PLANNING FOR CLIMATE CHANGE

How the South Australian planning system is responding to the challenges and opportunities of climate change

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Government of South Australia
Department for Trade and Investment

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"Land use planning and design are critical tools in supporting South Australia's community and economy to adapt to climate change, mitigate climate-related risks and reduce greenhouse gas emissions.

This brochure provides helpful insight into the role of the land use planning system, and how it is currently being used to tackle climate change-related issues. It provides a foundation for work to further improve planning policies and practices to deliver planning and development outcomes that are low emissions and climate resilient."

Martin Haese,
Chair of the Premier's Climate Change Council

"There is little doubt now that some cities in Australia will have days that reach or exceed 50°C. We have already seen days like these in Penrith. Adelaide is likely to face the same situation in the very near future. Cities will bear the brunt of many aspects of climate change because the heat island effect will exacerbate damaging weather features, including wind, storms and the radiant heat load. In an apparent contradiction, cities will also become refuges for wildlife, because they contain a variety of habitats and surface water. So, we must focus our planning not just on how we adapt and mitigate climate-induced weather affects, but also how we can support urban wildlife.

The way forward is, first -- good planning with an honest view to the realistic challenges ahead. And secondly, our response requires partnerships. Green Adelaide enthusiastically supports this plan for responding to climate change because it encourages partnerships with all forms of government, with a range of organisations, community groups and individuals. Acting together using a well planned, and concerted effort is the best way forward."

Chris Daniels,
Presiding Member of Green Adelaide

INTRODUCTION

South Australia's climate is changing.

Global warming caused by increasing greenhouse gases in the atmosphere, is changing climate patterns and weather events. Since the 1950s, hot days and heatwaves have become hotter and more frequent and heavy rainfall events have increased in frequency and intensity[1].

Globally, average surface air temperature has warmed by over 1 °C since reliable records began in 1850[2]. In Australia, the climate has warmed on average by 1.47 ± 0.24 °C since 1910[3].

As the climate continues to change, South Australia will become hotter and drier, with more frequent and intense extreme weather events. Rising sea levels will exacerbate coastal flooding and erosion risks.

With a changing climate there is growing potential for some natural hazards to occur at unimagined scales, in unprecedented combinations and in unexpected locations[4].

In recent years, South Australians have experienced firsthand the effects of climate change with increased frequency and intensity of extreme weather events such as droughts, heatwaves, bushfires and floods.

Climate change is already challenging the health and wellbeing of our communities, bringing with it serious risks to our property and infrastructure. It is also directly impacting our economy, particularly our agricultural and tourism industries. It presents challenges for our natural environments, habitats and biodiversity. The challenges and risks that climate change presents are projected to increase as the global climate continues to warm.

Addressing climate change means taking action to reduce greenhouse gas emissions and building the resilience of our regions, cities, towns and communities. Demand for low emissions and climate resilient development, goods and services is increasing, creating opportunities across South Australia.

Planning for the future requires considering the future climate. Planning and Land Use Services (PLUS) and the State Planning Commission (SPC) are working to embed climate change considerations across South Australia's planning policies and procedures based on the best available climate science and research.

We will continue to work with local government, industry and the community, including the Traditional Owners and Custodians of the lands and waters of South Australia, to collaborate on planning ideas and solutions that can influence and respond to climate change.

This brochure outlines how the planning system can respond to climate change risks, and the specific planning projects we have implemented and planned to address climate change challenges, and to take advantage of climate-related opportunities.


FIRE

CLIMATE CHANGE IMPACTS ON SOUTH AUSTRALIA

Projected changes to South Australia's climate are described in the *Guide to climate projections for risk assessment and planning in South Australia* published by the Department for Environment and Water in 2022[5]. This report provides a summary of the likely changes to key climate variables, such as temperature, rainfall, days of severe fire danger and sea level rise, under different greenhouse gas emissions scenarios. These changes will have a range of impacts on our communities, environments and economies.

	PROJECTED CHANGE	ASSOCIATED RISKS
 **Higher temperatures**	• Higher average daily maximum temperatures • Longer, hotter and more frequent heatwaves	• Reduced agricultural productivity • Changes in distribution and abundance of pest plants and animals • Increased risks of heat related illness and death
 **Drier with more time in drought**	• Reduced average annual rainfall • Reduced spring rainfall • More time spent in drought	• Increased stress on water resources • Reduced condition of water dependent ecosystems • Reduced agricultural productivity
 **More dangerous fire weather**	• More days of dangerous fire weather • Longer fire seasons	• Increased risks to public health and safety • Increased damage or destruction of assets, infrastructure and the natural environment
 **More intense heavy rainfall events**	• More rain falling in extreme rainfall events • More frequent extreme rainfall events	• Increased flood risk • Increased damage to assets, particularly roads and bridges • Increased damage to food crops
 **Rising sea levels**	• Increasing average sea levels • Increased height of extreme sea level events	• Increased coastal flooding • Increased erosion of beaches and damage or destruction of coastal assets

OUR APPROACH TO CLIMATE CHANGE

Consistent with the South Australian government's approach, the South Australian planning system aims to promote climate change mitigation and adaptation.

By undertaking both mitigation and adaptation solutions, we can deliver tangible climate change outcomes as well as many co-benefits including cost savings, energy conservation and improved community connection.

ADAPTATION

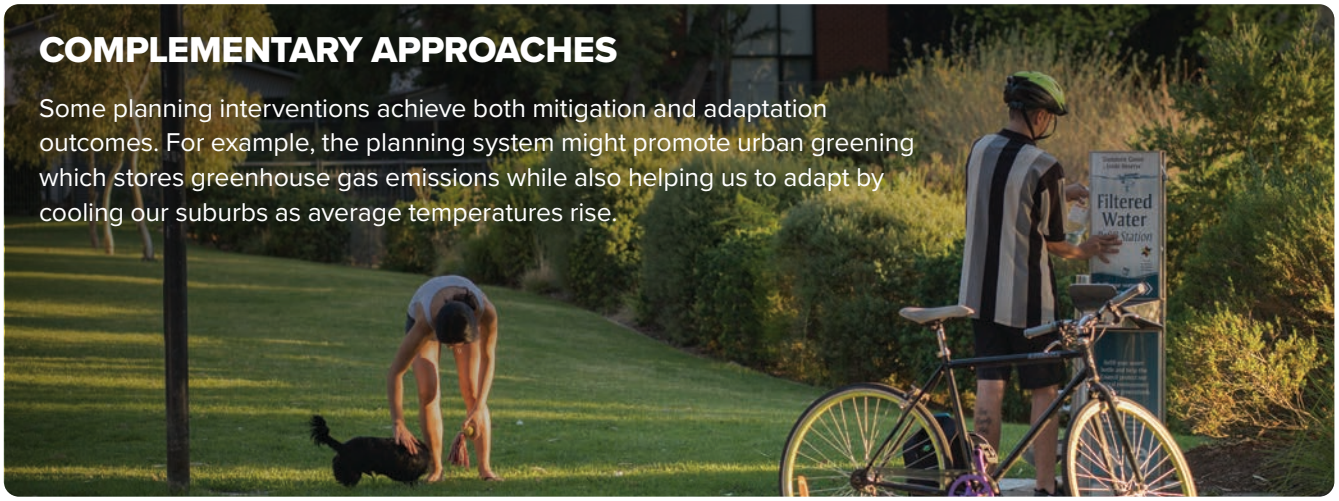
Climate change **adaptation** is the process of responding to the actual or expected climate and its effects. Adaptation works to manage the risks caused by climate change already in train and those caused by potential future climate change.

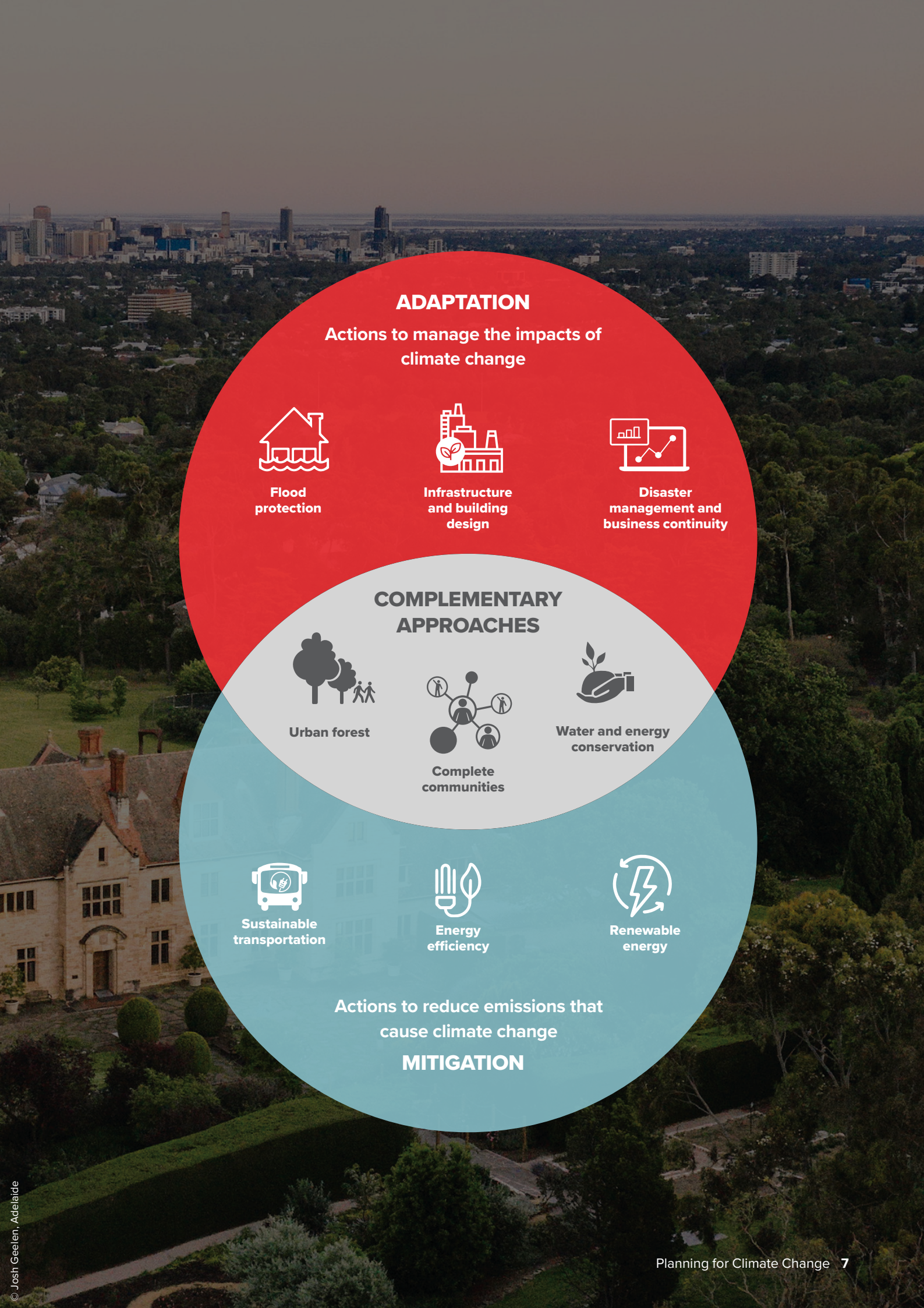
MITIGATION

Climate change **mitigation** seeks to reduce the release of greenhouse gas emissions to the atmosphere, including reducing the sources of emissions (for example burning fossil fuels) or increased the "sinks" that accumulate and store greenhouse gases (for example in forests, wetlands and soils).

COMPLEMENTARY APPROACHES

Some planning interventions achieve both mitigation and adaptation outcomes. For example, the planning system might promote urban greening which stores greenhouse gas emissions while also helping us to adapt by cooling our suburbs as average temperatures rise.



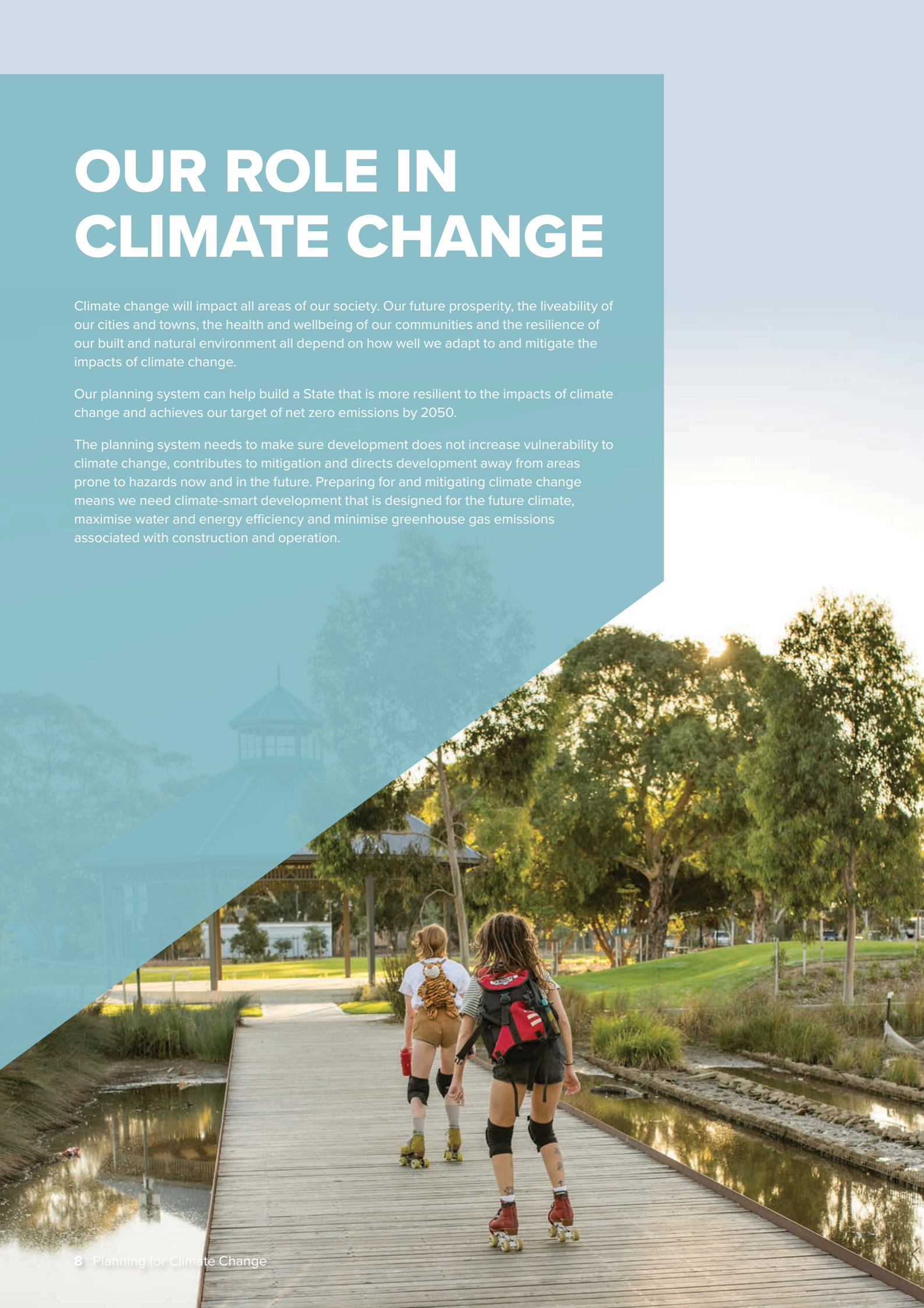


OUR ROLE IN CLIMATE CHANGE

Climate change will impact all areas of our society. Our future prosperity, the liveability of our cities and towns, the health and wellbeing of our communities and the resilience of our built and natural environment all depend on how well we adapt to and mitigate the impacts of climate change.

Our planning system can help build a State that is more resilient to the impacts of climate change and achieves our target of net zero emissions by 2050.

The planning system needs to make sure development does not increase vulnerability to climate change, contributes to mitigation and directs development away from areas prone to hazards now and in the future. Preparing for and mitigating climate change means we need climate-smart development that is designed for the future climate, maximise water and energy efficiency and minimise greenhouse gas emissions associated with construction and operation.



THE PLANNING SYSTEM AND CLIMATE CHANGE

South Australia's land use planning system is underpinned by the *Planning, Development and Infrastructure Act 2016* (PDI Act). The PDI Act directly refers to climate change and embeds its consideration in the development of the planning system through principles of good planning (S14).

The planning system provides for a range of planning instruments to guide and direct land use planning and design in South Australia, each of which offer different opportunities or mechanisms to respond to climate change.

Planning instrument	Opportunity or mechanisms to respond to climate change
State planning policies (SPPs)	The PDI Act requires the development of a number of state planning policies (SPPs), including a climate change policy. The purpose of the SPPs is to provide guidance about the intent of the Government's direction for the planning system. The PDI Act requires that the climate change SPP: *specifies policies and principles that are to be applied with respect to minimising adverse effects of decisions made under the Act on the climate and promoting development that is resilient to climate change.*
Regional Plans	Regional Plans can play a key role in influencing future development in each region to ensure that it is designed and located for the future climate. The design and location of new public realm elements and public infrastructure to be resilient to climate risks and protection and enhancement of natural habitats will be critical to support each region's social and economic prosperity.
Planning and Design Code	The Code contains a number of desired outcomes and performance outcomes relating to design that promote aspects of climate resilient development, including sustainable and durable design; landscaping, tree planting and permeable areas; climate responsive design techniques; water sensitive urban design; open space; protection of biodiversity. Hazard overlays include policy to recognise sea level rise; bushfire (development siting, asset protection) and flood hazard
Design Standards	No design standards have been prepared yet however design standards that promote well designed public realm that meets the needs of people now and in the future are envisaged. These could include reference to climate resilient design.
Off-set schemes	The Urban Tree Canopy Off-set Scheme facilitates tree planting and the enhancement of tree canopy in metropolitan Adelaide. This Scheme addresses the requirement to plant trees when new dwellings are built in urban residential areas, where planting a tree is not feasible to achieve the tree planting intent of the Planning and Design Code.

OUR CLIMATE CHANGE ACHIEVEMENTS AND FOCUS FOR FUTURE WORK

The South Australian planning system is already responding to the challenges and opportunities of climate change through a variety of initiatives.

Theme	What can the planning system do?	What planning mechanisms and initiatives do we already have in place, or are we currently undertaking, to progress this?	What more will the planning system do in the future?
 **Greening and carbon storage**	Protect existing trees and encourage more trees and green cover to reduce urban heat island effect and store carbon	**COMPLETED** • State Planning Policies 2.13, 4.4, 5.4, 5.11, 11.10, 15.4 • State Significant Native Vegetation Areas Overlay and the Native Vegetation Overlay which seek to protect, retain and restore areas of native vegetation • Policies and schemes in the Code to protect and enhance trees and green cover as well as retain stormwater to provide water for greening • Mandatory Tree Planting and Landscaping Requirements for new developments • Urban Tree Canopy Offset Scheme where retaining or plantings trees on-site is not feasible • Urban Tree Canopy Overlay promotes preservation and enhancement of urban tree canopy • Regulated and Significant Tree Overlay protects mature trees • 30-Year Plan for Greater Adelaide (2017 Update) target to increase urban green cover by 20% across metropolitan Adelaide by 2045 **IN PROGRESS** • Working collaboratively with Green Adelaide on a range of greening projects including Adelaide Garden Guide for New Homes, the Urban Greening Strategy for metropolitan Adelaide and Urban Heat and Tree Canopy Cover Data Recapture	• Explore policy frameworks to better support carbon farming/planting • Initiate the 'Open Space and Trees Project' to better understand open space and trees in an urban context, and make changes to the planning system where necessary to better support greening eg review significant tees legislation, urban canopy offset scheme and other opportunities ot increase tree canopy • Review the Tree Canopy Target in the 30-Year Plan for Greater Adelaide
 **Biodiversity protection**	Protect and enhance natural environments to improve the resilience of ecosystems to the impacts of climate change	**COMPLETED** • State Planning Policies 4.1 and 5.7 • State Significant Native Vegetation Areas Overlay and the Native Vegetation Overlay which seek to protect, retain and restore areas of native vegetation • Zones for open space and conservation areas	• Determine if there are more areas where the State Significant Native Vegetation Area Overlay should apply • Explore how the planning system can assist with habitat protection, breeding areas and movement corridors for threatened species

Theme	What can the planning system do?	What planning mechanisms and initiatives do we already have in place, or are we currently undertaking, to progress this?	What more will the planning system do in the future?
 **Energy and Emissions**	Improve the energy efficiency of new buildings and development	**COMPLETED** • State Planning Policies 2.3, 5.3, 12.5 • Policies in the Code to encourage energy efficient building design, for example siting and orienting buildings to maximise access to natural sunlight	• Advocate for the change of the building rules under the National Construction Code (NCC) to require the construction of 7-star energy efficient homes
	Support renewable energy generation and storage and transition South Australia away from fossil fuels	**COMPLETED** • State Planning Policies 5.6, 12.1, 12.2, • Policy framework that encourages growth in the renewable energy sector and aims to meet SA's emission reduction target of 100% net renewables by 2030.	• Investigate streamlining pathways and policy frameworks for renewable energy facilities in energy intensive locations (i.e. Strategic Employment Zone and Rural Insensitive Enterprise Zone) • Prepare policy frameworks for the assessment of offshore wind facilities • Consider the application of Infrastructure Corridors to facilitate infrastructure provision that supports the renewable energy sector and critical mineral production • Consider if and how renewable energy schemes may be delivered in the planning system • Support the development of green technologies, renewable energy and sustainable growth industries
	To aim for carbon neutrality and consider embodied carbon		• Investigate policy approaches that enable the consideration of cumulative carbon impacts and aim for carbon neutrality • Investigate how to calculate embodied carbon meaningfully, exploring industry carbon reduction plans and carbon pricing, rebates and incentives
 **Waste**	Facilitate reduction of waste to landfill and promote a circular economy		• Explore how the planning system can advance the circular economy • Explore waste treatment and management policies that consider climate change and urban infill scenarios

Theme	What can the planning system do?	What planning mechanisms and initiatives do we already have in place, or are we currently undertaking, to progress this?	What more will the planning system do in the future?
Sustainable urban development	Integrate climate change considerations into urban and regional development	**COMPLETED** • State Planning Policies 1, 2, 3, 4, 5 and 15 • Inclusion of sustainability as one of the 'Principles of Good Planning' under Section 14 of the Planning, Development and Infrastructure Act 2016 • Zones that identify areas for greenfield growth and are underpinned by master planning with inbuilt climate resilience measures eg rainwater tanks, WSUD, trees	• Explore the application of development green rating tools in a South Australian context • Explore at a neighbourhood scale how a more integrated approach to infrastructure and the environment can be achieved to create sustainable precincts • Explore how design standards can promote climate adaptation in the public realm and through infrastructure schemes
Transport	Promote low emissions and active transport	**COMPLETED** • State Planning Policies 1.3, 1.8, 1.11, 5.1, 6.3, 11.5, • Zones that encourage a compact urban form facilitating the use of existing infrastructure and transport services, reducing car use and promoting active transport and walkable neighbourhoods	• Prioritise active transport as part of the regional planning program through mixed land uses reducing the need for travel • Consider the 2022 Walking Strategy for SA as part of the regional planning program including The 30 Year Plan for Greater Adelaide to improve the walkability of neighbourhoods • Monitor EV take-up and consider if a policy response in relation to building on private property is required as part of the new NCC energy efficiency provisions

Theme	What can the planning system do?	What planning mechanisms and initiatives do we already have in place, or are we currently undertaking, to progress this?	What more will the planning system do in the future?
 **Hazards**	Direct development away from areas exposed to bushfire hazard.	**COMPLETED** • State Planning Policies 15.1, 15.6 • Hazards (Bushfire) Overlays ensures development responds to the potential for bushfire, to protect people and buildings, and enable emergency vehicle access	• Undertake the State-wide Bushfire Hazards Overlay Code Amendment to review and update the Hazard (Bushfire Risk) Overlays, incorporate current bushfire hazard mapping in the Code, and help guide the design of more bushfire resilient dwellings for our communities
	Direct development away from areas exposed to coastal and inland flooding risk	**COMPLETED** • State Planning Policies 15.1, 15.6 • Hazards (Flooding) and Hazards (Flooding - General) Overlays ensures new development acknowledges the impacts of future flood events • Code policy requirement for installation of water tanks on new house builds, retaining stormwater on-site • Residential Infill Policy helps allow stormwater to infiltrate into the ground via minimum soft landscaping requirements • Stormwater Management Overlay ensures water tanks manage stormwater impacts • Ramsar Wetlands Overlay seeks to control water movement in wetland areas taking into account the effects of climate change • Water Protection Area Overlay and Water Resources Overlay consider the adverse water quality impacts associated with climate change • Coastal Areas and Coastal (Flooding) Overlays seek to conserve and enhance the natural coastal environment and provide for natural coastal processes and hazards due to sea level rise, flooding and erosion	• Undertake the Flooding Hazards Mapping Update Code Amendment to update the Hazard (Flooding – Evidence Required) Overlay in 13 local government areas to ensure that developments can be assessed against current flood mapping and studies • Undertake the Flood Hazard Mapping and Assessment Project to deliver more consistent and contemporary mapping and modelling of riverine and flash flood hazards across South Australia, considering the impact of climate change and future development growth to 2050 • Investigate potential amendments to the Coastal Areas Overlay, including further application of Flooding Site and Floor Level Technical and Numeric Variations (TNVs)
	Ensure development does not contribute to increased urban heat	• See ‘greening’ measures	• Explore the use of heat mapping data in setting revised tree canopy targets • Investigate policy solutions for extreme heat such as a heat related hazard Overlay • Investigate options to update planning policy to cool urban areas (eg roofing colours and materials)
	Increase drought resilience	• Policies and schemes in the Code to retain stormwater to provide water for greenery	• Investigate options to update planning policy to promote infrastructure that reuses grey water

Theme	What can the planning system do?	What planning mechanisms and initiatives do we already have in place, or are we currently undertaking, to progress this?	What more will the planning system do in the future?
Planning/ strategy	To integrate greater climate change considerations across all planning policies and strategies	• Regional Planning Climate Change Investigations to identify the key climatic changes projected for each region and their likely impacts on communities, industries, infrastructure and the natural environment • State Planning Policies that address how the planning system should respond to climate change, design, energy and natural hazards	• Develop a new 30-Year Plan for Greater Adelaide to outline how Adelaide should grow to become more liveable, competitive and sustainable

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