adelaide’s Trees?*, June 2020, last viewed 10 March 2021 from: <https://www.conservation.sa.org.au/trees2020>

⁶⁴ Bec Taylor, Coordinator Resilient East, *Committee Hansard*, Resilient East, 12 November 2020, p. 17.

Submissions acknowledged present and future concerns towards the declining tree canopy in Adelaide.⁶⁵

“South Australia must take urgent measures to address this matter. If we are to achieve the State’s target for urban green cover to be increased by 20% by 2045 preserving trees on public land will not be enough, there must be strong policies and procedures in the planning system to protect trees on private land.”

- Submission 31, National Trust of South Australia.

Data collection informing strategic planning for urban green spaces

In terms of responding to the challenges of reduced green space and achieving Adelaide’s urban tree canopy, submissions highlighted the importance of accessing the best information and data to coordinate and monitor actions to improve urban green spaces.⁶⁶ The Committee was informed that Councils have conducted data analysis to inform their own approaches and strategies for increasing tree canopy cover in their areas:

“For Gawler to increase its canopy cover from below 10% to above 12% (a 20% increase by 2045) a significant increase in planting and maintaining trees will be required on public land. It will also require collaboration with the community to protect and enhance canopy cover on private land. Should Council seek to increase its canopy cover to a target of 30%, then transformational change will be required for human settlements to co-exist with vegetation in our council area.”

- Submission 40, Town of Gawler.

The Committee heard about the Light Detection and Ranging (LIDAR) analysis of the Adelaide area, which involves using radar technology to capture different points of data to generate a tree canopy analysis. This data captured every tree greater than three metres in height on private and public land.⁶⁷ The Committee heard that 18 metropolitan Councils have partnered with SA government departments to undertake this form of data collection. Moving forward, it is intended that this LIDAR capture will be used as a baseline from which to repeat the data collection, enabling comparison and reporting of progress towards the 2045 target of a 20 per cent increase in green cover.⁶⁸ The Committee also heard of an opportunity for the development of a coordinated data resource to inform evidence-based decision-making and monitor progress:

“Therefore, if the state government took a leadership role in building a centralised and systematic spatial data resource including thermal heat mapping, canopy assessment, soil moisture, hazard mapping, as well as correlating this with important other socio-economic and cultural issues such as community health and wellbeing, this would assist in the prioritisation of areas to purchase blocks of land to convert to green space. It would enable better planning for everyone on our mutual goals and, importantly, a single point to track collective progress and areas for improvement.”

- Eleanor Walters, Manager, Urban Planning and Sustainability, City of Norwood, Payneham and St Peters, *Committee Hansard*, Resilient East, 12 November 2020, p. 22.

The City of Adelaide’s submission indicated that data collection in the form of tree canopy and heat mapping contributed to addressing a more equitable distribution of street trees, as well as assisting the Council’s street tree planting program.⁶⁹ Resilient East’s submission identified a need for a targeted capacity building initiative or decision-support tools to inform evidence-based approaches for urban greening.⁷⁰

⁶⁵ Submission 01, Croft and Wharton; Submission 09, Environmental Defenders Office, p. 2.

⁶⁶ Submission 33, Resilient East, p. 9.

⁶⁷ Bec Taylor, Coordinator, Resilient East, *Committee Hansard*, 12 November 2020, pp. 17-18.

⁶⁸ Bec Taylor, Coordinator, Resilient East, *Committee Hansard*, 12 November 2020, pp. 17-18.

⁶⁹ Submission 38, City of Adelaide, p. 5.

⁷⁰ Submission 33, Resilient East, p. 18.

Challenges associated with planting more trees

The Committee was informed that the majority of tree canopy and green space loss is on private land (namely in front and backyards, gardens) compared to loss on public land. While the Committee heard of an existing grant program assisting local government to improve and increase their street tree planting;⁷¹ the Committee also heard why solely focusing on planting more street trees is not straight forward, and potentially unfeasible. Challenges from stakeholders' perspectives included:

- Reduced space suitable for planting trees, and limited ability for new plantings to grow and thrive, due to competition from underground services and infrastructure (each service authority having legislative and specific installation requirements that need to be met, and a perceived lack of coordination around this);⁷²
- Perception that there is not enough effort to make use of clever design solutions to work around and retain trees on roadsides and for road upgrades;⁷³
- The selection of trees on urban streets lack species diversity, and are often chosen for aesthetic and manageability reasons;⁷⁴
- Concern that the long-term benefits of trees and tree canopy are not able to be easily measured in financial terms, which can lead to viewing trees as operational expense rather than appreciating assets;⁷⁵
- Views that existing fees for removing a significant or regulated tree on private land inadequately reflect the value of what trees provided before removal,⁷⁶
- Newly planted trees provide less habitat opportunity and shade, and are vulnerable to damage by vehicles and development which increases costs for tree maintenance and replacement;⁷⁷
- Planting trees in the context of potential damage caused to adjacent properties;⁷⁸
- Limits as to how many trees can be planted in verges, particularly in suburbs with considerable density, where there is no new land being created;⁷⁹ and
- Limited opportunities for public comment on public infrastructure projects which impact trees (refer Appendix E).⁸⁰

Opportunities to support urban greening activities through strategy, policy and collaboration

The Committee asked witnesses from Resilient East what else, at a practical level, would need to happen between Councils and the state government when road upgrades or developments are taking place, especially where impacts on significant and regulated trees are anticipated. In response, the Committee heard of the benefits of earlier stakeholder engagement as part of the project implementation. This could allow consideration of alternate design solutions, rather than consultation at the end of the project, by which time it is often too late to incorporate significant changes affecting the outcome.⁸¹

⁷¹ Cate Hart, Executive Director, DEW, *Committee Hansard*, 24 September 2020, p. 2.

⁷² Submission 06, AILA (SA).

⁷³ Submission 40, Town of Gawler.

⁷⁴ Submission 19, Kelly, p. 4.

⁷⁵ Submission 15, Wells; Submission 32, Campbelltown City Council.

⁷⁶ Submission 04, Jen St Jack, Regional Climate Partnerships.

⁷⁷ Bec Taylor, Coordinator Resilient East, *Committee Hansard*, 12 November 2020, p. 17.

⁷⁸ Submission 25, City of Port Adelaide Enfield, p. 4.

⁷⁹ Pat Gerace, CEO, UDIA (SA), *Committee Hansard*, 3 December 2020, p. 32.

⁸⁰ Submission 28, Preston, p. 2; Submission 09, Environmental Defenders Office, p. 3; Submission 40, Town of Gawler; Submission 36, Poetzi.

⁸¹ Ben Clark, Group Manager, Assets and Infrastructure, Town of Walkerville, Resilient East, *Committee Hansard*, 12 November 2020, p. 26.

The Committee heard a need to include targets for green space/trees in infrastructure projects going ahead, for example, a target for minimum tree canopy retention and increase.⁸² Landscape architects involved in project design and delivery have difficulty ensuring stronger greening targets or retention of existing natural systems in projects.⁸³ The Committee enquired about the practice of setting greening targets with Daniel Bennett, who in turn advised:

*"...we think there is a massive opportunity in all existing announced projects and that is just putting some green targets on them. That is not very difficult. It can be done immediately. It shouldn't add any cost to those projects because most of them do include some of it, but we can celebrate the fact that we are doing it."*⁸⁴

Submissions referred to incentives for retaining vegetation, green cover and trees on private land, namely provisions within the draft Planning and Design Code for tree plantings as part of new urban development.⁸⁵

"The Planning and Design Code should better reflect the state planning policy of good design to achieve quality urban green space and recognise the fundamental role these play in preserving and enhancing the valued qualities of local communities. Our group certainly supports the new deemed-to-satisfy policies compared to the current residential code, particularly with the focus on trees and soft landscaping and on-site stormwater management."

The urban tree overlay, which you may have heard some discussion about, seeks the planting of at least one tree for each new dwelling and will assist in increasing metropolitan green canopy cover. However, even with this policy in place, it's unlikely to go far enough to meet the 30-year plan, green cover targets. For example, under the proposed policy, a 450-square metre block would require one medium tree, which, even at its mature age, would only achieve a four to eight-metre canopy spread, which would produce between 3 to 11 per cent of canopy cover over that block. This minimum approach will not have sufficient collective cover to build resilience to climate change that we are facing."

- Eleanor Walters, Manager, Resilient East, *Committee Hansard*, 12 November 2020, p. 21.

The Environmental Defenders Office's submission suggested consideration for higher penalties for unapproved tree damaging activity.⁸⁶ A cohort of submissions suggested a review of existing protections for significant and regulated trees,⁸⁷ including consideration of a broader definition of a significant tree.⁸⁸ The Committee also heard of the need for further engagement with local government so that if policy was to direct planting of new trees, then appropriate support would be provided by guidelines for tree planting and maintenance.⁸⁹ The Committee also heard considerations of potential bushfire risk when it came to measures aimed at increasing tree planting/vegetation.⁹⁰

A cohort of submissions commented on the perceived lack of private greening incentives in the draft Planning and Design Code. Conservation SA's submission suggested that Councils could place a caveat or other property title encumbrance over properties up for sale, where

⁸² Submission 06, AILA (SA).

⁸³ Submission 06, AILA (SA).

⁸⁴ Daniel Bennett, Registered Landscape Architect and Fellow, AILA (SA), *Committee Hansard*, 15 October, pp. 11-12.

⁸⁵ Cate Hart, Executive Director, DEW, *Committee Hansard*, 23 September 2020, p. 3; Submission 33, Resilient East, p. 23; Submission 32, Campbelltown City Council.

⁸⁶ Submission 09, Environmental Defenders Office, p. 5.

⁸⁷ Submission 07, McLeay; Submission 31, National Trust of South Australia; Submission 32, Campbelltown City Council.

⁸⁸ Submission 09, Environmental Defenders Office, p. 3.

⁸⁹ Submission 09, Environmental Defenders Office, p. 5.

⁹⁰ Ben Seamark, City Arborist, City of Tea Tree Gully, *Committee Hansard*, Resilient East, 12 November 2020, p. 24

vegetation or significant trees occur, so that prospective owners can understand the responsibilities for caring for this green space.⁹¹ Another submission recommended incentives for individuals to retain vegetation on their land, rather than pursuing wholesale clearance of a block of land.⁹² One submission suggested that the draft Planning and Design Code include specific recognition of existing tree canopy as an intergenerational asset.⁹³

Two submissions to the Committee's inquiry suggested a recalculation of land tax to incentivise retaining trees and green cover on private land.⁹⁴ Essentially this proposal included a percentage discount on land tax payable, based on the area of the property dedicated towards trees and green cover like gardens, not lawns.⁹⁵ Another submission suggested incentives for private land owners to retain mature native trees on their land, and this could be in the form of rate reductions.⁹⁶

Opportunities to support urban greening activities through public education and awareness

Submissions suggested that protections for trees through legislation and policy could be better complemented by efforts at the individual and community level. The Committee also heard varied opportunities to develop understandings of trees as intergenerational, appreciating assets. Submissions acknowledged the strength of previous public educational campaigns including *Trees R Cool*, which was developed by DEW with financial support from different local government areas.⁹⁷ The Committee was informed of opportunities to encourage retention of trees in private backyards through targeted messaging, as well as a recommendation to invest in a "Living with Trees" information campaign.⁹⁸

The Committee heard about a general increase in the amount of complaints around trees, including for maintenance reasons.⁹⁹ In response to some of these issues, the Committee heard about the development of a volunteer action group that can assist in efforts to keep streets clean and safe for local Council residents.¹⁰⁰ In terms of initiatives to improve tree canopy cover, one submission recommended greater investment in community education, as well as more support assisting communities to preserve vegetation, through assistance with maintenance.¹⁰¹

Campbelltown City Council's submission explained that consultation on its new Strategic Plan highlighted the top thing valued by the community was access to natural areas, green space and trees, emphasising a preference for planting and retaining more trees.¹⁰² This submission also described instances of community resistance towards having a tree located next to a residential property, informed by perceptions around safety, risk and mess.

⁹¹ Submission 12, Conservation Council SA.

⁹² Submission 21, Woodlands.

⁹³ Submission 09, Environmental Defenders Office, p. 5.

⁹⁴ Submission 19, Kelly, pp. 4-5; Submission 40, Town of Gawler.

⁹⁵ Submission 19, Kelly, pp. 4-5.

⁹⁶ Submission 23, Environmental Task Group, p. 2.

⁹⁷ Submission 32, Campbelltown City Council, July 2020.

⁹⁸ Submission 21, Woodlands.

⁹⁹ Sam Higgins, Manager, Open Space, Recreation and Property, City of Charles Sturt, AdaptWest, *Committee Hansard*, 4 February 2021, p. 44.

¹⁰⁰ Sam Higgins, Manager, Open Space, Recreation and Property, City of Charles Sturt, AdaptWest, *Committee Hansard*, 4 February 2021, p. 44.

¹⁰¹ Submission 09, Environmental Defenders Office, p. 5.

¹⁰² Submission 32, Campbelltown City Council.

3.1.4 Strategic planning and design of open space

Public open space is defined as an open piece of land that is undeveloped and accessible to the public, and usually refers to green space (land that is partly or completely covered with grass, trees, shrubs, or other vegetation).¹⁰³ Submissions and oral evidence suggested challenges and opportunities within the provision of open space, and how these are important to supporting quality green urban spaces such as parks, ovals, and public gardens, as well as open space as part of masterplanned developments.

Definitions and indicators for quality open space

Written and oral evidence to the Committee's inquiry reinforced the notion that how much open space is appropriate for a particular area is a complex issue, and timely for review. The Committee heard from a Resilient East witness that:

"For several decades, the planning legislation has required that where land is being subdivided, either a 12 ½ per cent land contribution is required to be vested with the council, or a payment of \$7,761 into the open space contribution scheme for every new allotment created. A broader review is now due as to whether the 12 ½ per cent and the monetary contributions are still the most relevant standards, given the rate of infill in inner city areas and the significant reduction in the average allotment size and decline of the suburban backyard. A review should also examine which areas are underprovided with open space."

- Eleanor Walters, Resilient East, *Committee Hansard*, 12 November 2020, p. 20.

The Committee asked Resilient East witnesses about what exactly constitutes "open space". In response, the Committee heard of a need for clarity around the definition of open space, to support the provision of quality spaces for communities to use.¹⁰⁴ In brownfield or greenfield developments, areas set aside for open space sometimes service uses other than public open space, such as stormwater and flood mitigation requirements.¹⁰⁵ As a result, these spaces cannot be used all the time by the community for recreation. For example, an area that contributes to the 12 ½ per cent but is also used as a detention basin is wet and unusable for the public during winter.¹⁰⁶

Seven out of 40 submissions directly referenced the 12 ½ per cent open space contribution,¹⁰⁷ and within this cohort, most supported a review of the approach to open space contributions. The Urban Development Institute of Australia's (SA division) submission described the current situation in terms of a "blanket" approach to providing open space, rather than an approach considering strategic, regional and local factors.¹⁰⁸ This submission provided the example whereby the 12 ½ per cent open space provision applies to some infill developments in metropolitan Adelaide that are nearby existing open space. For example, developments close to the Adelaide parklands or large suburban parks. On this basis, the additional provision of open space in the development may be unnecessary.¹⁰⁹

This submission also included an example whereby in some northern Adelaide locations, a lower provision of public open space has been sought, based on the ongoing maintenance

¹⁰³ SA Government, *Creating Greener Places for Healthy and Sustainable Communities*, 2019, p. 39, refer Appendix D: Tabled documents.

¹⁰⁴ Eleanor Walters, Manager, Urban Planning and Sustainability, City of Norwood, Payneham and St Peters, *Committee Hansard*, Resilient East, 12 November 2020, p. 23.

¹⁰⁵ Submission 25, City of Port Adelaide Enfield, p. 2.

¹⁰⁶ Daniel Bennett, Registered Landscape Architect and Fellow, AILA (SA), *Committee Hansard*, 15 October 2020, p. 12.

¹⁰⁷ Submission 17, Planning Institute of Australia, South Australia, p. 3.

¹⁰⁸ Submission 16, UDIA (SA), p. 2.

¹⁰⁹ Submission 16, UDIA (SA), p. 2.

costs once the land is transferred to the Council.¹¹⁰ Another submission described that the initial cost of urban greening in a master-planned development is usually borne by developers, and responsibility for the refurbishment and maintenance of the public realm sits largely with local government.¹¹¹ The Committee also heard support for reviewing the amount of open space to be contributed by developers, on the basis that the amount was set in place decades ago, at a time when there was, generally, more private green space:

"I think the other key thing that both local government and state government really need to look at is the provision of open space when we have the greenfield and brownfield developments. The 12.5 per cent provision was set in place decades ago. It was set in place when households on average were about 560 square metres; they had a good backyard, you could have your trees planted in there, they had space for people to kick the ball around, etc. So it is really probably time to think about and look at that as well."

- Abby Dickson, Director, Corporate Services, City of Port Adelaide Enfield, AdaptWest, *Committee Hansard*, 4 February 2021, p. 42.

The Committee heard opportunities and challenges regarding strategic planning of public open space. One challenge was the differences in how Councils manage the open space contributions with developments in their areas. The Committee heard an example involving an effective negotiation between a developer and Council representative regarding the open space contribution to be provided in the development. At a Committee hearing, Pat Gerace, CEO, UDIA (SA), commented on the complexity of this issue, particularly in greenfield developments, and some of the observed practical challenges experienced from the development industry:

"When we have called for a review of that 12 ½ per cent we have asked for flexibility in that because of what we have seen happening on the ground. It's not as simple as councils just taking 12 ½ per cent and that's what it is. What we are seeing is this negotiation where a developer may even be put under some pressure to say, 'We will only vest these roads with a council unless you come to this type of agreement.'"

*It takes time and it is messy, but the question is, does it get to what this committee was charged with looking at, the best outcomes for open space? What is the size? What is the location? What is the quality? These, unfortunately, become secondary to, 'Don't just give us the full amount. Give us less and we would like some money.'*¹¹²

The Committee heard that sometimes, the idea/plan of the type of open space envisaged by a developer is discouraged, in anticipation of the ongoing maintenance costs to the Council.¹¹³ Evidence from Pat Gerace further expressed a need for clarity around each Council's strategic planning towards the open space in their particular areas:

*"...when a developer is talking to a council, the council should be able to articulate, 'This is what our plan is for open space.' You should be able to have a discussion with that type of framework, not just have a conversation about that particular development in isolation. I would absolutely agree that councils should have that type of plan."*¹¹⁴

The Committee heard from Resilient East witnesses about the experiences of many inner urban areas that have infill development but are areas that have been underprovided with open space. The Committee heard a need for a clearer strategy about how further open space

¹¹⁰ Submission 16, UDIA (SA), p. 2.

¹¹¹ Submission 37, SA Active Living Coalition, p. 14.

¹¹² Pat Gerace, CEO, UDIA (SA), *Committee Hansard*, 3 December 2020, p. 32.

¹¹³ Pat Gerace, CEO UDIA (SA), *Committee Hansard*, 3 December 2020, p. 32.

¹¹⁴ Pat Gerace, CEO, UDIA (SA), *Committee Hansard*, 3 December 2020, p. 34.

will be funded and acquired in inner urban areas that have infill development, and an opportunity to review the open space provision:¹¹⁵

“A key opportunity, therefore, is the need for a review of how the open space provision is funded through the planning system, with an opportunity to develop a regional land acquisition strategy, which could form part of these regional plans that I spoke about earlier.”

- Eleanor Walters, Manager, Urban Planning and Sustainability, City of Norwood, Payneham and St Peters, Resilient East, *Committee Hansard*, 12 November 2020, p. 20.

3.1.5 Urban water management and urban green spaces

The Committee heard that one of the key challenges regarding water management and urban green spaces was stormwater management. Some submissions discussed the challenge of urban stormwater systems generally being designed decades ago, for a comparatively lower residential density.¹¹⁶ On this basis, it is difficult for current stormwater systems to accommodate the increased flows from areas experiencing higher residential density and an increase in hard surfaces.

These combined factors can prevent water from soaking into the ground, thereby contributing to increased run off into existing stormwater systems and creating associated downstream system impacts.¹¹⁷ However, discussion about this issue went beyond simply the topic of urban infill, which to some extent can be managed through the SA planning system. For example, a Council has no control over the design preferences of individuals, for example if a person seeks to pave their front yard.¹¹⁸

In response to the issue of existing stormwater catchments having reduced capacity is the option of using additional land for managing stormwater and mitigating flood risks. The Committee was informed that using existing open space for stormwater management requires careful design and is not considered optimal, especially if there is already low amounts of open space in an area.¹¹⁹ The LGA's submission suggested further resourcing for improved stormwater management in this regard, supported by improvements to the overall governance, funding and legislative arrangements contributing to improved stormwater management.¹²⁰

Benefits and opportunities through alternative water resources

Submissions commented on the benefits of using alternative water resources to support urban green spaces:

“Alternative water resources enable fit-for-purpose, locally sourced supplies to be consumed by the nearest available user. This reduces the cost of infrastructure to transfer water long distances and helps users to develop an appreciation of the importance for reusing water supplies and protecting marine environments. As an example, rainwater tanks directly connected to roof catchments retain stormwater flows, this in turn minimises catchment flooding and can provide a very clean source of water for the user which is free and plentiful in times of rainfall. Rainwater tanks can support urban gardens and green spaces are especially important during drier periods.”

- Submission 38, City of Adelaide, p. 9.

¹¹⁵ Eleanor Walters, Manager, Urban Planning and Sustainability, City of Norwood, Payneham and St Peters, *Committee Hansard*, Resilient East, 12 November p. 20.

¹¹⁶ Submission 04, Jen St Jack, Regional Climate Partnerships, p. 2.

¹¹⁷ Submission 33, Resilient East, p. 10; Submission 11, AdaptWest.

¹¹⁸ Submission 30, Patterson, p. 1.

¹¹⁹ Submission 25, City of Port Adelaide Enfield, p. 4.

¹²⁰ Submission 20, LGA, p. 6.

Two submissions referenced a SA case study that trialled use of alternative water resources to irrigate open space and green infrastructure, to observe effects on surrounding temperatures and impacts for airport operations.¹²¹ Hotter air temperature is acknowledged as a factor restricting airport operations, for example the amount of weight a plane can carry.¹²² This three-year trial, run as a partnership between SA Water and Adelaide airport, demonstrated that irrigating a crop of Lucerne contributed to reductions in the surrounding air temperature by over 3 degrees Celsius on warmer days.¹²³

The Committee heard the need for sustainable and cost-effective irrigation of urban green spaces. The Committee was informed that ongoing urban greening requires watering resources beyond traditional water resources, and recycled water was described as one option of an alternative water source. One submission indicated that community perceptions about recycled water was one of the key challenges to investing in alternative water sources, and recommended implementation of more community education programs in this regard.¹²⁴

Water Sensitive Urban Design and urban green spaces

The Committee heard that incorporating Water Sensitive Urban Design (WSUD) principles was important to mitigate some of the challenges associated with increasing proportions of harder surfaces and experiences of extreme weather events. A cohort of submissions commented on the need to take up opportunities for implementing WSUD into urban green spaces, including use of tree wells, raingardens and wetlands. Campbelltown City Council's submission described the key principles of a Water Sensitive approach as follows:

- *"Re-integrate water back into urban landscape – create a microclimate*
- *Re-use of water at source (or close as possible)*
- *Protect receiving water quality (streams and marine)*
- *Fit for purpose water use."*¹²⁵

The City of Adelaide practices WSUD through use of rainwater tanks, swales, bioretention basins, raingardens, tree inlets, and wetlands, and use of the Glenelg Adelaide Recycled Water Scheme (GARWS) network.¹²⁶ The City of Adelaide also provided an example of WSUD use in Gray Street, in the Adelaide Central Business District (CBD). Gray Street was described as an urban hot spot with little greening, and new apartment buildings and high-density residential housing. To mitigate the effects of the hot spot, the City of Adelaide put in seven street trees with stormwater inlets, two bioretention raingardens, three garden beds and two vertical green screens for cooling and shading.¹²⁷

Submissions included examples of WSUD implementation and learnings actively shared.¹²⁸ The Committee was informed of design opportunities within, infill developments, especially those that can reduce the proportion of impervious surfaces and thereby reduce the amount of additional storm-water runoff.¹²⁹

¹²¹ Submission 24, Water Services Association of Australia, p. 39.

¹²² Submission 24, Water Services Association of Australia, p. 39.

¹²³ Submission 35, DEW, p. 12

¹²⁴ Submission 38, City of Adelaide, p. 17.

¹²⁵ Submission 32, Campbelltown City Council.

¹²⁶ Submission 38, City of Adelaide, p. 9.

¹²⁷ Submission 38, City of Adelaide, p. 5.

¹²⁸ Submission 04, Jen St Jack, Regional Climate Partnerships, p. 2.

¹²⁹ Submission 25, City of Port Adelaide Enfield, p. 4.

Resilient East, which partners with Water Sensitive SA, identified that WSUD investment within the Resilient East region contributed the following benefits:

- *“Greater infiltration of water onto ground and soil for trees and vegetation to be healthier, greener and cooler,*
- *Creating new areas of cooler and climate resilient places,*
- *Utilising opportunities for managed aquifer recharge systems which can then provide water for irrigation of parks and gardens,*
- *Reduced runoff and slower rates of runoff into stormwater systems thereby reducing flood risk,*
- *Reduced pollution loads, such as oils, chemicals and organic pollutants, and*
- *Improved habitat for urban biodiversity.”¹³⁰*

Some submissions referenced the monetised benefits of WSUD and how these benefits can be quantified to support arguments for further investment. Resilient East’s submission included a table comparing the monetised benefits (estimated) of various WSUD projects, which also included the Gray St project referenced in the City of Adelaide’s submission (refer Figure 2).

Figure 2 Estimated monetised benefits calculated in 2019 for five WSUD projects in the Resilient East region

WSUD System	WSUD Monetised benefit calculation (value over 30 years)
Gray Street (7 trees + 2 rain gardens, City of Adelaide)	\$98,283
Bell Yett Reserve car park and swale (City of Burnside)	\$57,949
Felixstow Wetlands (City of Norwood, Payneham & St Peters, ERA Water)	\$5,269,736
Florence Street (3 Rain gardens + 3 bioretention filters, City of Unley)	\$64,100
Way Avenue (water inlet wells for 31 trees, City of Unley)	\$300,520

Source: Submission 33, Resilient East, p. 13.

Submissions re-iterated that ongoing maintenance and watering of urban green spaces is a key challenge in an environment of limited resourcing and climate change projections. The Committee was informed of “smart irrigation” projects using technology and weather predictions, to support cooler and greener public space at a lower cost. This concept was outlined in Regional Climate Partnerships’ submission, which explained their intention to continue partnering with SA Water to trial and scale up projects considered contenders for “smart irrigation”.¹³¹

¹³⁰ Submission 33, Resilient East, p. 11.

¹³¹ Submission 04, Jen St Jack, Regional Climate Partnerships, pp. 1-2.

3.1.6 Integrated landscape management: green and blue spaces

"South Australia's green open space is complemented by our blue open space and it too needs to be valued, protected, monitored, and restored."

- Submission 3, McMahon, Estuary Care Foundation.

The Committee heard a need for a more coordinated approach for "blue" infrastructure as well as green infrastructure. As described by DEW's submission, "blue infrastructure" is the water infrastructure, both natural and built, required to support green infrastructure:¹³²

...To successfully implement green open spaces, green infrastructure planning must also include the blue infrastructure required to successfully support it. Significant co-benefits can be realised from including blue infrastructure into green infrastructure strategic planning. The co-benefits of blue infrastructure also include reduced impacts on receiving waters and reducing impacts of flood events on infrastructure and the community."

The Committee was informed of challenges and opportunities inherent in the planning and management of natural and built water infrastructure, such as balancing coastal and marine environments. Some submissions advocated a need for a more long-term approach to Adelaide's metropolitan coastline protection and enhancement.¹³³ The Committee was informed of concern about land use planning on the ability of blue spaces to provide ecosystem services. For example, loss of seagrass in metropolitan waters has affected the marine ecosystem, which has impacts for the coast, including stronger wave action and its impact to erosion on metropolitan beaches.¹³⁴

Coastal conservation and adaptation

Some submissions described the challenge of rising sea levels and climate change adaptation, and the resulting coastal management responses to this. The Committee heard evidence from some stakeholders about the need for a coordinated approach and the benefits of having integrated coastal management as distinct from a system that focuses on individual segments of beaches. As well as coastal protection, the Committee heard of the importance of coastal conservation supporting green open spaces:

"...the critical thing is that we move from just pure coastal protection, and then we look at coastal adaptation, and we don't forget the coastal conservation part of that as well because that is often where the green open spaces are in the dune systems and in the coastal foreshore area."

- Maggie Hine, Team Leader, Strategic Planning and Environment, City of Port Adelaide Enfield, AdaptWest, *Committee Hansard*, 4 February 2021, pp. 42-43.

Coastal management funding and resources are discussed further under Terms of Reference 2.

¹³² Submission 35, DEW, p. 2, p. 8.

¹³³ Submission 02, Bossley.

¹³⁴ Submission 03, McMahon, Estuary Care Foundation.

Integrated conservation, planning and management of green and blue open spaces

DEW's submission described existing and new opportunities to potentially maximise the benefits from integrated green and blue infrastructure planning:

Existing opportunities include:

- *Applying the Open Space Fund to purchase land for the construction of blue infrastructure focussed on regional scale stormwater management.*
- *Continuing the roll out of simple WSUD approaches that provide water for urban greening (e.g. stormwater inlets to passively irrigate street trees), whilst also recognising the likelihood that additional, more secure water is likely to be needed to maintain the health and vigour of green infrastructure during droughts (particularly during extreme heat conditions at the end of summer).*
- *Continuing to progress actions articulated in the State WSUD policy (Water Sensitive Urban Design – Creating more liveable and water sensitive cities in South Australia (2013)).*

New opportunities include:

- *Integrating management of public and private open spaces to maximise opportunities for urban runoff/flood management, urban greening and cooling, and other desired outcomes, through green infrastructure planning*
- *Investigating the potential stormwater management offset mechanisms to provide more effective stormwater management and urban greening benefits compared to site-level measures in small scale infill developments*
- *Reviewing and improving urban watercourse and drainage legislation and exploring opportunities for beneficiary pays frameworks to support the renewal and maintenance of key urban drainage infrastructure such as regional trunk stormwater networks, including creeks and drains.¹³⁵*

The Committee was informed of a need for greater quality and coordination of the approach to planning and conserving urban blue spaces, as part of a more integrated approach to managing South Australia's landscape. One submission suggested that in addition to mapping data for metropolitan tree cover, adequate mapping of nearshore habitat is required. This data collection would, in turn, better identify risks to blue open space, and inform responses to them.¹³⁶ This submission suggested that South Australia's current bid to become a National Parks City could include a "Blue Adelaide" approach, which could incorporate reference to Adelaide reefs, the Adelaide Dolphin Sanctuary and Adelaide International Bird Sanctuary.¹³⁷

3.1.7 Urban green spaces and biodiversity

Some submissions discussed reported human health benefits from exposure to biodiverse urban green spaces, including exposure to microbially-diverse green space, and microbial compounds in soil.¹³⁸ One submission suggested that strategically planned blue and green infrastructure can help protect biodiversity through the creation of urban wetlands, which in turn provide support for threatened species.¹³⁹

¹³⁵ Submission 35, DEW, pp. 9-10.

¹³⁶ Submission 03, McMahon, Estuary Care Foundation.

¹³⁷ Submission 03, McMahon, Estuary Care Foundation.

¹³⁸ Submission 32, Campbelltown City Council; Submission 21, Woodlands; Submission 35, DEW, p. 17.

¹³⁹ Submission 35, DEW, p. 7.

Biodiverse green spaces on private land

“So if you are thinking about the biodiversity, the natural heritage, of the state, a lot of it is right here. If we are going to look after it, this is the place to look after it. Where is it? It is in many of our parks – not all – but it is mostly in people’s backyards. It is in those big trees that people have in their space. It is in the big trees along the roads and along the rivers and it is in the sand dunes along the coast. If we want to do something serious about halting biodiversity decline in our patch, we need to do it in our own backyard.”

- Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 55.

The Committee heard that most of the biodiversity in Adelaide can be found in green spaces on private land, and as such, private land can be a site for small, incremental improvements to biodiversity. The Committee was informed of the view that broader community understanding about biodiverse areas can be limited,¹⁴⁰ but opportunities exist to increase interest and knowledge in this area. Increasing community awareness of “floriferous” gardens attracting butterfly and moth host plants, and sources of nectar, were examples supporting biodiversity environments in home gardens.¹⁴¹

An often-cited challenge to local biodiversity was the loss of trees, gardens and existing habitats through levelling a site to make way for a new development. One submission encouraged greater consideration for incentives through the planning reform, focused on protection and preservation of private urban green space and the biodiversity habitats they provide.¹⁴²

Biodiversity Sensitive Urban Design

As described by the City of Adelaide’s submission, Biodiversity Sensitive Urban Design (BSUD) *“...aims to create urban environments that make a positive onsite contribution to biodiversity through building nature into the urban fabric by linking urban planning and design to the basic needs and survival of native plants and animals.”*¹⁴³ The City of Adelaide applies BSUD through use of native species in the city, in varied ways, including planting native street trees, green walls and street verges. By re-establishing locally indigenous plants in the city, the populations of species, as well as their genetic diversity, can be increased. Some of these plants can provide important habitat and food for native animals.¹⁴⁴

In terms of biodiverse green spaces on public land, the Committee heard a challenge is the competition for available space for use as quality green space. This can, in turn, put pressure on native flora and fauna, and create artificial habitat which can lead to the introduction or migration of exotic or non-endemic abundant species.¹⁴⁵ Urban green spaces need to be designed and planned well to limit unintentional outcomes such as habitat creation for nuisance or pest species.¹⁴⁶ The City of Adelaide’s submission described human activities putting pressure on native plants and animals in the Adelaide Park Lands as a further challenge to managing biodiversity in urban spaces.¹⁴⁷

¹⁴⁰ Submission 32, Campbelltown City Council.

¹⁴¹ Submission 14, Butterfly Conservation SA.

¹⁴² Submission 19, Kelly, p. 4.

¹⁴³ Submission 38, City of Adelaide, p. 8.

¹⁴⁴ Submission 38, City of Adelaide, p. 8.

¹⁴⁵ Submission 34, Green Adelaide Board, p. 4.

¹⁴⁶ Submission 34, Green Adelaide Board, p. 2.

¹⁴⁷ Submission 38, City of Adelaide, pp. 6-7.

The Committee was informed that the planning, implementation and ongoing maintenance and monitoring of biodiverse urban green spaces is complex. One submission described an observed reluctance from Councils to plant out public land for biodiversity and habitat based on perceptions of risk to public safety, fire management and maintenance costs.¹⁴⁸ Further challenges regarding urban green spaces and biodiversity included concerns about instances of lost biodiversity, including dealing with lost biodiversity in Mount Lofty Ranges,¹⁴⁹ as well as creeks and wetlands.

Implementation of biodiverse urban green spaces requires investment in expertise and strategic management.¹⁵⁰ One submission suggested the appointment to local Councils of more positions requiring expertise of biodiversity and green spaces.¹⁵¹ Two submissions highlighted the value of educational resources for the community provided by previous NRM Boards.¹⁵² In support of urban biodiversity, the Green Adelaide Board's submission referred to the importance of developing ecological awareness amongst the community. Such understanding and awareness can, in turn, encourage adoption of individual practices and behaviours supporting the natural environment.

Selection of the right tree for the right place

Another challenge for biodiverse urban green spaces is a lack of species diversity in trees selected for streetscapes. For example the practice of planting deciduous trees in metropolitan Adelaide.¹⁵³ The Committee was informed of a need for increased diversity of tree species to avoid disease,¹⁵⁴ and concerns about the loss of mature trees, which can in turn contribute to loss of habitat, and lost biodiversity.¹⁵⁵ The Committee heard from DEW witnesses about the practice of planting trees by local Councils, and the various practices and factors taken into consideration. Each Council has a street planting guide, in turn informed by the area's local species, and in consultation with energy providers. Knowledge of local species, type of soil, and relationship with powerlines are factors informing tree selection.¹⁵⁶

The Committee heard examples of varied initiatives by Councils to assist with tree planting. For example, enabling residents to purchase 10 native plants for \$10, which residents can then plant on their property.¹⁵⁷ Other examples included new tree vouchers, landscape advice and conservation grants.¹⁵⁸ Other evidence to the Committee referenced the value of *Plant Selector +*, an evidence-based, online tool that can inform decision-making about plants to use in certain areas, considering factors including landscape type and soil properties.¹⁵⁹ One submission suggested further resources to update this tool.¹⁶⁰

¹⁴⁸ Submission 19, Kelly, p. 4.

¹⁴⁹ Submission 29, Bailey.

¹⁵⁰ Submission 32, Campbelltown City Council.

¹⁵¹ Submission 08, Kensington Residents' Association, p. 2.

¹⁵² Submission 32, Campbelltown City Council; Submission 8, Kensington Residents Association, p. 2.

¹⁵³ Submission 08, Kensington Residents' Association, p. 2.

¹⁵⁴ Submission 06, Bennett, AILA (SA).

¹⁵⁵ Submission 11, AdaptWest; Submission 22, Trees for Life.

¹⁵⁶ Cate Hart, Executive Director, DEW, *Committee Hansard*, 24 September 2020, p. 5.

¹⁵⁷ Sam Higgins, Manager, Open Space, Recreation and Property, City of Charles Sturt, AdaptWest, *Committee Hansard*, 4 February 2021, p. 44.

¹⁵⁸ Submission 01, Croft and Wharton.

¹⁵⁹ Submission 06, Bennett, AILA (SA); Dr Sheryn Pitman, Programme Manager, Inspiring South Australia, SA Museum, *Committee Hansard*, 4 February 2021, p. 47; Botanic Gardens of South Australia, Plant Selector +, last viewed 3 March 2021 from:

<http://plantselector.botanicgardens.sa.gov.au/Search/ByLocation?pageNumber=1&itemsPerPage=10&searchType=&suburbId=17>

¹⁶⁰ Submission 33, Resilient East, p. 9.

The Committee heard a need for a more coordinated strategy for tree planting, which enabled flexibility to consider localised factors within different Council areas. One submission suggested a need for more research on appropriate species selection in Adelaide, in consideration of the impacts of climate change.¹⁶¹ The Committee asked witnesses from Green Adelaide if the Board had an overarching plan guiding the selection of trees for different areas. In response, Professor Chris Daniels explained that:

“There isn't yet, but I think that will be one of the really important items that we want to do, and that is where focusing on trees gives us that insight into the bigger and more complex pictures. You are absolutely right: it is not about putting in any old tree in any old spot and trying to deal with it 20, 30 or 40 years down the track when you've got a problem. We do need to improve our tree selector tools, and we are looking to do that. We do need to understand a lot about canopy, where and how and what that looks like. It doesn't have to be an indigenous species. There is some value there for local wildlife, but of course any trees are better than no trees for wildlife. Sometimes an introduced tree might be more effective in a particular location.”¹⁶²

3.1.8 Urban green spaces associated with primary production

In general, evidence responding to this component of the Terms of Reference focused on:

- alternative water supply and irrigation for primary production; and
- local food production and enhancing community connectedness and food security.

Alternative water supply and irrigation for primary production

The Committee was informed that green and blue infrastructure, when strategically implemented, can contribute to benefits outside metropolitan Adelaide, which in turn contributes to economic activity across the state.¹⁶³ The Virginia Pipeline and the Northern Adelaide Irrigation Scheme (NAIS), both delivered by SA Water, are examples of water reuse in primary production. The Virginia Pipeline Scheme was established in 1997 and provides an alternative source of water for the horticulture industry, including market gardeners. Broadly, this is achieved by sourcing recycled water from the Bolivar Wastewater Treatment Plant.¹⁶⁴ Both examples are recognised to contribute towards reduced wastewater disposal into the Gulf St Vincent, leading to improvements in near shore marine water quality and reduced impacts to seagrass.¹⁶⁵

Local food production and enhancing community connectedness

Urban green spaces including home gardens, verge and community gardens can support local food production.¹⁶⁶ Community gardens can provide benefits including increased availability and community access to fresh produce, which is important for urban residents and families on lower incomes. The SA Active Living Coalition's submission referenced a 2014 research finding that more than half of Australian households reported growing some food in a home or community garden, with the majority in front or backyard gardens. This submission raised concerns over smaller residential lot sizes and observed that increases in harder surfaces could contribute to difficulties in home food production.¹⁶⁷

¹⁶¹ Submission 06, Bennett, AILA (SA).

¹⁶² Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 60.

¹⁶³ Submission 35, DEW, p. 10.

¹⁶⁴ SA Water, last viewed 8 February 2021 from: <https://www.sawater.com.au/water-and-the-environment/recycling-and-the-environment/recycling-and-reuse-network>

¹⁶⁵ Submission 35, DEW, p. 10.

¹⁶⁶ Submission 35, DEW, p. 10; Submission 34, Green Adelaide Board, p. 3.

¹⁶⁷ Submission 37, Active Living Coalition, p. 12

To better support conditions for home-based food production, particularly in medium/high density developments, this submission suggested:

- the design for housing and residential lots include enough sunlight to support food production; and
- inclusion of garden plots or shared spaces for growing home-based food in residential buildings.¹⁶⁸

As well as increasing the availability and access to fresh food, community gardens with productive varieties of food can provide social and educational opportunities within communities.¹⁶⁹ The SA Active Living Coalition's submission referenced research on the benefits of community gardens towards feelings of belonging and ownership, as well as increased perceptions of safety and connection.¹⁷⁰ Some submissions also suggested consideration for providing food plants in public spaces, and to be incorporated as part of new or remedial urban greening projects:¹⁷¹

"...always incorporate a biodiversity corner for native plants in parks and reserves, preferably maintained by local volunteers, and to encourage community gardens as sources of outdoor activity and to help people to cheaply grow fresh healthy produce and thus provide greater food security for themselves whilst introducing their children to gardening and the great outdoors."

- Submission 23, Environmental Task Group.

Barriers to planting edible plants and productive trees on public land include damage by trees to infrastructure, ongoing maintenance costs, watering requirements and public liability risk.¹⁷² The Committee heard of biosecurity-related considerations for planting fruit trees in public areas, as well as the extent to which individuals manage their own fruit and vegetable plants on private land. The Committee heard about the importance of individuals understanding their collective responsibilities in terms of managing their own fruit plants, such as those in community gardens and backyard vegetable patches:

"So that is, again, an education and a responsibilities thing. We do want to encourage that connection in getting out and having fruit and vegies and trees, but you have to understand you have to manage it. You can't just leave it alone. If you do wind up with 10,000 apricots, you can't leave 9,000 out there. The other thing, of course, is they can attract rates and mice, as you know, so we've currently got a very large number of rodents across several of the suburbs in Adelaide. Again, how do you deal with that?"

It is a really important responsibility. The last thing we want is for Adelaide, through misadventure, to really impact the horticultural approach for the state."

- Professor Chris Daniels, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p.61.

¹⁶⁸ Submission 37, SA Active Living Coalition, p. 12.

¹⁶⁹ Submission 37, SA Active Living Coalition, p. 13.

¹⁷⁰ Submission 37, SA Active Living Coalition, pp. 12.

¹⁷¹ Submission 37, SA Active Living Coalition, p. 13.

¹⁷² Submission 37, SA Active Living Coalition, p. 13

3.1.9 Governance of urban green spaces

“Current research and planning for the range of issues facing urban green spaces (i.e. climate change planning, stormwater management and coastal planning) all identify and recognise the importance of a consistent and shared responsibility. This will require establishing and maintaining effective partnerships between all levels of Government, private industry, business and the wider community.”

- Submission 25, City of Port Adelaide Enfield, p. 6.

The Committee heard that the multi-disciplinary and cross-sector nature of urban green spaces provides opportunities for stakeholder collaboration, including government and non-government partnerships. Governance and coordinated strategy are important to achieve quality urban green spaces. The Committee heard that “...*better integration and clarity*” is needed regarding the roles of the multiple entities involved in the creation, funding and management of urban green spaces.¹⁷³ Similarly, the Committee heard evidence about the experience of stakeholders trying to implement quality design for urban green spaces, and some of the experienced challenges:

“There are so many good intentions across government, and it can get really confusing as a practitioner and someone who has worked in local government in terms of which agency do I listen to. Which one? There are so many. You’ve got planning, you’ve got the Open Space fund, you’ve got Places for People grants, the Planning and Development Fund. You’ve got the planning reform that has happened. You’ve got DIT doing large amounts of projects and delivery. You’ve got schools and education. Green Adelaide boards are a great initiative.”

- Daniel Bennett, AILA, SA Chapter, *Committee Hansard*, 15 October 2020, p. 10.

The Committee heard that there are cross-sector collaborations working well and provide policy and strategic principles for urban green spaces. For example, seven out of 40 submissions referenced the *Healthy Parks, Healthy People* initiative, which is a Public Health Partner Authority arrangement between DEW (through Green Adelaide) and the South Australian Department for Health and Wellbeing (through Wellbeing SA). The *Healthy Parks Healthy People South Australia Quality Green Open Space Action Plan: 2020-22* includes actions in public and private spaces. Alongside acknowledgement of existing strategy and guidance for urban green spaces that was working well, the Committee was informed of a need for more pragmatic advice for stakeholders to translate these high-level principles into practice:

“..one of our recommendations would be to bring all that together and put it in one spot and give the people of South Australia the best opportunity to address some of these falling targets in terms of healthy green open spaces. So our recommendation is some sort of agency to put all that together and really provide pragmatic advice, not so much policy. We’ve got lots of policy, but how do we achieve it?”

- Daniel Bennett, Australian Institute of Landscape Architects, SA Chapter, *Committee Hansard*, 15 October 2020, p. 11

Other evidence to the Committee suggested the need for an overarching management model for green spaces that was clearer to stakeholders.¹⁷⁴

¹⁷³ Eleanor Walters, Manager, Urban Planning and Sustainability, City of Norwood, Payneham and St Peters, *Committee Hansard*, Resilient East, p. 22.

¹⁷⁴ Submission 26, Parks and Leisure Australia SA NT.

Using the language of “green infrastructure”

“Too often green infrastructure such as landscapes, open space and natural areas are seen as non-essential infrastructure and are compromised continually for the sake of other infrastructure layers.”

- Submission 26, Parks and Leisure Australia SA NT.

The Committee heard that using the term “green infrastructure” to describe urban green spaces can contribute towards a greater valuing of green spaces as critical infrastructure essential to a city,¹⁷⁵ and enables the value of green infrastructure to be quantified:

“I can simply wrap all of that up into one term, which may help, and that is the term we use a lot now, which is ‘green infrastructure’. That is not just planting trees and making green spaces, but it’s having a performance measure around the values of having greener infrastructure.”

- Daniel Bennett, AILA (SA), *Committee Hansard*, 15 October 2020, p. 10.

DEW’s submission suggested one way to formalise the incorporation of green and blue infrastructure planning into urban strategic planning and management activities, was to include “green infrastructure” on asset registers maintained by local and state governments.¹⁷⁶

Development and implementation of Green Adelaide’s 5-Year Plan

As previously acknowledged, the Committee’s inquiry occurred during the establishment and early work of Green Adelaide, one of the newly established Landscape Boards. The Committee heard from Green Adelaide witnesses about their work achieved to date, and heard that engagement and discussions across varied sectors will be a significant part of Green Adelaide’s role.¹⁷⁷ At that time, Green Adelaide was nearing release of its draft 5-year plan for community consultation. The Committee heard that the 5-year plan aims to provide clearer direction and practical advice about improving green space:

“This plan is really driven by the need to reverse biodiversity loss, to reduce the impacts of urban development, to strengthen our response to climate change, to promote the importance of partnerships, to embrace Aboriginal connection to country and to deepen people’s connection with nature. We will do this through this plan. We will provide education and capacity building, inspire community love of nature, support whole-of-region coordination and governance, provide financial incentives, deliver on-ground practical action, shape legislation and policy and facilitate research and knowledge sharing.”¹⁷⁸

The Committee heard that Green Adelaide has worked very closely with a Kurna organisation throughout the development of the 5-year plan:

“The second thing we have done, which is quite different, is to work very closely with a Kurna organisation called Warpuli Kumangka, and this group of Kurna leadership has created a strong sense of understanding of the importance of Kurna in these sorts of plans and in these sorts of connections. Warpuli Kumangka is delivering the Kurna viewpoint into each and every thing we do. This enables us to build the sense of place that I have been talking about, to build the Kurna stories and understandings, and to be able to use that to help a whole array of communities and community members engage with nature.”¹⁷⁹

¹⁷⁵ Submission 35, DEW, p. 6.

¹⁷⁶ Submission 35, DEW, p. 5.

¹⁷⁷ Professor Chris Daniels, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 56.

¹⁷⁸ Professor Chris Daniels, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 56.

¹⁷⁹ Professor Chris Daniels, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 56.

The Green Adelaide Board aims to maximise the opportunity in leading a more connected and cooperative approach towards managing the urban landscape. This will involve engagement with varied stakeholders from the private sector, community, and across government.¹⁸⁰ Similarly, submissions referred to the benefits of implementing an integrated landscape scale approach, rather than viewing urban green spaces as isolated parts:

"Green Adelaide has been established under the Landscape South Australia Act 2019 to focus on managing the urban environment and its unique challenges. Green Adelaide is well placed to play a key role in leading a strategic approach to the incorporation of green infrastructure throughout metropolitan Adelaide,- as it will implement an integrated approach to several priorities including urban greening, water management, and enhancing biodiversity across the city at a landscape scale."

- Submission 35, DEW, p. 6.

COMMITTEE'S FINDINGS

4.1 Terms of Reference 2

Submissions highlighted that the seven priorities under Terms of Reference 2 relate to the remit of the Green Adelaide Board.¹⁸¹ Figure 3 provides Green Adelaide's resource allocation towards urban green spaces in its initial year of operation (2020-21). Further funding information is available in Appendix F.

Figure 3 Green Adelaide budget breakdown per priority area for 2020-21 FY

The total budget of Green Adelaide in 2020/21 is \$30.9m. Total budget (including governance and business administration costs, and salaries) and FTE for each of the seven priorities is as follows:

Priority	\$'000 ¹	FTE ²
Landscapes Priorities Fund ³	\$2,863	
Coastal management	\$5,291	6.36
Water resources and wetlands ⁴	\$8,011	8.96
Green streets and flourishing parklands ⁵	\$3,094	6.36
Biodiversity sensitive and water sensitive urban design	\$2,153	4.36
Controlling pest plants and animals	\$1,749	3.36
Nature education	\$4,831	10.96
Fauna, flora and ecosystem health in the urban environment	\$2,883	5.36

¹Includes budget for governance, administration, and foundational activities spread across priorities.

²Includes FTE for governance, administration, and foundational activities spread across priorities.

³The Landscapes Priority Fund will be allocated to significant landscape scale projects throughout the State.

The above budgets include the following external funding:

Priority	Funding Source	\$,000
Water resources and wetlands	Australian Government Breakout Creek funding	\$1,000
	Australian Government St Peters second creek	\$400
	Water Sensitive SA	\$500
Green streets and flourishing parklands	DPTI Greener Neighbourhood grants	\$100

Source: Submission 34, Green Adelaide Board, p. 7.

¹⁸⁰ Submission 34, Green Adelaide Board, p. 5.

¹⁸¹ Submission 06, Jen St Jack, Regional Climate Partnerships, p. 1; Submission 18, Nature Conservation Society.

Broader commentary around resource allocation across the seven priorities is included in the following section.

4.1.1 Resourcing and funding urban green spaces

“...while planning for green and blue infrastructure can start to unlock improved liveability outcomes there are often no clear pathways to deliver and fund these initiatives.”

- Submission 24, Water Services Association of Australia.

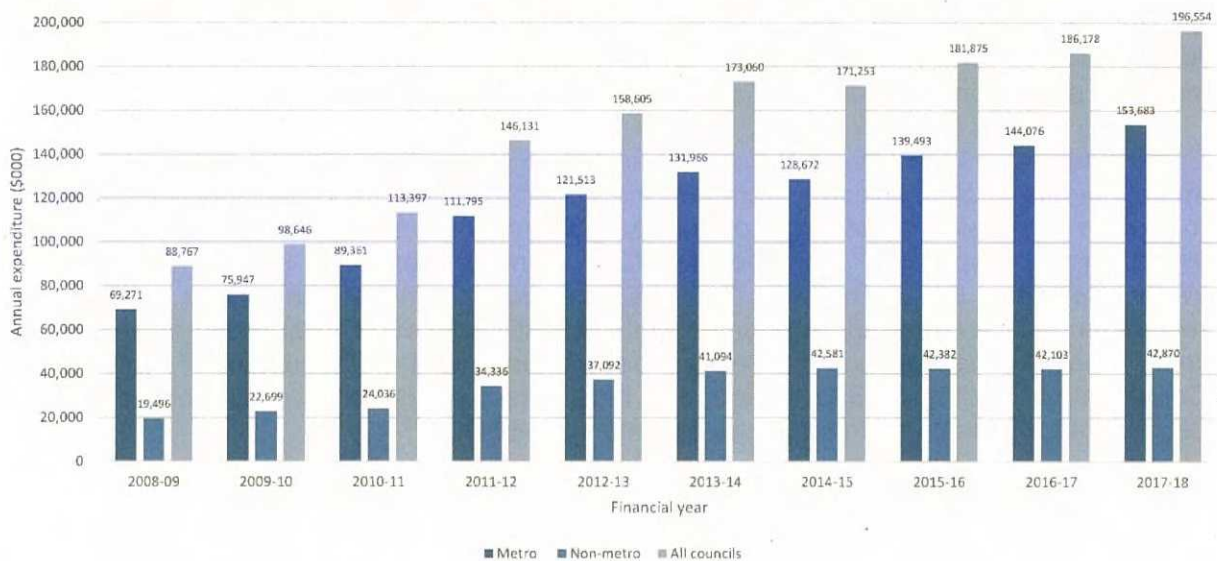
“With the planning reform process in its final stages many organisations would argue now is timely to revisit how South Australia funds and maintains urban greening and open spaces.”

- Submission 37, SA Active Living Coalition, p. 3.

Resourced activities like heat mapping urban hot spots and strategic methods to irrigate urban green spaces inform an evidence-base for urban green spaces. The Committee was informed that funding avenues for greening projects are often unclear, with some stakeholders of the view that there is not enough available funding to match need.

Local government already invests time, effort and resources to green infrastructure, including urban heat mapping and coastal adaptation planning, but could benefit from the provision of additional financial and other support to strategically curate urban green spaces.¹⁸² Figure 4 provides annual expenditure by local government on parks and gardens from 2008-09 to 2017-18.

Figure 4 Local government annual expenditure for parks and gardens



Source: Submission 20, LGA, p.10

¹⁸² Submission 20, LGA, pp. 9-11.

Green streets and flourishing parklands, biodiversity sensitive and water sensitive urban design

Submissions referenced the SA Government administrated Greener Neighbourhood grants as the main program funding tree planting activities to support urban tree canopies. The SA Government provides financial support for this grants program, in partnership with Green Adelaide, from the Planning and Development Fund. Submissions expressed concerns about achieving the tree canopy target with the funding available, and called for greater, and long-term funding and resourcing to be able to realise these aims:

“Continued access to State Government funding for urban greening and water sustainability initiatives is required. It is expensive to increase greening in a contested landscape (street tree installations can cost up to \$70,000 per tree). Additional State or Federal funding is critical to support increased greening in the city.”

- Submission 38, City of Adelaide, p. 17.

Some submissions suggested greater support for local governments to be able to conduct strategic assessments of their areas, to identify gaps and opportunities in green space, and then apply for support and resourcing to create new public green space where necessary. Examples included upgrades to streetscapes in areas with urban infill.¹⁸³

Submitters expressed that achieving quality green urban spaces, including biodiversity outcomes, requires more substantial reforms and incentives than has currently been provided. Realising some of the current targets and outcomes for biodiversity, as outlined in State Planning Policies, are largely limited by urban development and environmental protection frameworks as they currently are.¹⁸⁴ The Committee was informed of current initiatives that are incorporating greater opportunities to incorporate Kaurna understandings of native biodiversity management. For example, the three objectives of the City of Adelaide’s *Integrated Biodiversity Management Plan 2018-2023* established six key biodiversity areas, including protection of specific tree species and listed fauna and flora.¹⁸⁵

Some submissions identified significant costs with implementing WSUD practices to achieve improvements.¹⁸⁶ Submissions referred to the Water Sensitive SA capacity building program to provide stakeholders (industry, community, government) with support to better incorporate WSUD in green spaces.¹⁸⁷ Campbelltown City Council’s submission highlighted the role of Water Sensitive SA in helping Councils transition to WSUD in public places, and recommended the continuing support for Water Sensitive SA and similar programs to facilitate water sensitive approaches to design, development and infrastructure.¹⁸⁸ The Nature Conservation Society of SA’s submission highlighted the potential of Green Adelaide to demonstrate national and international leadership in BSUD.¹⁸⁹

¹⁸³ Submission 37, SA Active Living Coalition, p. 3.

¹⁸⁴ Submission 19, Kelly, p. 2.

¹⁸⁵ Submission 38, City of Adelaide, p. 2.

¹⁸⁶ Submission 30, Patterson, p. 1.

¹⁸⁷ Submission 33, Resilient East, Appendix 2, p. 26; Submission 35, DEW, p. 5.

¹⁸⁸ Submission 32, Campbelltown City Council.

¹⁸⁹ Submission 18, Nature Conservation Society of SA.

Water resources and wetlands

Councils are responsible for the management of stormwater drainage networks in their Council areas. The Committee was informed that because of increasing frequency of extreme weather events (for example intense storms), combined with increased infill development in some of these areas, the cost and maintenance of stormwater drainage necessarily increases.¹⁹⁰

A concern for present and future management and maintenance of these systems is that extra resourcing may need to be sourced from increased Council rates.¹⁹¹ While there is capacity and innovative research on implementing water management ideas and practices, Councils' ability to fund and implement research findings can be limited.¹⁹² The Committee also heard of a need for a more coordinated approach to water management practice:

"Overall, a piecemeal approach is not the most effective way of achieving advances in water management practice in a (literally) rapidly changing climate."

- Submission 30, Patterson, p. 1.

The LGA's submission recommended updating the SA Government's 10-years old water strategy, and prepare a state-wide urban water strategy, undertaken by local and state government, and in collaboration with key strategic stakeholders.¹⁹³ Another submission suggested consideration of a single policy applying to all development, that considers all aspects of integrated water management, including waterway ecology.¹⁹⁴ One submission pointed to the opportunities of various wetlands developed in different suburbs of Adelaide, and called for lessons learned from these examples to be applied to creating more wetlands.¹⁹⁵

Coastal Management

The LGA's submission referred to the State Government's \$4 million in grant funding over four years, for the purposes of assisting local councils with coastal management and protection. This submission also recommended further financial support for coastal Councils aimed at protecting and managing coastlines.¹⁹⁶ One submission suggested an opportunity to better integrate marine and coast biodiversity conservation, as well as increasing community education to improve community perceptions towards saltmarsh, mangrove, and mudflat areas.¹⁹⁷

Controlling Pest Plants and Animals

The Nature Conservation Society's submission called for more adequate resourcing towards initiatives for controlling pest plants, especially in the case of pest plants impacting native plants, in the Adelaide, Adelaide hills and Fleurieu regions. This submission explained the work of the Threatened Plant Action Group, work which involves the targeted control of pest plants (weeds) and was previously supported through the NRM Board.¹⁹⁸

¹⁹⁰ Submission 04, Jen St Jack, Regional Climate Partnerships, p.2; Submission 35, DEW, p.4; Submission 33, Resilient East, p.10.

¹⁹¹ Submission 04, Jen St Jack, Regional Climate Partnerships, p.3.

¹⁹² Submission 30, Patterson, p. 1.

¹⁹³ Submission 20, LGA, p.6.

¹⁹⁴ Submission 09, Environmental Defenders Office, p. 4.

¹⁹⁵ Submission 08, Kensington Residents' Association, p. 2.

¹⁹⁶ Submission 20, LGA, p. 9.

¹⁹⁷ Submission 05, Pryce, Oceanwatch Australia.

¹⁹⁸ Submission 18, Nature Conservation Society of SA.

Nature Education

The Committee heard from Dr Sheryn Pitman about the need for developing and strengthening ecological literacy within communities, and why this is important for maintaining urban green spaces in the city. For example, ecological literacy is important to inform individual decision-making towards living in sustainable ways. One suggestion was for education about nature and science to go wider than the school system, and the value of a broader, community approach to nature-based education.¹⁹⁹

Two submissions referred to the example of *Amongst It*, an online resource that provides information about grant-funded community projects focused on developing appreciation and connection with nature.²⁰⁰ The Committee heard that education and capacity building to develop a broader community love and care for nature will be a focus of Green Adelaide's 5-year plan.²⁰¹

In-kind, community and volunteer support

A proportion of Resilient East's work involves in-kind resourcing from Council staff. This involves a balance between progressing strategic initiatives to influence greening outcomes, within the constraints of funding available. Moreover, much of the collaborative work across individuals needs to be coordinated with individual Councils' priorities.²⁰²

Submissions referred to the considerable volunteer support delivering outcomes for urban green spaces and local biodiversity activities.²⁰³ One submission expressed concern about future support for volunteer activities given the withdrawal of the Volunteer Support Program following the transition from NRM Boards to Landscape Boards.²⁰⁴ Other submissions reinforced continuing support for existing collaborations and partnerships including regional adaptation, Water Sensitive SA, and SA Healthy Parks Healthy People.²⁰⁵

The Planning and Development Fund

"Ensure the Planning and Development Fund is fully used to protect, enhance and create urban green spaces"

- Submission 40, Town of Gawler.

Developers of new allotments are required to either provide open space within the development area or make a financial contribution in lieu of land. The 'Open Space Levy' is charged where a development involves 20 or more allotments and does not provide new open space on the development site.²⁰⁶ Financial contributions from developments go into the Planning and Development Fund (the Fund), which provides grants to communities for developing public spaces.

¹⁹⁹ Dr Sheryn Pitman, Programme Manager, Inspiring South Australia, SA Museum, *Committee Hansard*, 4 February 2021, pp. 50-51.

²⁰⁰ *Amongst It*, 2021, last viewed online from: <http://www.amongstsa.org.au/> 13 March 2021, as quoted in Submission 35 from DEW, p. 5; Submission 18, Nature Conservation Society of SA.

²⁰¹ Professor Chris Daniels, Presiding Member, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 56.

²⁰² Submission 33, Resilient East, pp. 16-17.

²⁰³ Submission 22, Trees for Life.

²⁰⁴ Submission 08, Kensington Residents' Association, p. 1.

²⁰⁵ Submission 33, Resilient East, p. 18.

²⁰⁶ Submission 38, City of Adelaide, p. 15.

Nine out of 40 submissions referenced the Fund, expressing concerns that:

- regulation changes enabling monies from the Fund to be used for government administration of the new planning system is outside the Fund's original purpose;²⁰⁷
- uses of the Fund goes against industry and community expectations for providing useable open space and recreation spaces for the community;²⁰⁸
- some suburbs experiencing significant land development see little money spent back in these areas, based on proposals not accepted by the Fund;²⁰⁹
- using the Fund for administrative purposes is particularly concerning given the view that there is a lack of a clear pathway for protecting and enhancing green spaces and achieving greater urban tree canopy;²¹⁰ and
- the potential of the Fund to deliver quality public green open spaces is limited.²¹¹

Urban green spaces and comparisons with other jurisdictions

The Committee was informed that comparing resource allocation of urban green spaces with other interstate and overseas examples is complex, due to different climate, geography and demographic differences between SA and other cities. As such, cross-comparisons can make it difficult to inform decision-making about what projects may be suitable to implement in SA.²¹² One submission described that there is already the required knowledge and expertise in SA towards managing the environment:

"There exists considerable local knowledge in managing our environment and this includes our First Nations people. Why look interstate and overseas? Surely we can accept and value our unique State and its people first and foremost in managing its environment."

- Submission 7, McLeay.

Within the cohort of submissions that mentioned interstate/overseas examples, the most frequently mentioned jurisdiction was New South Wales (NSW):

"Led by the NSW Government Architect Abbie Galvin in response to bushfires and COVID 19 the NSW Government have developed the Greener Places policy and allocating funding that goes well beyond the status quo with an integrated approach to managing and developing green places and should be reviewed as part of this inquiry as well as what other states are doing so SA leads the country in its approach."

- Submission 26, Parks and Leisure Australia SA NT.

The AILA's (SA) submission recommended the NSW Government's policy is a benchmark for analysis in South Australia, given that SA does not yet have a policy or strategy on green infrastructure.²¹³ One submission mentioned the Sydney Green Grid,²¹⁴ which provides a strategic framework for enhancing quality open space in metropolitan Sydney, and further integrating green spaces.²¹⁵

²⁰⁷ Submission 08, Kensington Residents' Association, p. 3.

²⁰⁸ Submission 17, Planning Institute of Australia, SA division, p. 4.

²⁰⁹ Submission 13, Norwood Residents' Association.

²¹⁰ Submission 40, Town of Gawler.

²¹¹ Submission 37, SA Active Living Coalition, p. 15.

²¹² Submission 35, DEW, p. 11.

²¹³ Submission 06, Bennett, AILA (SA).

²¹⁴ Submission 17, Planning Institute of Australia SA, p. 5.

²¹⁵ Office of the Government Architect, NSW Government, Sydney Green Grid, Spatial Framework and Project Opportunities, last viewed 10 March 2021 from: <https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/plans/sydney-green-grid-plan-1-introduction-2017.pdf>

The Environmental Defenders Office's submission referred to the work of the Greater Sydney Commission, and its work progressing the NSW Government target to increase the urban tree canopy in Greater Sydney by 40 per cent. This submission referred to recent draft NSW government guidelines outlining the creation of quality open spaces and parks within a certain proximity to high-density homes, schools and workplaces, including providing metrics for local planners to guide their work.²¹⁶

COMMITTEE'S FINDINGS

5.1 Terms of Reference 3

The Committee received evidence on the following matters:

- Economic benefits of urban green spaces;
- Existing protections for the Adelaide Park Lands; and
- Benefits of blue spaces.

Economic benefits of urban green spaces

Some submissions described the associated economic benefits of urban green spaces, including the cooling properties of trees and their ability to provide shade to buildings. This can affect the energy efficiency of a building, and in turn influence heating/cooling costs.²¹⁷ Submissions also commented on the economic value of green spaces, for example, through improved property amenity and prices in terms of green space.²¹⁸

Submissions also commented on benefits to amenity and property values from public realm planting,²¹⁹ and an association between the proximity of green infrastructure and WSUD features with property values.²²⁰ Also, one submission questioned how reduced amenity (for example through lack of trees), within an area may negatively affect property values.²²¹

Existing protections for the Adelaide Park Lands

The Adelaide Parklands are managed pursuant to the *Adelaide Park Lands Act 2005*. The Adelaide Park Lands Preservation Association's submission reflected concerns about existing legislation in terms of protecting and preventing future loss of the Park Lands for the community.²²² This submission recommended establishment of a new model of governance for the Park Lands, for example a new management model "...at arms length" from the state government and City Council.

²¹⁶ Submission 09, Environmental Defenders Office, p. 5; Submission 8, Kensington Residents' Association; Submission 27, Kent Town Residents' Association.

²¹⁷ Submission 35, DEW, p. 16; Submission 38, City of Adelaide, p. 4.

²¹⁸ Submission 35, DEW, p. 16; Submission 12, Conservation Council SA; Professor Daniel Bennett, Green Adelaide Board, *Committee Hansard*, 4 March 2021, p. 56.

²¹⁹ Submission 27, Kent Town Residents' Association, p. 1.

²²⁰ Submission 34, Green Adelaide Board.

²²¹ Submission 36, Poetzl.

²²² Submission 10, Adelaide Park Lands Preservation Association, pp. 6-9.

Benefits of blue spaces

In discussing the benefits of urban green spaces, one submission outlined the distinct value of blue spaces, including psychological benefits they can provide:

"Green spaces in urban environments are important for enhancing local biodiversity, for stormwater management, for temperature modulation, for improved air quality and other such practical benefits. There is also a substantial and growing literature on the positive impact green spaces may have on human psychological wellbeing.

But what of Blue Spaces?

A subset of this work on psychological wellbeing focusses on the value of "blue spaces": spaces which abut substantial water bodies, either fresh or marine. In general most of this research finds blue spaces have a more powerful psychological benefit than green spaces."

- Submission 2, Bossley.

APPENDIX A: LIST OF SUBMISSIONS

- 01 Croft and Wharton
- 02 Bossley
- 03 McMahon, Estuary Care Foundation
- 04 Jen St Jack, Regional Climate Partnerships
- 05 Pryce, Oceanwatch Australia
- 06 Bennett, Australian Institute of Landscape Architects
- 07 McLeay
- 08 Kensington Residents' Association
- 09 Environmental Defenders Office
- 10 Adelaide Park Lands Preservation Association
- 11 AdaptWest
- 12 Conservation Council SA
- 13 Norwood Residents' Association
- 14 Butterfly Conservation SA
- 15 Wells
- 16 Urban Development Institute of Australia SA
- 17 Planning Institute of Australia SA
- 18 Nature Conservation Society of SA
- 19 Kelly
- 20 Local Government Association SA
- 21 Woodlands
- 22 Trees for Life
- 23 Environmental Task Group
- 24 Water Services Association of Australia
- 25 City of Port Adelaide Enfield
- 26 Parks and Leisure Australia SA NT
- 27 Kent Town Residents' Association
- 28 Preston
- 29 Bailey
- 30 Patterson
- 31 National Trust of South Australia
- 32 Campbelltown City Council
- 33 Resilient East
- 34 Green Adelaide Board
- 35 Department for Environment and Water
- 36 Poetzi
- 37 SA Active Living Coalition
- 38 City of Adelaide
- 39 Faulkner
- 40 Town of Gawler

APPENDIX B: LIST OF WITNESSES

<p>In order of appearance</p> <p>24 September 2020 – Constitution Room, Old Parliament House</p> <ol style="list-style-type: none"> 1. Cate Hart, Executive Director, Environment, Heritage and Sustainability, Department for Environment and Water 2. Gayle Grieger, Principal Advisor, Environment, Heritage and Sustainability
<p>15 October 2020 – Constitution Room, Old Parliament House</p> <ol style="list-style-type: none"> 3. Daniel Bennett, Registered Landscape Architect, Fellow, and President, Australian Institute of Landscape Architects, SA Chapter 4. Sally Bolton, State Manager, Australian Institute of Landscape Architects, SA Chapter
<p>12 November 2020 – Constitution Room, Old Parliament House</p> <ol style="list-style-type: none"> 5. Ben Clark, Group Manager, Assets and Infrastructure, Town of Walkerville 6. Kat Ryan, Coordinator, Environmental Projects and Strategy, City of Unley 7. Ben Seamark, City Arborist, City of Tea Tree Gully 8. Bec Taylor, Coordinator, Resilient East 9. Eleanor Walters, Manager, Urban Planning and Sustainability, City of Norwood, Payneham and St Peters
<p>3 December 2020 – Constitution Room, Old Parliament House</p> <ol style="list-style-type: none"> 10. Pat Gerace, Chief Executive Officer, Urban Development Institute of Australia (SA)
<p>4 February 2021 – Kingston Room, Old Parliament House</p> <ol style="list-style-type: none"> 11. Jeremy Miller AdaptWest Regional Coordinator 12. Sam Higgins, Manager Open Space, Recreation and Property, City of Charles Sturt 13. John Wilkinson Open Space Planner, City of Charles Sturt 14. Abby Dickson, Director Corporate Services, City of Port Adelaide Enfield 15. Maggie Hine, Team Leader Strategic Planning and Environment, City of Port Adelaide Enfield 16. Amy Bruckman, Environment Sustainability Officer, City of West Torrens 17. Dr Sheryn Pitman, Programme Manager, Inspiring South Australia, SA Museum
<p>4 March 2021 – Kingston Room, Old Parliament House</p> <ol style="list-style-type: none"> 18. Professor Chris Daniels, Presiding Member, Green Adelaide Board 19. Brenton Grear, Director, Green Adelaide Board 20. Louisa Halliday, Manager, Strategy and Performance, Green Adelaide Board.

APPENDIX C: RESPONSES TO QUESTIONS ON NOTICE

Thursday 24 September 2020

13 The Hon. J. A. Darley: In your submission, you spoke about the Adelaide Airport project with the Lucerne. Did the irrigation from that come from treated effluent from Glenelg treatment works?

Response from DEW:

SA Water and Adelaide Airport have been running a trial using stormwater to irrigate a 4ha site within the airport land to understand the potential benefits that maintaining appropriate vegetative cover and reducing surface and air temperatures can provide airport operations. Stormwater is stored in an adjacent aquifer storage and recovery (ASR) scheme and is used to irrigate the 4ha trial site. If the project expands, recycled water would be used, making use of the existing infrastructure in the area.

Thursday 3 December 2020

61 The Hon. R. P. Wortley:

When an arrangement is made between a developer and a council to reduce the open space for a financial contribution, do the elected members have any say in that? Does that have to be endorsed by the council itself, or is that something done confidentially between the officers of the council and the developer?

Response from Mr Pat Gerace, CEO, UDIA (SA)

I believe that the depending on the development in question, and the level of delegated authority to council staff, the involvement of elected members would be only to the extent that Council Assessment Panels (where there is one elected representative allowed) is approving the development. I have to reiterate though, that when you assess a project it should be in its entirety because there are many interrelated factors at play which will impact the overall design.

52 Dr Close: So it's 12½ per cent of the land value; is that how that's calculated?

Mr Gerace: I would need to come back to you on the calculation measure. No, 12½ per cent applies to the development area if you have got more than 20 houses, but if you're just simply doing a subdivision, say for example, if you have 1,000 square metres and you create two allotments of 500, there is a calculation. I think the minimum amount you can pay is about \$7,000, but I would need to come back to you on the exact fee for the creation of that additional allotment.

Response from Mr Gerace:

Mr Gerace's subsequent response included a hyperlink to a SA Government website that in turn provided information about the rates of financial contribution per each additional allotment that goes to the Planning and Development Fund. Information on current contributions is provided in Part 9 of the *Development Regulations 2008*. As at 15 March 2021, the financial contributions per each additional allotment for open space under the Regulations are:

- (a) *where the land to be divided is within Metropolitan Adelaide or Outer-Metropolitan Adelaide—\$7 761 for each new allotment or strata lot delineated on the relevant plan that does not exceed 1 hectare in area;*
- (c) *where the land that is to be divided is within Regional South Australia—\$3 116 for each new allotment or strata lot delineated by the relevant plan that does not exceed 1 hectare in area.*²²³

²²³ *Development Regulations 2008 (SA)*

<https://www.legislation.sa.gov.au/LZ/C/R/DEVELOPMENT%20REGULATIONS%202008/CURRENT/2008.233.A.UTH.PDF> (last viewed 15 March 2021).

Thursday 4 February 2021

78 The Hon N.J. Centofanti: Thank you for your presentation as a whole and, in particular, for mentioning the right tree, the right place, the right time. My question was around street trees and, as local government, the percentage of residents who seek to have trees removed for various reasons, such as impinging on infrastructure in people's front yards. I'm just wondering whether you could put a figure on how many people ring you up and say –

Response from AdaptWest:

The AdaptWest councils do not track this data as a percentage of resident requests. The number of total requests factored against overall resident numbers is quite low, therefore this percentage figure would also be quite low.

The councils do track the number of requests received for the removal of street trees, but this data is recorded differently for each of the councils, hence what can be seen in the table below.

Resident requests for street tree removal are usually logged with customer service teams. However, depending on the circumstances, the requests might also come in the form of a development application. For example, in the data below, West Torrens numbers are for the total number of requests for street tree removal regardless of where the request originated, whereas the PAE and Charles Sturt numbers are only for those logged with customer service teams.

Bearing in mind that this is total requests, it does not mean that each request results in the removal of the tree. These are assessed by council staff on an individual basis. Council may also elect to remove a tree due to reasons of poor health, damage, age, tree replacement programs etc.

Therefore, looking at the past 3 years (2018 – 2020) we see these numbers:

Total requests for tree removal 2018 – 2020

	2018	2019	2020
Port Adelaide Enfield (logged with customer service)	257	206	100
Charles Sturt (logged with customer service)	184 (17/18)	173 (18/19)	206 (19/20)
West Torrens (total count of all requests)	332	328	291
Total	773	707	597

APPENDIX D: TABLED DOCUMENTS

- 24 September 2020 Department for Environment and Water, PowerPoint presentation
- 15 October 2020 Australian Institute of Landscape Architects SA Chapter – PowerPoint presentation
South Australian Government, 2019, *Creating Greener Places for Healthy and Sustainable Communities*
- 15 October 2020 Resilient East – PowerPoint presentation
- 12 November 2020 Urban Development Institute Australia (SA) – visual map providing information on the open space and public realm investment from the Planning and Development Fund, from July 2010 to June 2019 ²²⁴
- 4 February 2021 AdaptWest – PowerPoint presentation
- 4 February 2021 Sheryn Pitman PhD – PowerPoint presentation, *Bringing nature back into cities and creating eco-literate communities.*

²²⁴ Source: <http://location.sa.gov.au/viewer/?map=roads&x=137.22634&y=-33.64919&z=6&uids=244&pinx=&pinx=&pinTitle=&pinText=>, last viewed 15 December 2020.

APPENDIX E: TREE REMOVAL AND INFRASTRUCTURE PROJECTS

After



Before



Source: Submission 36, Poetzi.

Note: These photographs contrast the same location before and after tree removal from a public infrastructure development. According to the submission, 35 significant and regulated trees were felled, and an additional 28 old growth trees were impacted as part of the development.

APPENDIX F: GREEN ADELAIDE 2020-21 EXPENDITURE BREAKDOWN ACROSS 7 PRIORITY AREAS

Table 1 Expenditure by priority in 2020-21

Priority	Focus areas/projects	Total levy funding (\$)
Landscapes Priorities Fund		2,863,000
Coastal management	* Adelaide's Living Beaches Agreement	
	Working with local councils on coordinated coastal conservation initiatives	
	Working with Birdlife Australia to conserve coastal shorebirds and their habitats	
	Implementing Blue Carbon initiatives	
	Citizen science initiatives such as marine debris and reef monitoring	
	Supporting master planning at Mutton Cove	
	Total operating	4,062,089
	Salaries + program support	847,635
Water resources and wetlands	* Patawalonga Lakes management Ministerial Directive	
	* Water Planning and Management charges	
	** Breakout Creek project	
	** Second Creek project	
	River Torrens Governance	
	River Torrens dilution flows	
	** River Torrens recovery	
	Water asset operations and maintenance	
	Water planning for Adelaide Plains Prescribed Water Resource	
	Surface water monitoring	
	operating	6,112,796
	Salaries + program support	1,517,194
Biodiversity sensitive and water sensitive urban design	Grants to eNGOs, local councils to implement initiatives	
	CRC for Water sensitive cities	
	Water Sensitive SA	
	operating	1,325,000
	Salaries + program support	447,452
Green streets and flourishing parklands	***Greener Neighbourhoods Grants Program	
	National Park City initiatives	
	Healthy Parks Healthy People initiatives	
	Green infrastructure research, mapping, strategy, trials and implementation	
	operating	1,800,000
	Salaries + program support	913,350
Flora, Fauna and ecosystem health in the urban environment	* Grassroots Grants Program	
	Urban Biodiversity initiatives with eNGOs	
	Threatened Flora and Fauna recovery initiatives	
	Working with local councils on coordinated biodiversity conservation initiatives	
		operating
	Salaries + program support	657,461
Controlling pest animals and plants	Working with local councils and other public land managers on coordinated pest animal and plant control initiatives	
	Monitor for new weeds	
	Weed Identification service	
	operating	1,148,600
	Salaries + program support	219,410

Source: Green Adelaide Business Plan 2020-21, from Submission 34, Green Adelaide Board.

Priority	Focus areas/projects	Total levy funding (\$)
Nature education	NRM Education	
	Nature Play SA	
	Implementing urban sustainability initiatives with communities	
	Natural Resource Centres	
	Supporting volunteers	
	operating	2,612,416
	Salaries + program support	1,837,709
Foundational activities	Strategy	
	Data and information management	
	Communications	
	operating	641,309
	Salaries + program support	2,028,055
Total		30,878,476

Explanatory notes:

- The Landscapes Priority Fund contribution is required consistent with the provisions of Division 2 Section 93 of the Landscape South Australia Act 2019.
- State Water Planning and Management contributions include the following functions: water licensing and assessment, water resource monitoring, state and condition reporting for water resources, compliance activities and water planning advice to support the management of water resources. These services are provided by the Department for Environment and Water, including departmental staff based regionally.
- Green Adelaide shares four Prescribed Water Resource Areas (PWRAs) with neighbouring landscape regions. As the board with the majority of the area of the resource, Green Adelaide is responsible for water planning for the Central Adelaide and Northern Adelaide PWRAs. For the McLaren Vale and Western Mt Lofty Ranges PWRAs, that have a small area within the Green Adelaide region, the Hills and Fleurieu Landscape Board will take carriage of the water planning and implementation. The boards will work together to effectively manage the resources to ensure consistency in approaches.

* Ministerial directives made under Section 14(3) of the Landscape South Australia Act 2019 have been put in place for management of the Patawalonga Lake System and Adelaide's beach and coastal management. The Grassroots Grants Program contribution is required consistent with the provisions of Section 28 of the Landscape South Australia Act 2019.

** The Australian Government Minister for Environment has announced a financial contribution towards both the Breakout Creek and Second Creek at St Peters Billabong projects.

*** The Department for Planning, Transport and Infrastructure is partnering with Green Adelaide to financially support the Greener Neighbourhoods Grants Program from the Planning and Development Fund.

Sources of funding (income)

Table 2 Sources of funding

Funding source	2020-21 Income (\$)
Landscape and water levies¹	
Regional landscape levy (formerly NRM land levy)	28,633,164
Water levy	145,312
External funding²	
Australian Government Breakout Creek	1,000,000
Australian Government St Peters Second Creek	400,000
DPTI Greener Neighbourhood grants	500,000
Water Sensitive SA	100,000
Other sources of income	
Interest	100,000
Total	30,878,476

¹ Landscape and water levy income to be raised in 2020-21 is based on 1.9% actual CPI rate (September 2019 quarter in Adelaide) increase on the 2019-20 income, and water levy income is based on 1.9% increase on the 2019-20 water levy rates.

² Green Adelaide receives funding from the Australian Government, SA Department of Planning Transport and Infrastructure and Water Sensitive SA to deliver activities specified in respective agreements.

Source: Green Adelaide Business Plan 2020-21, from Submission 34, Green Adelaide Board.