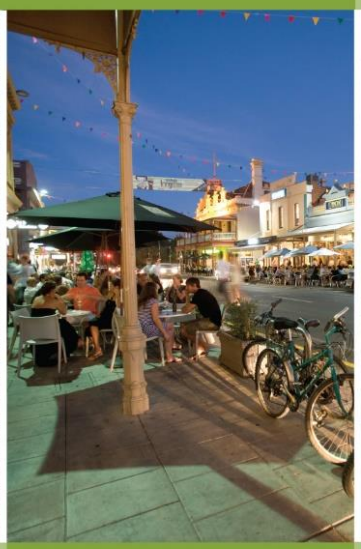
Resilient **East**

Vision, Values and Key Decisions Report





URPS

Resilient East Climate Change Adaptation Project

Vision, Values and Key Decisions report

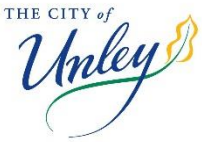
Lead Consultant	URPS
In association with	Seed Consulting Services Mark Stafford-Smith, CSIRO
Prepared for	Resilient East
Consultant Project Manager	Nicole Halsey, Director, URPS Suite 12/154 Fullarton Road (cnr Alexandra Ave) Rose Park, SA 5067 Tel: (08) 8333 7999 Email: nicole@urps.com.au Website: www.urps.com.au

Citation

Resilient East (2014) *Vision, Values and Key Decisions Report*, prepared by URPS as part of the Resilient East consultancy led by URPS, for the Eastern Region in association with the Government of South Australia and the Australian Government.

City of
Norwood
Payneham
& St Peters

CITY OF
TEA TREE GULLY
Naturally Better



CONTENTS

Executive Summary

Background

In South Australia the State Adaptation Framework is driving the development of regional integrated vulnerability assessments and climate change adaptation plans in order for regions to:

- Understand how climate change may impact them;
- Identify those aspects that are more vulnerable to climate change than others; and
- Develop a plan that identifies and prioritises adaptation options to address vulnerabilities.

These regional adaptation plans contribute to the achievement of South Australia's Strategic Plan (SASP) target 62 relating to all State Government regions having completed a climate change adaptation plan by 2016.

The Eastern Region under the banner of 'Resilient East' is one of the twelve State Government regions in South Australia that have committed to this adaptation planning process.

The Resilient East project

Resilient East is a project being undertaken by a partnership between the Cities of Tea Tree Gully, Campbelltown, Burnside, Unley, Norwood Payneham & St Peters and Prospect, the Town of Walkerville and Adelaide City Council, with the support of State and Federal Government, to develop an Integrated Vulnerability Assessment (IVA) and Climate Change Adaptation Plan.

Resilient East is being undertaken over three key stages as summarised by Figure A below, with stakeholder participation a feature throughout.

Figure A: Overview of Resilient East

Role of this report

This report is the culmination of stage one of Resilient East and provides the framework and key point of reference moving into the next stage of the project. In particular this report summarises anticipated changes in climate in the Region by 2050 (refer section 4), describes the Eastern Region through the aspects that are particularly valued (refer section 3), and considers how climate change may impact these in the future (refer sections 6 to 14).

This report will be a key a source of information to assist in the completion of stage two of Resilient East which will involve undertaking an Integrated Vulnerability Assessment (IVA), which in turn will form the basis of the Resilient East Regional Climate Change Adaptation Plan.

Information within this report such as the values (refer section 3) and regional profile (refer sections 6 to 14) supports the completion of the IVA including the identification of those aspects important to the Region to be assessed in terms of their vulnerability to a changing climate.

Overview of the Eastern Region

The Eastern Region comprises the Cities of Burnside, Campbelltown, Norwood Payneham & St Peters, Prospect, Tea Tree Gully and Unley, the Town of Walkerville and Adelaide City Council.

The Region is bounded by the Cities of Salisbury and Playford in the north, the Adelaide Hills Council area in the east, the Cities of Mitcham, Marion and West Torrens in the south, and the Cities of Charles Sturt, West Torrens and Port Adelaide Enfield in the west.

Table A summarises key aspects and features of the Eastern Region which are more fully documented and discussed in sections 6 to 14.

Table A: Summary of key aspects and features of the Eastern Region

Key aspects and features	Eastern Region
Total population	320,000 or 19% of the State's population
Total land area	16,800 hectares
Land uses	Predominantly residential (55%), open space (15%), industrial and commercial areas (12%) and rural areas (5%)
Built heritage (European)	4,793 State and Local heritage places
Contribution to Gross Regional Product (GRP)	$30.6 billion dollars or 32.6% of the Gross State Product (GSP)
Jobs and employment	248,961 jobs 171,975 or 70% of these being undertaken by residents of the Region

Key aspects and features	Eastern Region
Attractions, events and activities	Home to the State's capital city and inner and middle ring Council areas that are key contributors to the economic activity and vibrancy of Greater Metropolitan Adelaide and the State providing: • Key activity centres and main street environments • Cultural activities, celebrations, events and festivals of local, regional, State, National and International significance
Open space and natural features	2,480 hectares of open space or 15% of the total land area of the Region More open space per capita than the Western Adelaide Region Iconic waterways such as the River Torrens and constructed and natural wetlands and a range of water sensitive urban design features Foothills, parks and reserves
Habitat and biodiversity	1267.1 hectares of remnant native vegetation The majority (90%) of this vegetation occurs in the Hills Face in the Cities of Burnside, Campbelltown and Tea Tree Gully
Community health	Relatively healthy with key demographic characteristics not indicating high levels of disadvantage in the community overall
Income, higher education and socio-economic disadvantage	Region rates more favourably than Greater Adelaide as a whole The Region's community does include vulnerable people such as those aged over 65, people needing assistance with core activities, and people from culturally and linguistically diverse backgrounds who may have less capacity or have greater reliance on services and support
Demographic characteristics	Demographic diversity within the Region, with for example Adelaide City Council showing quite different characteristics in age and cultural and linguistic diversity than Walkerville and Burnside
Community involvement and participation	There are a range of opportunities for community members to connect, contribute and participate including involvement in decision making via consultation processes, participating in community activities and events, volunteering, helping others and learning. 17% of the community volunteer which is similar to the metropolitan average
Mobility	Relatively car dependent with 50% of households owning 2 or more vehicles 10% of residents use public transport to get to work which compares to 8% for Greater Adelaide
Infrastructure and services	Significant amount and diversity of infrastructure and services underpin the Region's community and economy. They are fundamental to the provision of essential services such as utilities, and contribute significantly the creation of jobs, facilitation of commerce, the provision of community facilities, commercial buildings and residential housing and the amenity and character of the Region

1 INTRODUCTION

1. Introduction

Resilient East aims to develop a coordinated and collaborative response to reduce the vulnerability of metropolitan Adelaide's Eastern Region to climate change.

The Resilient East project is being undertaken by the Eastern Region Alliance (ERA) - a partnership between the Cities of Tea Tree Gully, Campbelltown, Burnside, Unley, Norwood Payneham & St Peters and Prospect, and the Town of Walkerville – together with Adelaide City Council.

The project is being undertaken in three stages:

1. Development of a vision, values and summary of relevant regional characteristics and key decisions, and description of a future climate scenario as a basis for planning;
2. An integrated vulnerability assessment (IVA) that considers the implications of climate change on the identified vision, values and key decisions; and
3. A Climate Change Adaptation Plan that documents both regional and individual Council actions to respond to vulnerabilities identified in the IVA.

This Values, Key Decisions and Vision Report is the culmination of the first stage of work, and will underpin the subsequent IVA and Adaptation Plan stages.

Resilient East involves the active participation of the Region's key stakeholders, players and influencers in order to provide a strong foundation for ongoing coordination and collaboration to tackle the challenges of climate change into the future. The three project stages incorporate a series of workshops involving representatives of organisations that play a role in the Region's:

- Assets and infrastructure;
- Emergency management;
- Local economic development and sustainability;
- Natural environment, open space and water; and
- Social and community resilience and health.

In the first stage, stakeholders have brought their perspectives from these sectors of the Region to contribute directly to the formation of the Region's vision, values and key decisions.

1.1. Role of this report

This Values, Key Decisions and Vision Report sets out:

- The vision, values and key decisions developed in collaboration with Eastern Region stakeholders that underpin the Resilient East project;
- A high level summary of future climate projections that will inform the assessment of the Region's vulnerability to climate change;
- A profile of Eastern Adelaide's key characteristics relevant to the identified regional values, and preliminary discussion of sensitivity and adaptive capacity in relation to climate change. Like the climate projections, this profile will assist in the assessment of the Region's vulnerability in the next stage of the project; and
- The project partners' strategic directions and policies relating to climate change adaptation that provide the context for Resilient East and link to the identified values.

2 EASTERN REGION DIRECTIONS FOR CLIMATE CHANGE ADAPTATION

2. Eastern Region directions for climate change adaptation

This section provides a brief overview of the risk assessments already undertaken in relation to climate impacts by the Eastern Region Council. It also provides a summary of a review of current strategic directions and policies of the project partners relating to climate change adaptation.

2.1. Climate change risk assessments

Under the Local Government Association Mutual Liability Scheme Councils across South Australia undertook climate change risk management assessments to aid adaptation planning. For the Councils in the Eastern Region this assessment process identified that extreme temperature (number days >35 degrees) posed the greatest risk to Council operations, followed by reduced average rainfall. Extreme bushfire weather was also identified as a high risk area by the Cities of Burnside and Tea Tree Gully and Adelaide City Council.

Key impact areas for the Eastern Region Councils where the risk was assessed as high or extreme comprised:

- Development planning
- Health and wellbeing
- Community infrastructure
- Council prosperity
- Recreation and community services
- Emergency management

Appendix A provides a more detailed breakdown of these impact areas by risks.

2.2. Summary of current strategic directions

A review of the partner Council strategic management plans identified that most Councils have incorporated climate change adaptation into their strategies and in some cases, targets. Adelaide City Council has the most thorough coverage of climate change adaptation followed by the Cities of Tea Tree Gully and Norwood Payneham & St Peters. There was less emphasis on the need to prepare for the impacts of climate change in the Cities of Burnside and Prospect and Town of Walkerville strategic plans. There is no specific mention of preparing for climate change in Unley Council's Strategic Plan, although a range of objectives and strategies support adaptation.

In addition to the strategic plans of the partner Councils, a range of other strategic documents and plans were reviewed to understand how directions around climate change adaptation provided in the strategic management plans filtered down into other areas of Council business.

This review showed that the plans and strategies relating to the areas of open and green spaces, health, wellbeing and safety, governance tools such as asset management plans and biodiversity were the areas in which climate change adaptation were most comprehensively covered in the documents reviewed (refer Appendix B for more detailed information).

Table 1: Review of Council Strategies and Plans

Area of focus	Adelaide	Burnside	Campbelltown	Norwood Payneham & St Peters	Tea Tree Gully	Prospect	Walkerville	Unley
Open and Green Spaces	✓	✓	✓	✓	✓			
Water	✓			✓	✓			✓
Community Engagement, Education, Participation Connection, and Inclusion	✓							✓
Health, Wellbeing and Safety	✓	✓	✓	✓	✓			
Habitat and Biodiversity	✓	✓	✓		✓	✓		✓
Governance (e.g. Strategic Management Plan of Council,)	✓		✓	✓	✓	✓		✓
Infrastructure and Built Environment	✓			✓			✓	
Economic Activity and Vibrancy	✓		✓	✓	✓	✓		

3 VISION, VALUES AND KEY DECISIONS

3. Vision, values and key decisions

In November 2014 a Resilient East Values, Key Decisions and Vision Workshop was held with 85 stakeholders representing a range of organisations that play a role in the Eastern Region's:

- Assets and infrastructure;
- Emergency management;
- Local economic development and sustainability;
- Natural environment, open space and water; and
- Social and community resilience and health.

Workshop participants undertook a number of activities designed to:

- Understand those features or aspects of the Eastern Adelaide region that are important to stakeholders and their objectives and functions;
- Identify key decisions the Region's stakeholders need to make;
- Identify stakeholders' vision for the future of the Eastern Region; and
- Consider how these values, key decisions and vision might be impacted by climate change.

Information provided by participants during the workshop has been distilled into a vision for the future that will be tested and refined and evolved over the course of the project (refer Box 1), and a list of 9 overarching aspects that are valued in the Eastern Region (refer Table 2 and Table 3). Workshop participants also identified short, medium and long term key decisions for regional stakeholders (refer Table 4).

This information forms the focus of the remainder of the Resilient East project, has guided the development of the regional profile that forms part of this Values, Key Decisions and Vision Report, and will go on to guide future stages of the project that seek to understand the Region's vulnerability to climate change and identify and prioritise strategies to adapt to climate change impacts.

Box 1: A draft vision for the future of Eastern Adelaide

The Eastern Region of the Future is:

- Resilient and flexible;
- Responds to challenges and opportunities with creativity and innovation;
- "Green" in appearance and attitude, embodying sustainability, robustness and health in its economy, environment and people; and
- Independent in its self-sufficiency, and connected through strong links that form its vibrant, diverse and inclusive community and culture.

Table 2: Regional values, features and aspects

"What we value in the Eastern Region"	Features or aspects	Description
Open and green spaces	Street trees Park lands Open spaces	We value the street trees, parks and open areas that contribute to the region's visual character and amenity.
Water	WSUD Infrastructure service levels Water quality Habitat Iconic waterways (River Torrens), watercourses and wetlands (South Park Lands) Water efficiency	We value the watercourses and wetlands that contribute to the Region's environmental values and amenity, and stormwater management infrastructure that protects the environment and public safety and supports the sustainable use of water resources.
Community engagement, education and participation	Improving awareness of risks and safety Public health education Empowered communities Education influences behaviour Lifelong learning Active citizenship Structured support for community involvement	We value the involvement, engagement and education of communities around the Region's decision making, including in relation to health, safety and sustainability. We value fostering active citizenship and lifelong learning to support individual and community wellbeing.
Community connection, inclusion	Ageing Affordable, adaptable, sustainable housing Community facilities	We value inclusiveness and connection amongst all members of the community across diverse age, socio-economic and cultural groups, and fostering this connection in policy approaches and provision of services and support.
Health, wellbeing and safety	Physical health Mental health Infrastructure to support health (e.g. recreation facilities) Of ageing population Reduced risks to life and property Emergency management	We value the physical and mental health of the community and the infrastructure and services that support good health, wellbeing and safety, including amongst the Region's ageing population.
Habitat and biodiversity	Remnant vegetation Habitat diversity Hills Face Zone/peri-urban areas	We value the Region's habitat, biodiversity, remnant vegetation and foothills environments for their intrinsic value and amenity.

"What we value in the Eastern Region"	Features or aspects	Description
Governance	Leadership Coordination Financial sustainability Service levels Infrastructure Community expectations Collaboration and partnering	We value good governance and coordinated, sustainable delivery of the services and infrastructure that support the success and wellbeing of the Region.
Infrastructure and built environment	Asset renewal Heritage conservation Iconic buildings (e.g. Adelaide Oval) Balancing growth and heritage/natural environment Energy efficiency Building design Regional coordination of development Transport Essential services (e.g. power) Community facilities Waste management Roads	We value development and infrastructure that is sustainable and contributes to the amenity and quality of life in the Region.
Economic activity and vibrancy	Main streets Activity hubs Events Essential services (e.g. power) Business	We value economic activity for the contribution it makes to the quality of life of residents and visitors alike through the provision of goods and services, employment and investment opportunities and vibrant destinations for shopping, recreation, socialising and celebration.

Table 3: Regional values as relevant to stakeholders

"What we value in the Eastern Region"	Stakeholder representation by theme				
	Assets and infrastructure	Emergency management	Local economic development & sustainability	Natural environment, open space & water	Social and community resilience & health
Open and green spaces	X			X	X
Water	X	X	X	X	X
Community engagement, education and participation		X			X
Community connection, inclusion	X				X
Health, wellbeing and safety	X	X		X	X
Habitat and biodiversity			X	X	X
Governance	X	X	X	X	X
Infrastructure and built environment	X		X		X
Economic activity and vibrancy	X		X		X

Table 4: Key decisions

	Assets and infrastructure	Emergency management	Local economic development and sustainability	Natural environment, open space and water	Social and community resilience and health
Short lifetime decisions (0-10 years)	Annual budget (1 year). Infrastructure maintenance (1 year). Urban stormwater master plan finalisation <2 years. Elected member body renewal (4 years). Waste management & energy management processes. Hard waste collection review. Level of service delivery (community expectations). Cost recovery model for damaged infrastructure (e.g. roads) caused by private infill development. Plant and equipment.	Resourcing response teams (1-3 years). Plant replacement program (planning) (2 years). Risk management studies (2-3 years). Implementing community education programs (5-10 years). Plant replacement e.g. hoses, pumps, consumables (5-10 years).	Business incubation. Cultural vitality e.g. events, activities and programs, public art Separate rate levy.	Weed & pest management. Short term (annual + 5 years). Water flow trials in Torrens (annual). Community education (0-2 years). Funding/planning (0-3 years). Wetland designs (2-3 years). Recycling services provided by Councils (5-10 years). Creating opportunities for community involvement e.g. disability access. Compliance of private land holders with land management principles (fire/biodiversity).	Ongoing maintenance of public housing (0-10 years). Workforce planning (0-10 years) strategies to retain and recruit ageing/mature workers. Community education. Affordable housing. Service delivery decisions i.e. exposing a gap. Communication of community services & programs. Accessibility/travel communication for community facilities. Community programs, projects & activities e.g. community gardens, talks & classes etc.). What is going to happen with HACC? Consider life beyond current funding strategy – diversity. Health service delivery. Food security projects. Housing design & passive energy efficiency.
	Assets and infrastructure	**Emergency management**	**Local economic development and sustainability**	**Natural environment, open space and water**	**Social and community resilience and health**
Medium lifetime decisions (10-30 years)	Waste management & recycling (10-15 years). Facilities renewals (10-15 years). Strategic planning (25 years). Land use planning (30 year plan for greater Adelaide) & development plans. Stormwater/wastewater recycling. Planning for roads – fit for purpose bio-filtration – land. Waste management minimisation. Reduce car dependency footpath renewal - active transport. Community assets e.g. swimming pools, library, recreation & social facilities.	Plant replacement large vehicles (10-20 years). Emergency sector reform (20-30 years).	Strategies to grow home-based businesses. Retail hub redevelopment. Stormwater harvesting.	Volunteer conservation activities (5-20 years). Legislation development (10-30 years). Amenity landscapes (10-30 years). Planning for energy efficient public transport. Habitat restoration (25+ years). Renewal & management of 'urban tree screens' (TTG). Changes to open space opportunities (e.g. from structured to unstructured recreation). Replacing irrigation infrastructure. Water harvesting & reuse infrastructure. Streetscape policies. Water security planning.	Design, materials and construction of housing stock (10-30 years). Health service delivery (10-30 years). Workforce planning (10-30 years), strategies, planning for workforce demographics. Built design of homes i.e. single blocks, - consider green designs before house is built – regulatory changes. In-home construction, consider passive design/orientation – influence best practice to help home owners use house in energy efficient way. Preparing for an ageing population. Community bus routes. Location & nature of community facilities e.g. clubrooms, libraries & community centres). Swimming pool/construction – decision to construct lifetime impact. Alternative housing models. Cultural diversity – new arrivals; ATSI; LGBTI; CALD. Changes to building codes to improve resilience.

	Assets and infrastructure	Emergency management	Local economic development and sustainability	Natural environment, open space and water	Social and community resilience and health
Long lifetime decisions (30+ years)	Eastern Adelaide USMP – implementation (25-30 years). City & regional master planning (30-45 years). Water security infrastructure (45-60 years). Development assessment decisions relating to built environment e.g. construction of buildings, houses etc. (50 years). Reservation of land for urban growth/infill & economic development (60-80 years). 2nd generation street tree planting policy Trees & open space. Stormwater, footpaths & roads (&bike paths). Building assets.	Flood mitigation infrastructure. Land development.	Transport planning. Accessible services. Housing density.	Street tree assets (30+ years). Conservation reserves (30+ years). Policy and regulatory reform (30+ years). Approvals for wastewater infrastructure (30+ years). Management of urban stormwater for environmental purposes e.g. replenishment of water table. Management of remnant vegetation. Location of waste dumps. Location of green spaces (protect or not remnant veg). Revegetation. Development planning – subdivision & density policy. Built infrastructure & aquatic planting for Torrens.	Urban renewal (30+ years). Parks & ownership of parks (can potentially be a lifetime decision). Advocate for disaster mitigation, ie insurance company. Workforce planning (short, medium & long) longer term. Planning laws & development plans. Cultural inclusion. Development opportunities to accommodate changing population. Community wellbeing (outcome of infrastructure & services & cultural planning). Lifelong learning programs.

4 CLIMATE PROJECTIONS

4. Climate projections

This section outlines the climatic hazards that the Eastern Region may be exposed to as a result of changing climatic conditions. The exposure of the Eastern Region to climate hazards is summarised in Table 5.

Table 5: Exposure of Eastern Adelaide to potential climate hazards

Climate hazard	Exposure of Eastern Adelaide
Increasing average temperature	Entire region exposed
Increasing frequency, intensity and duration of heatwaves	Entire region exposed
Declining average annual rainfall	Entire region exposed
Increasing rainfall intensity	Entire region exposed
Increasing fire risk	Primarily foothills Councils exposed

The Project Steering Group considered the range of projections that could be used and a Climate Projections Report has been prepared to inform subsequent stages of assessment. The PSG agreed to base the Resilient East's climate projections on data from the median model output, with a timeframe of 2050 and using the high concentration pathway. The decision of 2050 as a timeframe reflects that many of the decisions made by Council, whether planning or infrastructure based, have a timeframe of at least 30 years.

The median temperature and rainfall data presented in the following section is based on the SA Climate Ready information, which is from the average change across 27 weather stations from the Adelaide Mount Lofty Ranges NRM region[1]. However, projections to 2050 are not currently available from SA Climate Ready for rainfall intensity, extreme heat and fire risk, so data has been presented for 2090 based on the CCIA project and for 2070 using analyses undertaken for other projects in Metropolitan Adelaide based on AR4 model results. These provide a general indication of the trend in these variables for the coming century.

4.1. Increasing average temperature

Surface air temperatures in the region have warmed since national records began in 1910, especially since 1960[2]. From 1910 to 2013, mean temperature has risen by 0.7°C.

[1] A list of weather stations for the AMLR NRM region is contained in the SA Climate Ready User Guide, available on https://data.environment.sa.gov.au/Climate/Pages/Home.aspx.

[2] Hope, P. *et al.* 2015, *Southern and South-Western Flatlands Cluster Report*, Climate Change in Australia Projections for Australia's Natural Resource Management Regions: Cluster Reports, eds. Ekstrom, M. *et al.*, CSIRO and Bureau of Meteorology, Australia.

By 2050, the SA Climate Ready data suggests that annual median maximum temperature will increase compared to the baseline[3] (1986–2005) by 1.3ºC and 1.6 ºC under the intermediate and high concentration pathways. By 2070, the increase in maximum temperature for the intermediate concentration pathway is 1.5ºC compared with 2.3 ºC for the high concentration pathway.

The difference between seasonal changes in maximum temperature by 2050 is limited, with summer, autumn and winter projected to increase by 1.2ºC and spring slighter higher at 1.6ºC under an intermediate concentration pathway. Under the high concentration pathway summer, autumn and winter increase by 1.5-1.6 ºC and spring by 2.0ºC.

4.2. Increasing frequency, intensity and duration of heatwaves

Heat extremes information is not available from the SA Climate Ready project so projections from the CCIA project have been used along with data for the Western Adelaide region (based on Adelaide Airport) produced from the AR4 group of models (CMIP3). Notably, the CCIA project provides data for changes to 2030 and 2090 only at this stage and not 2050.[4]

Heat related extremes are projected to increase at a similar rate as projected mean temperature in the region with a substantial increase in the number of warm spell days[5]. The number of days above 35 °C in Adelaide is projected to increase by about 150 %, but the number of days above 40 °C nearly doubles by late in the century (2090) (Table 6).

Table 6: Projections of extreme heat conditions for Adelaide by 2030 and 2090

THRESHOLD	CURRENT	2030, RCP4.5	2090, RCP4.5	2090, RCP8.5
Over 35 °C	20	26 (24 to 29)	32 (29 to 38)	47 (38 to 57)
Over 40 °C	3.7	5.9 (4.7 to 7.2)	9.0 (6.8 to 12)	16 (12 to 22)

Using AR4 based data[6], the incidence of heatwaves also increases in response to climate change. The number of days with temperatures of 35°C or more is projected to increase from 13.4 per year (during the baseline period 1980-1999) to 17.1 per year by 2030 and 35.8 per year by 2070. This equates to a 28% and 167% increase in the number of days over 35°C by 2030 and 2070, respectively.

[3] Climate Change in Australia reporting uses a primary reference period or baseline of 1986 to 2005 in accordance with results reported in the latest Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2013)
[4] A new definition of extreme heat was recently developed by the Bureau of Meteorology and could be used http://www.bom.gov.au/weather-services/about/heatwave-forecast.shtml
[5] Hope, P. et al. (2015)
[6] Based on high emissions and median model outputs from SKM (2013) *Western Adelaide Region Climate Change Adaptation Plan - Stage 1*. Sinclair Knight Merz, South Australia.

The number of days with temperatures over 40°C is projected to increase from 1.8 days per year (during the baseline period 1980-1999[7]) to 2.5 per year and 10.8 per year by 2030 and 2070. This equates to a 39% and 500% increase by 2030 and 2070, respectively.

4.3. Declining average annual rainfall

By 2050, the SA Climate Ready data suggests that annual median rainfall will decline by 6.8% and 7.4% compared with the baseline[8] under the intermediate and high concentration pathways, respectively (Figure 2). By 2070, the rainfall decline for the intermediate pathway is 5.7% compared with 11% for the high concentration pathway.

The seasonal differences are significant at 2050, with spring projected to experience a 21% decline in rainfall under the high concentration pathway compared with a 3.5% and 4.9% decline in autumn and winter respectively.

By 2070, the projected decline in median annual rainfall is 11% under a high concentration pathway, with reductions as high as 20.6% in spring.

4.4. Increasing rainfall intensity

The CCIA project found that there is high confidence that the intensity of heavy rainfall events (maximum 1-day rainfall) will increase in the region and that this holds despite projected decreases in mean rainfall. In contrast, projections of an increase in the return frequency of maximum 1-day rainfall events has low confidence.

Other recent analysis suggests that for each degree of global warming, extreme daily rainfall may increase by 7%[9]. If this was to apply in the Eastern Adelaide region, increasing temperatures could be expected to increase rainfall intensity by nearly 7% in the Eastern Adelaide region by 2030 and at least 10% by 2050 under a high concentration pathway.

4.5. Increasing fire risk

Fire weather was estimated in the CCIA project using the McArthur Forest Fire Danger Index (FFDI). Fire weather is considered 'severe' when the FFDI exceeds 50 and extreme when FFDI exceeds 75.

The CCIA projections suggest an increased fire weather risk in the future. Across the region, general fire weather danger increases by roughly 10 % by 2030, 12 % under RCP4.5 by 2090 and 30% under RCP8.5 by 2090.

[7] Note that the baseline (reference) period for AR4 data was 1980 – 1999.
[8] The baseline period for the SA Climate Ready data (based on AR5 results) is 1986-2005.
[9] Westra, S., Alexander, L. V., & Zwiers, F. W. (2012). Global increasing trends in annual maximum daily precipitation. Journal of Climate Change, 26, 3904-3918.

The number of days with a 'severe' fire danger rating increases from 12 % (RCP8.5) to 20 % (RCP4.5) by 2030, and from 25 % (RCP4.5) to 65 % (RCP8.5) by 2090. However, these changes represent sub-cluster wide results (i.e. FFDI for the entire Southern and South-Western Flatlands cluster), reflecting the method of aggregating data in this analysis. When taken on its own, the relative change in the number of severe days projected for Adelaide (2090, RCP8.5) is over 200%.

FFDI calculations are also available from AR4 based analyses, which were generated for the Resilient South project[10]. These found that for Adelaide Airport, days with FFDI ratings in the extreme category are projected to increase fivefold from 2 days per year in 1980-1999 to 10 days per year under the 2070 high emissions scenario.

[10] Resilient South (2014) Climate Change Scenarios Report – Resilient South, prepared by SKM as part of the Resilient South consultancy led by URPS, for the Cities of Onkaparinga, Holdfast Bay, Marion and Mitcham in association with the Government of South Australia and the Australian Government.

5 REGIONAL PROFILE

5. Regional Profile

The following profile of the Eastern Region, set out in Sections 6 to 14 of this report, has been developed as a source of information to assist in completion of the Resilient East IVA, which in turn will form the basis of the Regional Climate Change Adaptation Plan.

Information within the profile will support key aspects of the IVA including the selection of indicators against which to assess vulnerability, and consideration of the sensitivity and adaptive capacity of the Region in relation to those indicators.

In this context, *sensitivity* describes how something is affected either adversely or beneficially by climate variability or change (as described in Section 4), and *adaptive capacity* describes the ability to adjust to potential damage, take advantage of opportunities, or respond to consequences.[11] Along with baseline data that describe key characteristics of the Region, the profile provides a discussion to inform more detailed consideration of sensitivity and adaptive capacity that will occur in collaboration with stakeholders in the next stage of the project.

The regional profile has been structured around the following regional values identified by stakeholders in the initial project Values, Key Decisions and Vision Workshop:

- Open and green spaces;
- Water;
- Community engagement, education and participation;
- Community connection, inclusion;
- Health, wellbeing and safety;
- Habitat and biodiversity;
- Governance;
- Infrastructure and built environment; and
- Economic activity and vibrancy.

[11] IPCC (2014) Annex II Glossary in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press United Kingdom and New York, NY, USA, pp. 1757-1776.

Along with a description of the value and its features and aspects in the Region, the profile presents in relation to each of these values:

- A summary of existing conditions and key characteristics of the Region;
- Potential sensitivity of key regional characteristics to future climate factors (refer Section 4);
- Characteristics that contribute to adaptive capacity; and
- Strategies and policies of the Resilient East project partners that are relevant to the value and provide a source of further information in relation to existing conditions, and potential sensitivity and adaptive capacity[12].

Throughout the regional profile, inclusive of data tables, the terms *Eastern Adelaide* and *Eastern Region* refer to the 8 Resilient East project partners collectively.

5.1. Overview of the Eastern Region

The Eastern Region comprises the Cities of Burnside, Campbelltown, Norwood Payneham & St Peters, Prospect, Tea Tree Gully and Unley, the Town of Walkerville and Adelaide City Council.

The Region is bounded by the Cities of Salisbury and Playford in the north, the Adelaide Hills Council area in the east, the Cities of Mitcham, Marion and West Torrens in the south, and the Cities of Charles Sturt, West Torrens and Port Adelaide Enfield in the west.

The total population of the Region is estimated at just over 320,000, or 19% of the State's population. The City of Tea Tree Gully has the largest population in the Region with just over 30% and the Town of Walkerville the smallest with 2% of the population.

5.1.1. The built environment, infrastructure and economy

The Eastern Region encompasses a total land area of over 16,800 hectares and is predominantly residential (55%), with some open space (15%), industrial and commercial areas (12%) and rural areas (5%).

In the Eastern Region, 34% of residential development is medium or high density housing which compares to 24% for Greater Adelaide. The Region has limited residential broadhectare land, a situation that is not likely to change in the short term. Therefore, dwelling supply will predominantly come from infill development and redevelopment opportunities.

Built heritage of the Eastern Region is diverse with 4,793 State and Local heritage places across the Region. This heritage contributes to the character of some of the Council areas, particularly

[12] Note: listed policies and strategies are not intended to be an exhaustive list. Plans and strategies are those identified by individual Councils. Where no plan or strategy was identified in relation to a specific value by a Council a targeted internet search was undertaken to supplement this information.

Adelaide City Council and Councils in close proximity to the City reflecting the pattern of European settlement of the State.

The Eastern Region is home to the State's capital city and inner and middle ring Council areas that are key contributors to the economic activity and vibrancy of Greater Metropolitan Adelaide and the State.

Key contributions the Region makes to economy and vibrancy include:

- 30.6 billion dollars in Gross Regional Product, which is 32.6% of the Gross State Product (GSP);
- 18.12 billion dollars in Gross Regional Product (GRP) by Adelaide City, with the remaining Eastern Region Councils combined contributing 11.94 billion dollars to GRP;
- 248,961 jobs, with 171,975 or 70% of these being undertaken by residents of the Region;
- Key activity centres and main street environments which attract people from within and outside the Region for shopping, entertainment and recreation; and
- Cultural activities, celebrations, events and festivals of local, regional, State, National and International significance.

5.1.2. Open space, water, habitat and biodiversity

The Eastern Region has 2,480 hectares of open space which is 15% of the total land area of the Region. This compares to 14% in the Southern Region (Cities of Onkaparinga, Marion, Mitcham and Holdfast Bay) and 8% in the Western Region (Cities of Port Adelaide Enfield, Charles Sturt and West Torrens). The area of the Western and Eastern Regions is similar in size however the Eastern Region has a greater area of open space per capita.

The Eastern Region contains iconic waterways such as the River Torrens as well as a number of other watercourses. These watercourses, together with constructed and natural wetlands and a range of water sensitive urban design features, offer critical habitat and resources for numerous native species, contribute to the biodiversity of the Region, provide a number of ecosystem services, contribute to flood mitigation and stormwater management, provide recreation opportunities and amenity and provide water for reuse such as irrigation.

The open space of the Eastern Region combined with its water features provide important green infrastructure, contributing to the overall amenity and character of the Region and the mitigation of urban heat island effect to deliver cooling.

Habit and biodiversity assets are found throughout the foothills, parks and reserves and along watercourses contributing to the amenity of the Eastern Region and to recreation and tourism opportunities. Many of the areas that provide habitat and contribute to biodiversity are also key open space features of the Region. The aesthetic value and amenity of the foothills environment means that they are a desirable place to live. In other Councils in the Region the watercourses,

parks and reserves and adjacency to the Adelaide Park Lands contributes to their amenity and desirability.

The biodiversity of the Eastern Region has been significantly altered from its pre-European state with 6% or 1267.1 hectares of remnant native vegetation remaining. The majority (90%) of this vegetation occurs in the Hills Face in the Cities of Burnside, Campbelltown and Tea Tree Gully.

5.1.3. The Community of the Eastern Region

The community of the Eastern Region is relatively healthy with key demographic characteristics not indicating high levels of disadvantage in the community overall. For some indicators relating to income, higher education and socio-economic disadvantage the Region rates more favourably than Greater Adelaide as a whole. Similarly, the general health of the Region is relatively good with higher proportions of good self-assessed health and less mental health care plans than Greater Adelaide. At the same time the Eastern Region's community does include vulnerable people such as those aged over 65, people needing assistance with core activities, and people from culturally and linguistically diverse backgrounds who may have less capacity or have greater reliance on services and support.

There is also demographic diversity within the Region, with for example Adelaide City Council showing quite different characteristics in age and cultural and linguistic diversity than Walkerville and Burnside.

Throughout the Eastern Region there are a range of opportunities for community members to connect, contribute and participate. These opportunities include involvement in decision making via consultation processes, participating in community activities and events, volunteering, helping others and learning.

A broad range of community infrastructure and services are provided in the Region that play a role in supporting individuals, families and communities experiencing vulnerability, disadvantage and inequality. Similarly, there is a significant amount of community infrastructure that provides space for service and program delivery and opportunities for informal connection and learning.

6 OPEN AND GREEN SPACES

6. Open and green spaces

Description	We value the street trees, parks and open areas that contribute to the Region's visual character and amenity.
Features/aspects of open and green spaces we value in the Eastern Region	Street trees Park lands Open spaces

6.1. Existing conditions

Open and green space includes aspects of the public realm such as publically owned streets, pathways, right of ways, open spaces, plazas, street trees and street furniture. The term 'green infrastructure' is often used to refer to the living/green components of these aspects that perform a role such as shading, cooling and water treatment (refer section 7). The quality of the public realm is vital to creating environments that people want to spend time in. The public realm also provides connectivity between different places and spaces and the activities that occur there, and supports active travel via walking and cycling.

Open and green space also describes non-built up areas for public access and use including parks and reserves, trails and informal recreation spaces, and playing fields. These spaces contribute to the visual character and landscape of the Region and the health and wellbeing of the community through the opportunities they provide for recreation, relaxation and social connection.

The Eastern Region includes 2,480 hectares of open space[13], which forms 15% of the total land area of the Region. This compares to 14% in the Southern Region (Cities of Onkaparinga, Marion, Mitcham and Holdfast Bay) and 8% in the Western Region (Cities of Port Adelaide Enfield, Charles Sturt and West Torrens). The area of the Western and Eastern Regions is similar in size however the Eastern Region has a greater area of open space per capita.

As shown in Table 7, within Eastern Adelaide, the highest proportions of open space are within City of Adelaide and City of Campbelltown, and lower proportions within City of Prospect and City of Norwood Payneham & St Peters. Open space in the Region is owned by local governments (65%) and State government (30%) (refer Table 8Table 7). Some open space in the Region is irrigated using a range of water sources including groundwater, River Torrens water, recycled wastewater and treated stormwater contributing to the 'green' landscape of the Region.

[13] Open space comprises golf courses, recreation areas and reserves including conservation and recreation parks

Table 7: Proportion of open space (Source: Department of Planning, Transport and Infrastructure, 2013 Generalised Land Use-Spatial Dataset)

LGA	Area of Open Space (ha)	Total Council Area (ha)	% of Council total area
Adelaide LGA	595	1218	49%
Burnside LGA	250	2234	11%
Campbelltown LGA	356	1941	18%
Norwood, Payneham and St Peters LGA	82	1155	7%
Prospect LGA	20	600	3%
Tea Tree Gully LGA	1115	8309	13.7%
Unley LGA	36	1104	3%
Walkerville LGA	26	276	10%
Eastern Region	2480	16837	15%

Table 8: Ownership of open space (Source: Department of Planning, Transport and Infrastructure, 2013 Generalised Land Use-Spatial Dataset and Government Land-Spatial Dataset)

LGA	Local Owned Area of Open Space (ha)	Local Owned % of Council Open Space	State Owned Area of Open Space (ha)	State Owned % of Council Open Space
Adelaide LGA	581	99%	9	1%
Burnside LGA	147	70%	62	30%
Campbelltown LGA	168	48%	184	52%
Norwood Payneham & St Peters LGA	53	71%	21	29%
Prospect LGA	19	99%	>1	1%
Tea Tree Gully LGA	585	56%	460	44%
Unley LGA	34	96%	1	4%
Walkerville LGA	15	58%	11	42%

Key open space features that exemplify the contribution of open and green spaces to the Region include:

- The Adelaide Park Lands framing the centre of Adelaide and North Adelaide comprising formal and semi-planned gardens and playing fields, and providing areas for cultural and community events such as the Adelaide Fringe. The Park Lands have historical significance as part of Colonel William Light's design for the Adelaide, and were entered on the Australian National Heritage list in 2008.
- The eastern section of the River Torrens Linear Park extending from Mount Lofty Ranges to the Adelaide CBD. This park includes walking and cycling trails adjacent the iconic River Torrens watercourse as well as areas for picnicking and informal recreation. Within the City of Adelaide, the Park passes significant landmarks including the Adelaide Zoo, Botanic Gardens and Elder Park. In addition to its recreational value the Park also contributes to flood mitigation and stormwater management, and acts as a biodiversity corridor.

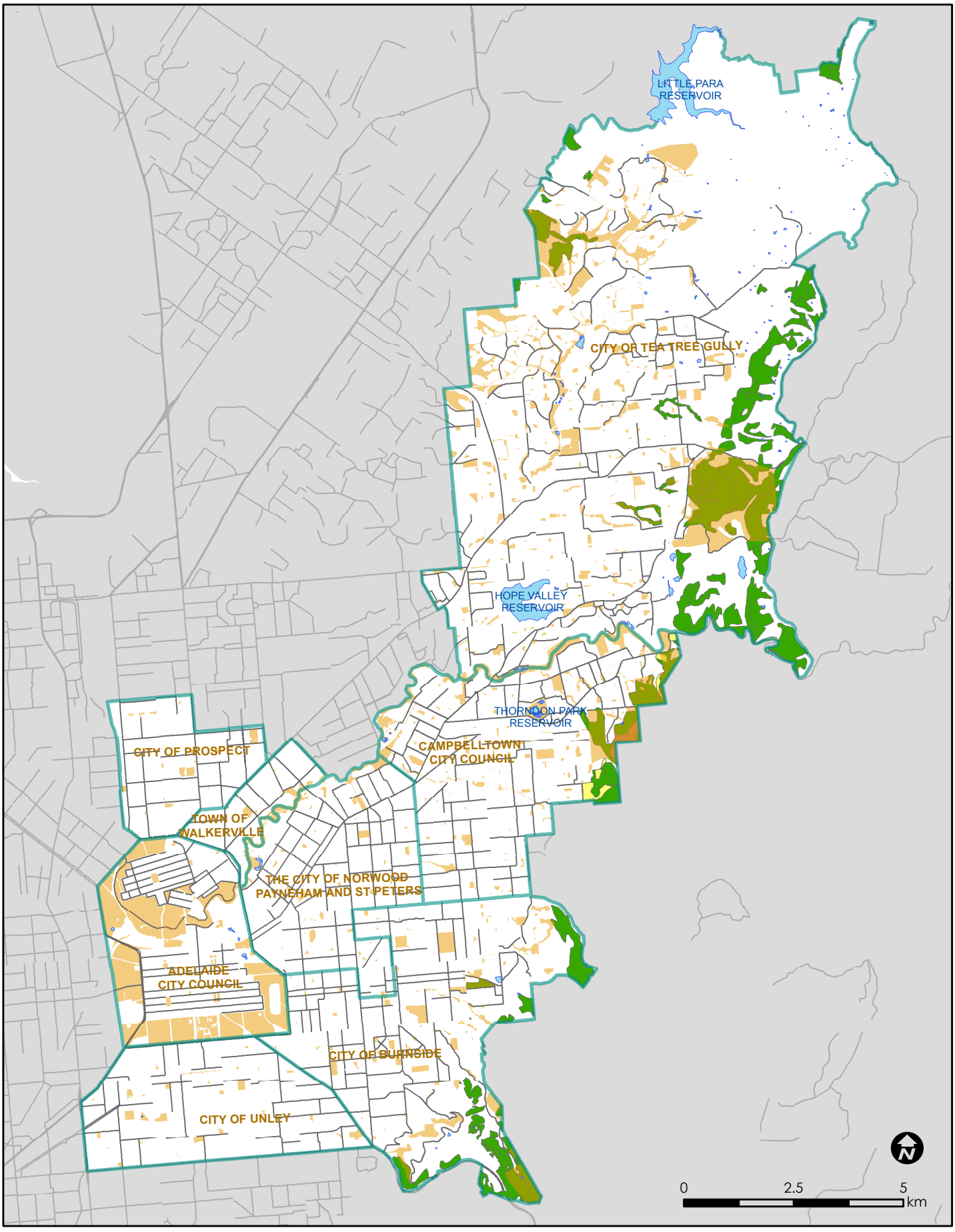
- Anstey Hill Recreation Park and Morialta Conservation Park, each of which provide biodiversity habitat, landscape values, and recreational opportunities such as walking and rock climbing; and
- Local parks and reserves such as Kensington Gardens Reserve, The Gums, Thorndon Park, Lochiel Parklands and Waterfall Gully Reserve that contribute to the amenity of the surrounding suburbs and provide for formal and informal sport and recreation.

Street trees also contribute to the 'green' nature of the Region and provide visual amenity and shade. The Region contains a large number of street trees, including significant avenues of trees at Alexandra Avenue and Prescott Terrace in Rose Park and along Frome Road in Adelaide City.

Amongst the Region's Council areas, total tree canopy coverage ranges from between 18% of total land area in Prospect to 30% of total land area in Burnside. The average percentage of tree canopy coverage across the Region is 26%, similar to the proportion across metropolitan Adelaide as a whole, and between 4% and 28% lower than urban areas in other Australian states.[14]

The Region contains 1,270 hectares of remnant native vegetation, the majority of which is located in the Hills Face in the Cities of Burnside, Campbelltown and Tea Tree Gully (refer Section 11, Habitat and Biodiversity). Some of this area also comprises open space such as in the Anstey Hill Conservation Park, Morialta Conservation Park and Cobbler Creek. Map 1 shows open space and remnant vegetation in the Eastern Region.

[14] Jacobs, B., Mikhailovich, N., and Delaney, C. (2014) *Benchmarking Australia's Urban Tree Canopy: An i-Tree Assessment*, prepared for Horticulture Australia Limited by the Institute for Sustainable Futures, University of Technology Sydney, pp. 14 & 26.



Waterbodies

Council boundaries

Major Road

Open Space

Native Vegetation (General Form Description)

Forest

Woodland

Shrubland >1m

Sedgeland

Grassland

Map 1
Open Space and Remnant Vegetation Resilient East

Data Source: DPTI, DEWNR

6.2. Sensitivity to climate factors

Open and green spaces and street trees and green infrastructure in the Eastern Region are likely to be sensitive to projected climate changes relating to heat and reduced rainfall. Vegetation types ranging from turfed areas, to mature trees, to remnant native vegetation may experience declining condition as a result of drying, plant loss, and introduction of disease. This in turn has potential to:

- Impact the visual amenity of streetscapes and open spaces;
- Impact the recreational amenity of open spaces leading to reduced use;
- Compromise the Region's biodiversity and habitat;
- Increase the likelihood of limb fall which poses a hazard to the community; and
- Reduce the Region's resilience to Urban Heat Island (UHI) effect.[15]

Extreme rainfall events can damage open spaces and vegetation, impacting their ability to be used for formal and informal recreation. Bushfire can also damage these spaces and impact upon their recreational and visual amenity, with flow on effects on community wellbeing.

Many parks and reserves in the Region contain infrastructure such as seating, play equipment, BBQs, trails, walking paths and other amenities. These facilities could be damaged by flood and bushfire events, and increased heat, reduced rainfall, and/or more intense rainfall events may also reduce the life of these assets or require more frequent maintenance.

6.3. Adaptive capacity

The Region contains a number of water reuse schemes that support sustainable irrigation of open and green spaces. Such schemes contribute to the Region's adaptive capacity by enabling open and green spaces to remain accessible and in good condition without reliance on rainfall or potable water supplies. For those Councils in the Eastern Region that already have low levels of open and green space provision, ensuring ongoing access to other areas of quality open space in the Region will be important.

Water Sensitive Urban Design (WSUD) and managed aquifer recharge (MAR) features (either established or in development) that capture, treat and store stormwater are in operation in the Eastern Region including within parks within the City of Unley and sites associated with the Waterproofing Eastern Adelaide project at Tusmore Park, Mahogany Reserve, Felixstow Reserve and Athelstone Reserve, and Waterproofing Northern Adelaide sites within the City of Tea Tree Gully. The Glenelg to Adelaide Recycled Water Project (GAP) utilises recycled water from the

[15] UHI refers to the difference in air temperature between urban environments and surrounding rural environments, where urban environments experience warmer temperatures due to a larger impervious surface area as a result of urban development. Open spaces and vegetated areas can moderate air temperature and reduce the impacts of UHI.

Glenelg Wastewater Treatment Plant to irrigate over 163 hectares of Park Lands in the Adelaide City and for use in the City of Unley (refer Section 7, Water).

Existing green infrastructure such as street trees, open space and water sensitive urban design features already play an important role in in the Eastern Region by providing cooling and reducing the Urban Heat Island effect as well as contributing to the character and amenity of the Region. Green infrastructure will have an increasingly important role to play in the Region as temperatures increase.

Throughout the Region a large number of strategies and management plans seek to maintain and improve open spaces and the features and assets within them for community benefit (refer Section 6.4 below). The development and implementation of these plans by regional stakeholders (primarily local governments) contributes to the adaptive capacity of the Region's open and green spaces by maintaining them in good condition and providing an understanding of the associated risks and opportunities. Open and green spaces managed by local governments are also subject to a prioritisation of service levels for different spaces, and this framework for prioritisation supports Councils' ability to adapt to competing or changing demands associated with their management under future climate conditions.

6.4. Relevant polices and strategies

Adelaide City Council	Park Lands Management Strategy Park Lands Landscape Master Plan Park Lands 10 year Plan
City of Burnside	Open Space Strategy Community Land Management Plans Open Space Policy
City of Campbelltown	Open Space Directions and Strategies Report 2012 Chain of Trails Master Plan 2014
City of Norwood Payneham & St Peters	Open Space Strategy Recreation & Open Space Asset Management Plan Playgrounds Strategy
City of Tea Tree Gully	Open Space Strategy 2011 - 2030 Urban Landscape Master Plan
City of Unley	Review of the Open Space Recreation Strategy 2004-2014 Open Space Policy Community Land Management Plan
Town of Walkerville	Open Space Strategy

7 WATER

7. Water

Description	We value the watercourses and wetlands that contribute to the Region's environmental values and amenity, and stormwater management infrastructure that protects the environment and public safety and supports the sustainable use of water resources.
Features/aspects of water we value in the Eastern Region	WSUD Infrastructure service levels Water quality Habitat Iconic waterways (River Torrens), watercourses and wetlands (South Park Lands) Water efficiency Groundwater

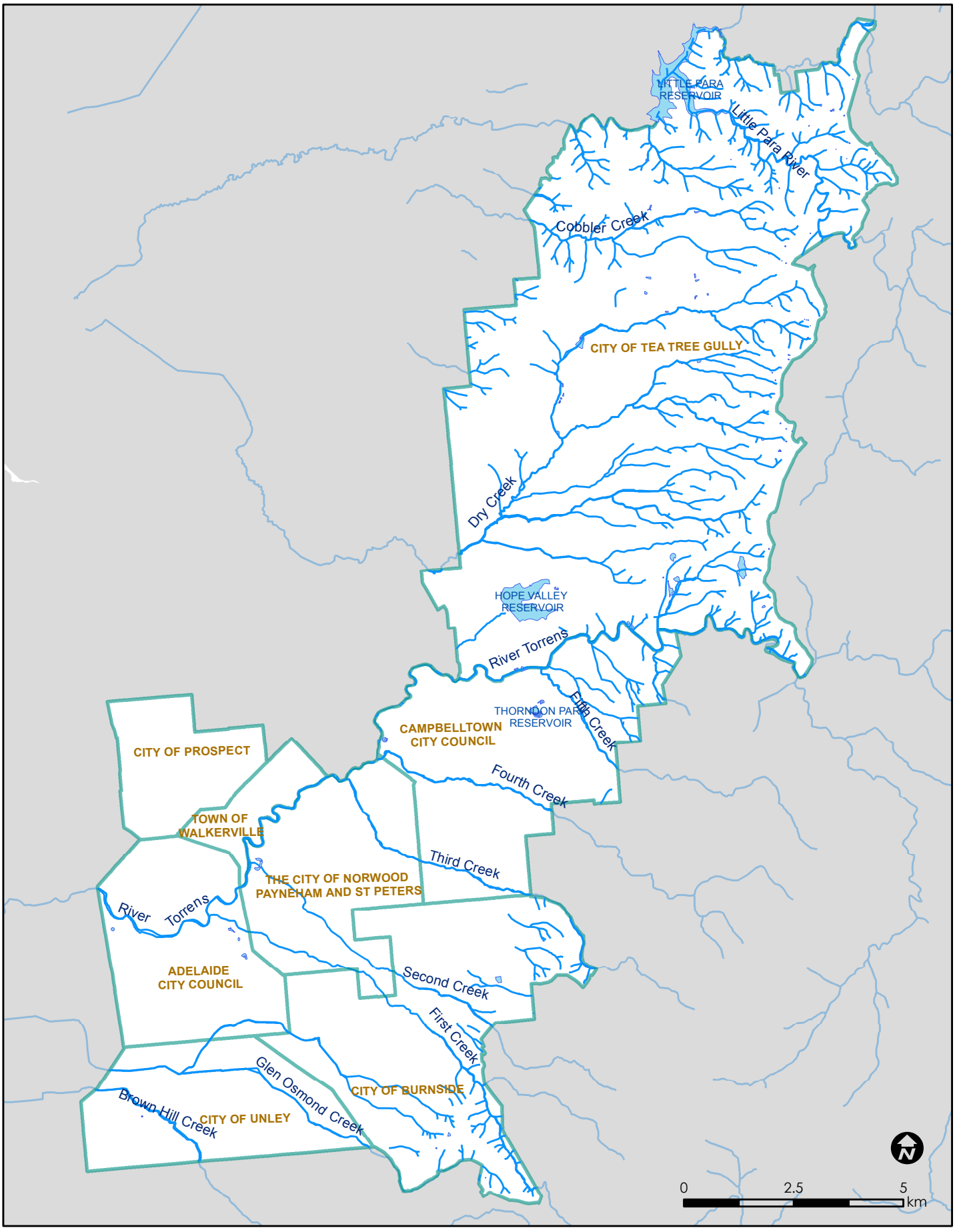
7.1. Existing conditions

Water includes natural water courses, constructed systems, wetlands, riparian habitat, groundwater and water sensitive urban design (WSUD) features. These aspects contribute to the Region's environmental values, character and amenity, and assist with managing stormwater, including flood mitigation, to protect the environment and public safety. WSUD features such as wetlands, detention basins and vegetated swales support the sustainable use of water resources and assist with maintaining other aspects valued across the Region through irrigation of open space, streetscapes and public realm.

The Eastern Region contains iconic waterways such as the River Torrens as well as a number of other watercourses such as Glen Osmond Creek, Brown Hill Creek, Keswick Creek, Little Para River, Cobbler Creek, Dry Creek and First to Fifth Creeks (refer Map 2). All of these watercourses have been significantly modified from natural condition and are highly channelized, cleared of vegetation and receive increased runoff as a result of urban development. Many areas, such as along the River Torrens, a section of Brown Hill Creek at Forestville Reserve and Second Creek and Dunston Grove Linde Reserve have been rehabilitated to provide habitat and recreation opportunities.

Groundwater in the Eastern Region is in the Central Adelaide Prescribed Wells Area. The use of groundwater has increased rapidly over the last 20 to 30 years, mainly for industrial purposes and turf irrigation,[16] and a Water Allocation Plan is currently under preparation to manage this resource.

[16] Adelaide and Mount Lofty Ranges Natural Resources Management Board, 2013, *Concept Statement-Preparation of a Water Allocation Plan for the Adelaide Plains*, page 1



Watercourse

Waterbodies

Council boundaries

Map 2
Watercourses
Resilient East

Data Source: DPTI, DEWNR

Key features that exemplify the contribution water makes to the Region include:

- Constructed and natural wetlands, which contribute to water quality, stormwater treatment and biodiversity. Examples include the Botanic Gardens wetland, St Peters Billabong at the end of Second Creek, Thorndon Park lake and wetlands, Ridge Reserve wetlands, Mahogany Wetland at Dernancourt and the Kingfisher Wetland at Modbury Heights;
- The quality, quantity and location of the Region's water resources offer critical habitat and resources for numerous native species, contributing to the biodiversity of the Region;
- A number of ecosystem services are provided by environment and open space areas, for example, the numerous wetlands in the Region help to capture, store and improve water quality and availability, as well as providing important species habitats;
- The eastern section of the River Torrens Linear Park extending from Mount Lofty Ranges to the Adelaide CBD. The River Torrens contributes to flood mitigation and stormwater management, provides recreation opportunities and acts as a biodiversity corridor;
- A range of WSUD features including soakage trenches, rain gardens, tree pits and rainwater tanks which capture and treat stormwater runoff and contribute to the Region's amenity, water quality, flood mitigation and the mitigation of urban heat island effect to deliver cooling. Stormwater is harvested (e.g. via Managed Aquifer Recharge (MAR) and Aquifer Storage and Recovery (ASR) schemes) at a number of sites across the Region and reused to irrigate open space, contributing to the maintenance of its quality and amenity (refer Table 9 for examples of WSUD features in the Region);
- Reservoirs including Little Para reservoir which is used to balance storage for River Murray water and provide a flood mitigation role, and Hope Valley reservoir which is a service reservoir from which water is distributed as part of the public water supply network; and
- Use of treated waste water from the Glenelg to Adelaide Recycled Water Project to irrigate over 163 hectares of Park Lands;
- Use of groundwater for irrigation and industrial uses.

Table 9: Examples of WSUD Features in the Eastern Region

Adelaide City Council	Peacock Road Water Sensitive Urban Design features North Terrace Water Sensitive Urban Design features Victoria Avenue Water Sensitive Urban Design features
City of Burnside	Rain Garden Queens Lane Glen Osmond Permeable Paving at Linden Gardens Reserve Tusmore Park: Biofiltration/ raingarden
City of Norwood Payneham & St Peters	James Coke Park Stormwater reuse in irrigation (underground tank captures runoff from Coke St) Soakage trenches along internal pathway Dunstone Grove Linde Reserve Biofiltration stormwater harvesting & reuse scheme (irrigates the reserve, Community Garden, St Peters Civic Plaza, St Peters Town Hall including the two fountains) Creek line naturalisation Glynde Corner Biofiltration bed with storage capacity Richards Park Underground rainwater tank for irrigation St Peters St Civic Plaza Rain gardens to capture footpath runoff Two biofiltration garden beds capturing and treating all surface water in the St Peters Civic Plaza Pollock Ave, Marden Tree pits along roadway
City of Tea Tree Gully	Kingfisher Wetland and ASR Wynn Vale Dam and ASR Edinburgh Reserve Wetland Gifford Reserve Wetland Mahogany Reserve: Wetland (including link to the existing Torrens Wetland/Aquifer Storage & Recovery Torrens 1 Wetland and ASR Solandra Wetland and ASR
City of Unley	Hamilton Boulevard WSUD Heywood Park Managed Aquifer Recharge Scheme Ridge Park Managed Aquifer Recharge Scheme Wattle Street WSUD

7.2. Sensitivity to climate factors

Water in the Eastern Region is likely to be sensitive to projected climate changes relating to reduced rainfall runoff to watercourses and storages, increased rainfall intensity and increased evaporation.

This in turn has potential to:

- Reduce the effectiveness of WSUD features and reduce the supply of water available for irrigation and other purposes;
- Impact the visual amenity of streetscapes and open spaces;
- Impact the recreational amenity of open spaces, potentially leading to reduced use;
- Threaten public safety and damage the built environment and infrastructure through flooding; and
- Compromise the Region's biodiversity and habitat.

The irrigation of open space and public realm may also be affected by higher temperatures coupled with less rainfall causing an increase in evapotranspiration. This will result in increased management intervention to irrigate more and extend irrigation to areas previously not irrigated. This will increase costs associated with increased water usage, infrastructure and maintenance associated with additional infrastructure, which may in turn be passed on to rate payers and club members.

Reduced rainfall has the potential to threaten the health of vegetation, particularly street trees in the urban environment which require changes to species selection and management practices.

The increased frequency of intense rainfall events could have implications for infrastructure both in terms of its ability to cope with extreme events and management of stormwater to prevent flood damage and loss of life.

Increased temperatures, reduced inflows as a result of reduced rainfall and nutrient enriched runoff from increased rainfall events may impact water quality of watercourses, resulting in more frequent algal blooms.

More frequent bushfires has the potential to adversely impart surface water quality in the Region as a result of reduced vegetation cover in the surface water catchments.

7.3. Adaptive capacity

The Eastern Region contains a range of WSUD and MAR features (either established or in development) that capture, treat and store stormwater for reuse. These are generally subject to management plans and associated budgeting to monitor and maintain them which contributes to their adaptive capacity.

The Waterproofing the East project aims to provide a regional approach to the capture, treatment, storage and reuse of stormwater. Initiated under the Eastern Regional Alliance and supported by funding from the Australian Government's National Urban Water and Desalination Plan and the Adelaide and Mount Lofty Ranges Natural Resources Management Board, this initiative contributes significantly to the adaptive capacity of the Region. The extent of this

contribution to adaptive capacity will be conditional on the ability for this key project to be funded and implemented.

The use of treated wastewater from the Glenelg to Adelaide Recycled Water Project (GAP) by the Adelaide City Council to irrigate Park Lands also contributes to adaptive capacity by ensuring a reliable supply of water (recycled) remains available during times of future water restrictions. The use of recycled waste water is also occurring in the Cities of Unley Tea Tree Gully.

The number of constructed wetlands throughout the Region contributes to adaptive capacity. Constructed wetlands are less vulnerable than natural wetlands as they have been designed to accommodate a range of conditions. In addition, often constructed wetlands are established to provide additional benefits (e.g. economic benefit through capture, treatment and reuse of water) and may have greater budgets allocated for their management and maintenance.

The management of water resources throughout the Region is the subject of a large number of strategies and management plans that seek to maintain and improve its quality, manage its impact in terms of flooding and capture, treat and store for reuse (refer Section 7.4 below). The development and implementation of these plans by regional stakeholders (primarily local governments) contributes to the adaptive capacity of the Region's water by maintaining them in good condition and providing an understanding of the risks and opportunities they are subject to.

7.4. Relevant policies and strategies

Regional	Water Security Action Plan 2011-2016 Brown Hill Keswick Creek Stormwater Management Plan Eastern Region Stormwater Management Plan Waterproofing Northern Adelaide (in collaboration with Salisbury and Playford Councils)
Adelaide City Council	Biodiversity and Water Quality Action Plan Water Infrastructure Asset Plan
City of Burnside	Biodiversity Strategy Water Sensitive Urban Design Policy Watercourse Management Policy
City of Campbelltown	Integrated Urban Water Cycle Management Plan Flood plain mapping information brochure Waterproofing the East Project Infrastructure and Asset Management Plan – Stormwater Assets Stormwater Drainage Programme
City of Norwood Payneham & St Peters	Water Conservation Webpage Stormwater Asset Management Plan
City of Prospect	Water Conservation Webpage Environmental Protection – Water Quality Policy Stormwater Pollution

City of Tea Tree Gully	Recycled Water Policy Community Wastewater Management Systems (CWMS) Management Policy CWMS Asset Management Plan Stormwater Asset Management Plan
City of Unley	Stormwater Management Plan 2012 Waterproofing the East Project Stormwater Harvesting and Reuse Project
Town of Walkerville	Stormwater Infrastructure and Asset Management Plan
Adelaide & Mount Lofty Ranges Natural Resources	Regional Natural Resources Management Plan Adelaide Plains Water allocation Plan (currently under preparation)

8 COMMUNITY ENGAGEMENT, EDUCATION AND PARTICAPTION

8. Community engagement, education and participation

Description	We value the involvement, engagement and education of communities around the Region's decision making, including in relation to health, safety and sustainability. We value fostering active citizenship and lifelong learning to support individual and community wellbeing
Features/aspects of community engagement, education and participation we value in the Eastern Region	Improving awareness of risks and safety Public health education Empowered communities Education influences behaviour Lifelong learning Active citizenship Structured support for community involvement

8.1. Existing conditions

Involvement of the community in decisions that affect them, participation in community activities and events, helping others, and opportunities for learning, each contribute to wellbeing and social connection in Eastern Adelaide.

Community involvement in local decision making is often facilitated by local government, and each of the Region's Councils has a community engagement policy or strategy that forms a framework for opportunities for the community to be informed of, consulted about, and involved in Councils' direction and decision making processes. Specific community engagement initiatives implemented by the Region's Councils to obtain community input on a range of topics and themes relating to Council plans, services and activities include the following:

- Online Community Panels for Campbelltown, Prospect and Unley who are invited to respond to 4 to 6 surveys each year to and the local community;
- The Your Say Adelaide and Engage Burnside online consultation platforms;
- Tea Tree Gully's community panel which is communicated both online, in writing and through face to face events; and
- A large number of project-specific community consultation processes involving a variety of communication channels including information brochures, workshops and community meetings, online and postal surveys and displays.

A range of opportunities for community education are available in the Eastern Region, including language, arts and crafts, and skills development programs conducted through libraries and community centres (such as the City of Adelaide's three community centres), and environmental

education programs delivered by the Adelaide and Mount Lofty Ranges Natural Resources Management Board. Formal education is provided within the Region by numerous public and private schools from pre-school to secondary levels, campuses of three Adelaide-based and two internationally based Universities, and three TAFE SA campuses. Vocational education and training is also provided throughout the Region by commercial and not for profit organisations.

Opportunities for volunteering, community participation and active citizenship in the Region occur through:

- Local government initiatives such as volunteering programs, grants and sponsorship for arts and cultural, recreation and sport, and community development projects, and community service awards programs such as Citizen and Volunteer of the Year;
- Incorporated resident and community associations and informal community networks and reference groups such as the South West City Residents Association Inc., West End Reference Group, Norwood Residents Association, Prospect Residents Association, and Campbelltown Residents & Ratepayers Association Inc;
- Not for profit organisations such as the Salvation Army, St Vincent de Paul Society and local faith based groups; and
- Service clubs such as Rotary Clubs, Kiwanis and Lions Clubs with local chapters throughout the Region.

Table 10 shows the percentage of persons in the Eastern Region aged 15 years and over who undertake voluntary work. Across the Region the proportion of the community who volunteer is similar to the metropolitan average (around 17% compared to around 18%), with particularly high numbers in Burnside and Walkerville (around 25%).

Table 10: Persons aged 15+ undertaking voluntary work (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

Area	Number	%
Adelaide LGA	3,769	20
Burnside LGA	8,708	25
Campbelltown LGA	7,111	18
Norwood Payneham & St Peters LGA	6,277	21
Tea Tree Gully LGA	13,610	17
Prospect LGA	3,119	19
Walkerville LGA	1,488	25
Unley LGA	6,963	23
Eastern Adelaide	51,045	17
Greater Adelaide	178,577	18

Table 11 presents survey data relating to regular volunteering and participation in community activities. This data shows around a third of Eastern Region survey respondents participate in volunteering on a regular basis, and a similar proportion are members of a local sporting club, church or community group. Amongst the parents with school aged children, a higher proportion are actively involved in school activities amongst several Eastern Region Councils (up to 90%) compared to the State average of around 64%.

Table 11: Community participation survey data (Source: Social Health Atlas of Australian Local Government Areas 2011)

Area	I regularly volunteer time to help out somewhere (survey data %)	I am a member of an organised sport or church or community group in my local area (%)	I have school aged children and am actively involved with activities in their school (%)
Adelaide LGA	30	35	90
Burnside LGA	44	33	82
Campbelltown LGA	29	37	67
Norwood Payneham & St Peters LGA	33	31	77
Prospect LGA	28	30	81
Tea Tree Gully LGA	31	41	66
Unley LGA	35	36	71
Walkerville LGA	28	30	81
South Australia	36	39	64

8.2. Sensitivity to climate factors

Climate change in the Eastern Region is likely to affect community engagement, education, and participation through its impacts on the infrastructure that supports access to and delivery of those activities.

During periods of extreme heat, heatwaves, or intense rainfall events, people may be less likely to undertake volunteering or participate in community engagement, community programs and education. Many volunteers and people who are active in community engagement processes are older people who are particularly vulnerable to heat and may be advised to stay at home and monitor their own wellbeing during hot weather.

Community infrastructure that supports access and delivery of community engagement and education such as community buildings, roads and footpaths is likely to deteriorate more quickly under projected future climate conditions, requiring more frequent maintenance and potentially greater expense to maintain service levels.

During hot weather, costs of cooling community buildings that host community engagement and education activities may increase, in turn impacting on the financial capacity of organisations involved in supporting community participation.

While during extreme events such as floods and bushfires volunteers mobilise to respond to a crisis situation, after the event those who have experienced trauma, loss and damage may have less capacity to participate in the community. Such events can also damage or destroy infrastructure and facilities that support civic participation.

8.3. Adaptive capacity

The existing levels of volunteering and community participation in the Region supports its adaptive capacity. This includes:

- The activities of Councils to support volunteering, participation in community programs, and involvement in community engagement processes; and
- The activities of community groups and not for profit organisations to plan, coordinate and implement volunteering, participation and education programs.

Such activities contribute positively to the skills and capacity of those involved, and create formal and informal connections between individuals and organisations that play a role in the community's resilience and capacity to adapt.

A number of the Eastern Region Councils maintain online community engagement platforms or panels, providing opportunities for members of the community to contribute to Council decision making from their own homes or workplaces without the need to be exposed to extreme heat or rainfall events. While this contributes to adaptive capacity, it is important to recognise that not all sectors of the community are computer literate or have access to the internet, and some sectors of the community rely on libraries for access to such platforms. Extreme weather events can also disrupt power and telecommunications service supply that support online community engagement.

8.4. Relevant policies and strategies

Adelaide City Council	Public Communication and Consultation Policy Arts and Culture Strategy 2010-2014
City of Burnside	Connect Art' program Community Engagement (Public Consultation) Policy
City of Campbelltown	Arts & Cultural Awareness Policy
City of Norwood Payneham & St Peters	Community Consultation Policy Access & Inclusion Policy Access & Inclusion Plan 2013 – Issues & Opportunities Paper
City of Prospect	Community Engagement and Consultation Policy
City of Tea Tree Gully	Community Engagement Framework Community Engagement (Public Consultation) Policy
City of Unley	Community Engagement and Public Consultation Policy
Town of Walkerville	Public Policy and Communication Policy

9 COMMUNITY CONNECTION AND INCLUSION

9. Community connection and inclusion

Description	We value inclusiveness and connection amongst all members of the community across diverse age, socio-economic and cultural groups, and fostering this connection in policy approaches and provision of services and support.
Features/aspects of community connection and inclusion we value in the Eastern Region	Ageing Affordable, adaptable, sustainable housing Community facilities

9.1. Existing conditions

Community connection and inclusion is about the Eastern Region's people and the relationships amongst them. Aspects of the Region that influence community connection and inclusion include:

- Demographic characteristics (for example relating to age, socio-economic factors and cultural background) that highlight particular social needs and can be indicators of both vulnerability and capacity;
- The facilities and infrastructure available to the community; and
- The support and services available to the community.

9.1.1. Demographic characteristics

The total population of the Eastern Region at 30 June, 2013 was estimated to be just over 320,000, or 19% of the State's population. Table 12 shows the population of each Council and the different proportions of each, from City of Tea Tree Gully which is home to just over 30% of the Region's population to Walkerville, home to 2% of the population.

Table 12: Eastern Adelaide population by LGA (Source: ABS 2014)

Area	Population Estimate (2013)	Proportion of total Eastern Region population (%)
Adelaide LGA	22,200	7%
Burnside LGA	44,500	14%
Campbelltown LGA	50,893	16%
Norwood Payneham & St Peters LGA	36,868	12%
Prospect LGA	21,133	7%
Tea Tree Gully LGA	98,378	31%
Unley LGA	38,695	12%
Walkerville LGA	7,368	2%
Eastern Adelaide	320,035	
South Australia	1,670,827	

Age of population can indicate particular needs amongst the community, particularly relating to children and older people who are considered potentially vulnerable and requiring particular support, services and infrastructure. Figure 2 shows that the age profile of Eastern Adelaide as a whole is generally consistent with that of Greater Adelaide, with all variations from the metropolitan average within 1%. Each age cohort between 0-4 and 60-64 years makes up between 5% and 8% of Eastern Adelaide's population. Older cohorts are represented in slightly lower proportions of 3-5% of population. Around 17% of the Region's population is aged over 65, compared to 14% across Greater Adelaide. Table 13 shows that the age profiles of each of the Region's Councils follow similar trends, with the exception of Adelaide City Council that has a significantly higher proportion of 20 to 29 year olds and slightly lower proportions of cohorts under 14 years and over 40 years compared to the Region's other Councils.

Figure 2: Eastern Adelaide age profile (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

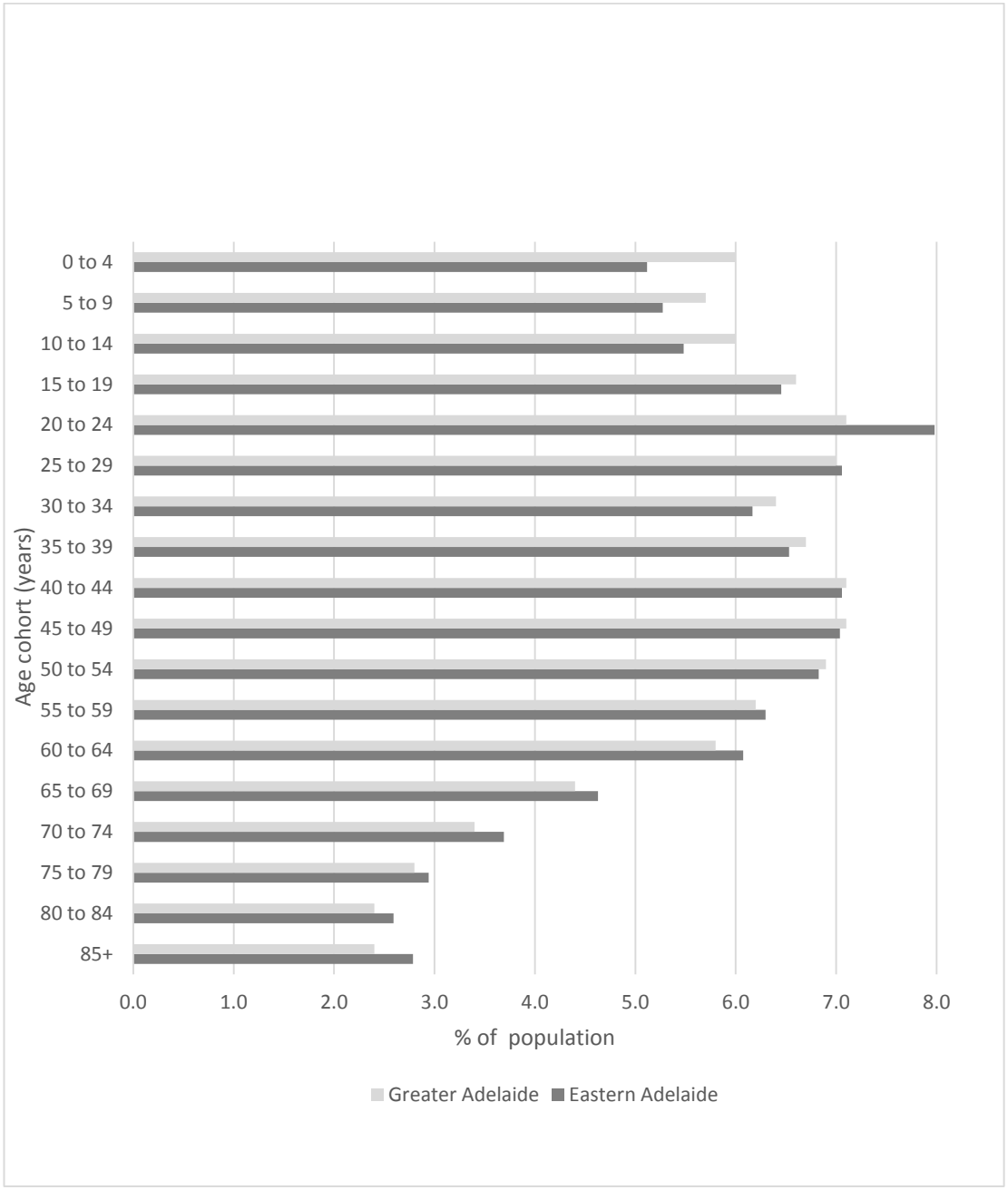


Table 13: Age profile (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

Age cohort (years)	% of total population							
	Adelaide	Burnside	Campbell-town	Norwood Payneham & St Peters	Tea Tree Gully	Prospect	Walkerville	Unley
0 to 4	3	4	5	5	6	6	4	5
5 to 9	2	6	6	5	6	6	5	6
10 to 14	2	6	6	5	6	5	6	5
15 to 19	7	7	6	6	7	6	7	6
20 to 24	**21**	7	7	8	6	9	7	8
25 to 29	**14**	5	6	9	6	9	5	7
30 to 34	9	4	6	7	6	7	4	7
35 to 39	6	5	7	7	7	7	6	7
40 to 44	5	7	8	7	7	8	7	7
45 to 49	5	7	7	7	8	7	6	7
50 to 54	5	8	6	6	7	7	7	7
55 to 59	5	7	5	6	7	6	7	7
60 to 64	6	7	6	5	7	5	7	6
65 to 69	4	6	5	4	5	3	5	4
70 to 74	3	4	5	4	4	3	5	3
75 to 79	2	3	4	3	3	2	4	3
80 to 84	2	3	3	3	2	2	4	3
85 +	2	4	3	4	2	3	4	4
Total	100	100	100	100	100	100	100	100

Table 13 shows that across the Region's Councils the median age differs from the Greater Adelaide median of 39 years by between -9 and +5 years. The median age within the Region is lowest in Adelaide, and highest in Burnside and Walkerville.

Income and education are indicators of socio-economic status that can impact on community connection and inclusion. As shown in Table 14, amongst the Region's Councils median household income varies by around $400 a week, and is generally higher than the Greater Adelaide median. The Region as a whole and most of its individual Councils have higher than metropolitan average proportions of people with a bachelor or higher degree qualification. Incidence of degree qualifications within the Region is highest in Unley and Burnside, and lowest in Tea Tree Gully and Campbelltown.

Table 14: Age, income and education highlights (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

Area	Median age (years)	Median weekly household income ($)	Bachelor or higher degree (%)
Adelaide LGA	30	1,144	36
Burnside LGA	44	1,472	37
Campbelltown LGA	41	1,069	21
Norwood Payneham & St Peters LGA	39	1,133	33
Tea Tree Gully LGA	40	1,246	14
Prospect LGA	36	1,336	30
Walkerville LGA	44	1,451	34
Unley LGA	39	1,428	37
Eastern Adelaide	Not available	Not available	26
Greater Adelaide	39	1,106	18

The SEIFA Index of Disadvantage measures the relative level of socio-economic disadvantage based on a range of characteristics such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations. Table 14 shows the SEIFA score for each Eastern Adelaide Council is higher than for Greater Adelaide, indicating a lower level of disadvantage in the Region.

Table 15: **SEIFA index** (Source: ABS Census of Population and Housing 2011 via profile.id.com.au)

Area	Adelaide	Burnside	Campbell-town	Norwood Payneham & St Peters	Tea Tree Gully	Prospect	Walkerville	Unley
SEIFA index	1,013	1,081	1,011	1,025	1,038	1,042	1,065	1,065

Table 16 and Table 17 give an indication of the Region's cultural diversity. In the context of community connection and inclusion, people from diverse cultural and linguistic backgrounds may require different types of services and support, and have different needs, lifestyles, and relationships within the Region. The Region as a whole is home to a slightly higher proportion of people born overseas and from non-English speaking backgrounds (18%) compared to Greater Adelaide (15%). Amongst the Region's Councils, this proportion is significantly higher than Greater Adelaide in Adelaide (32%) and Campbelltown (27%).

Across the Region, the proportion of people speaking a language other than English at home is slightly higher at 20% than the Greater Adelaide proportion of 17%, but lower within the City of Tea Tree Gully (11%) and significantly higher in the City of Campbelltown (33%) and Adelaide City Council (32%).

Table 16: Birthplace (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

Area	Overseas born	Overseas Born Non-English Speaking Backgrounds	Most common birthplaces other than Australia		
	%		1	2	3
Adelaide LGA	41	**32**	China	UK	Malaysia
Burnside LGA	27	18	UK	China	Italy
Campbelltown LGA	33	**27**	Italy	UK	China
Norwood Payneham & St Peters LGA	29	21	UK	Italy	China
Tea Tree Gully LGA	24	10	UK	Italy	Germany
Prospect LGA	27	20	India	UK	Italy
Walkerville LGA	26	17	UK	India	Italy, China
Unley LGA	23	15	UK	China	Greece
Eastern Adelaide	28	18	Not available	Not available	Not available
Greater Adelaide	25	15	UK	Italy	India

Table 17: Languages other than English spoken at home (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

Area	People who spoke a language other than English at home		Most popular languages spoken		
	Number	% of total population	1	2	3
Adelaide LGA	6,205	32	Mandarin	Cantonese	Arabic
Burnside LGA	8,041	19	Mandarin	Italian	Cantonese, Greek
Campbelltown LGA	15,899	33	Italian	Mandarin	Greek
Norwood Payneham & St Peters LGA	8,683	25	Italian	Mandarin	Greek
Tea Tree Gully LGA	10,393	11	Italian	Greek	Mandarin
Prospect LGA	5,046	25	Greek	Italian	Mandarin
Walkerville LGA	1,267	18	Italian	Greek	Mandarin
Unley LGA	6,414	17	Greek	Mandarin	Italian
Eastern Adelaide	61,948	20	Not available	Not available	Not available
Greater Adelaide	212,051	17	Italian	Greek	Mandarin

In the Eastern Region there are 1,549 Aboriginal and Torres Strait Islander people or 0.7 % of the population. This compares to 1.3% in Greater Adelaide. The highest number of Aboriginal and

Torres Strait Islander people live in the City of Tea Tree Gully (803) followed by Adelaide City Council and the City of Campbelltown (233). The lowest numbers live in the Town of Walkerville (26) and the City of Unley (14).

Kaurna people are the traditional owners of the Adelaide Plains which includes the Eastern Region. Kaurna people lived in an area that extended as far north as Crystal Brook, down to Cape Jervis in the south, west to the ocean where they stayed in winter, and east to the hills where they stayed in summer. The various watercourses in the Eastern Region, including the River Torrens were important water sources for Kaurna people and Victoria Square / Tarntanyangga was and remains today a key meeting place.

Some Eastern Region Councils have signed Reconciliation Statements recognising the prior occupation of their land by Kaurna people and actively seek opportunities to recognise Kaurna heritage through physical features and community cultural activities. Examples of this include the renaming of all parks within the Adelaide City Council Park Lands with traditional Kaurna name including the dual naming of the River Torrens / Karrawirra Parri and Victoria Square / Tarntanyangga. There are a number of places of aboriginal cultural significance located throughout the Region including numerous scarred trees.

People who require assistance with core activities, may have differing needs and challenges to social inclusion and connection within the community. Table 18 shows that around 5% of the Eastern Region and Greater Adelaide populations require assistance with core activities, and the proportion is between 3% and 6% amongst the Eastern Region Councils.

Table 18: Need for assistance with core activities (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

Area	Persons needing assistance with core activities	
	Number	% of total population
Adelaide LGA	630	3
Burnside LGA	1,699	4
Campbelltown LGA	2,707	6
Norwood Payneham & St Peters LGA	1,992	6
Tea Tree Gully LGA	4,099	4
Prospect LGA	918	5
Walkerville LGA	393	6
Unley LGA	2,071	6
Eastern Adelaide	14,509	5
Greater Adelaide	65,797	5

Table 19 presents survey data relating to people's ability to get help from family, friends or neighbours when needed. This data shows that responses from within the Eastern Region Councils vary between -5% and +3% from the South Australian average, with the lowest proportion in the Adelaide City Council (88%).

Table 19: Community participation survey data (Source: Social Health Atlas of Australian Local Government Areas 2011, data collected mid 2000s)

Area	I can get help from family, friends or neighbours when I need it (%)
Adelaide LGA	88
Burnside LGA	96
Campbelltown LGA	92
Norwood Payneham & St Peters LGA	93
Prospect LGA	91
Tea Tree Gully LGA	93
Unley LGA	94
Walkerville LGA	91
South Australia	93

9.1.2. Facilities and infrastructure

Community facilities and infrastructure within Eastern Adelaide supports opportunities for community connection and inclusion amongst the Region's population, specifically:

- Community centres and libraries that provide meeting places, opportunities for learning, and venues for delivery of services and support;
- 2,480 hectares of parks and reserves that provide opportunities for social connection and formal and informal recreation and connection with nature;
- 189 childcare centres, 60 preschools, 115 primary and secondary schools and 13 tertiary institutions that provide education, social and recreational opportunities for children, young people and families;
- Indoor sports and recreation facilities such as the MARS complex and Campbelltown Leisure Centre;
- Arts and cultural infrastructure including the Art Gallery of South Australia, the State Library of South Australia, local galleries and theatres, and community centres, civic centres and libraries that provide spaces for performing and visual arts; and
- Public and open spaces that are used for a variety of community and cultural events and celebrations.

9.1.3. Support and services

Availability and use of community, educational, recreational, arts and cultural services and programs contributes to community connection and inclusion in the Eastern Region.

Throughout the Region, these services are delivered primarily by local governments and not for profit organisations and community, faith and culture based groups. Examples of these services include:

- The Family Connections program for children and families delivered jointly by the Cities of Burnside, Unley and Norwood Payneham & St Peters;
- Home and Community Care (HACC) programs to support frail elderly people, younger people with disabilities and carers delivered by each of the Region's Councils;
- Community bus services and home or mobile library services provided by the Region's Councils;
- Financial and legal services, family and personal support, youth services, and employment services and housing and homelessness support provided by not for profit organisations with offices in the Region such as Uniting Communities and The Salvation Army;
- Social connection opportunities and services provided by groups such as Association of Italian-Australian Pensioners & Elderly of S.A Inc. (APAIA) and Chinese Welfare Services of SA Inc.; and
- Social connection and support for young people such as at HIVE, Youth FM, Youth Advisory Committees and through various initiatives such as 'Speaking of Which' and 'When it hits the fan' pocket directory.

9.1.4. Mobility

Residents across the Eastern Region are relatively car dependent with 50% of households owning 2 or more vehicles which is the same as for Greater Adelaide. The lowest proportion of households owning 2 or more vehicles is in Adelaide City Council (22%) and the highest in the City of Tea Tree Gully (59%).

In the Eastern Region 10% of residents use public transport to get to work which compares to 8% for Greater Adelaide. Slightly higher proportions of residents in the Cities of Norwood Payneham & St Peters (11%) and City of Unley (11%) use public transport to get to work than other Councils in the Region. The City of Burnside has the lowest proportion at 7%.

This increased public transport use in some Councils in the Eastern Region is reflected across Australian capital cities with the Australian Bureau of Statistics reporting that between 1996 and 2006 public transport use by adults traveling to work or study grew by 17% for all capital cities[17].

[17] Australian Bureau of Statistics Public Transport Use for Work and Study, www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter10102008, viewed 25.2.15

This report also identified that the number of cars per household is associated with public transport use, with relatively low rates of use among residents of households that have two or more cars. Not only is the rate of public transport use lower in households that have two or more cars, but people in these households comprise a much larger share of the overall population (60% compared with 32% in one-car households)[18]. Consistent with this pattern, a widely reported reason for using public transport for travel to work or study was the lack of car ownership (19%). This was particularly the case for people aged between 18 and 24 years, with 28% identifying this reason for their use of public transport.

9.2. Sensitivity to climate factors

Vulnerable members of the Region's community such as older people, young children, and people who require assistance with core activities are likely to be more sensitive to climate hazards than the broader population. Older people are particularly vulnerable to heat, being at higher risk of dehydration and heat exhaustion and less likely to use air conditioning due to concerns about electricity costs.

Older people may also be less able to undertake works to prepare their property for bushfire such as cleaning of gutters and reducing fuel loads around their homes.

Vulnerable people may experience limited mobility, limited capacity, social isolation or a lack of financial resources, and be reliant on services that are under pressure during extreme heat, heatwaves, bushfires, and periods of intense rainfall, for example health services, community buses, community centres and libraries, and in home support.

Climate hazards such as extreme heat, heatwaves, increased rainfall intensity and bushfire have potential to limit the community's access to programs and services that support connection and social inclusion. For vulnerable members of the community who rely on public transport or walking, access to basic amenities such as food shopping may also be reduced.

Buildings such as community centres, libraries, arts facilities and indoor recreation centres could be damaged by flood and bushfire events. Increased heat, reduced rainfall, and/or more intense rainfall events may also reduce the life of these assets or require more frequent maintenance or replacement. During very hot weather, community demand for these facilities may increase as members of the community seek refuge and assistance, leading to strain on services and competing demands amongst user groups.

Outdoor recreation and informal exercise opportunities that support community connection and inclusion may be effected by hot and dry conditions with formal sport programs being cancelled or relocated to indoor facilities already experiencing increased demand, playing surfaces deteriorating, and need for new infrastructure to support use such as lights to enable evening use, air conditioning of indoor facilities, heat tolerant playing surfaces, and shade structures in parks and playgrounds.

[18] Op cit

The Region's parks and reserves and the infrastructure within them provide opportunities for social connection and inclusion, and these will be sensitive in the ways described in Section 6.2, Open and Green Spaces sensitivity discussion.

9.3. Adaptive capacity

The Eastern Region's key demographic characteristics do not indicate high levels of disadvantage in the community overall. For some indicators relating to income, higher education and socio-economic disadvantage the Region rates more favourably than Greater Adelaide as a whole. While this forms a strong basis for community resilience and adaptive capacity, the Region's community does include vulnerable people such as those aged over 65, people needing assistance with core activities, and people from culturally and linguistically diverse backgrounds who may have less capacity to adapt or greater reliance on services and support.

There is demographic diversity within the Region, with for example Adelaide City Council showing quite different characteristics in age and cultural and linguistic diversity than Walkerville and Burnside. This diversity means that adaptive capacity may also vary throughout the Region at Council or even more localised levels.

The community services delivered in the Eastern Region by public and not-for profit organisations play a critical role in supporting individuals, families and communities experiencing vulnerability, disadvantage and inequality. The support provided by these organisations contributes to the Region's resilience and the ability of these sections of the community to respond to change.

Similarly, the significant amount of community infrastructure in the Region that provides space for service and program delivery and opportunities for informal connection and learning contributes to the community's capacity to adapt.

Community connection and inclusion is the subject of a number of strategies and management plans (refer Section 9.4 below) that contributes to the adaptive capacity of the Region.

9.4. Relevant policies and strategies

Adelaide City Council	Reconciliation Action Plan 2014-2015 Community Strategy 2012-2016 Arts and Culture Strategy 2010-2014 Smart Move Strategy
City of Burnside	Sport and Recreation Strategy
City of Campbelltown	Infrastructure and Asset Management Plan-Building Assets
City of Norwood Payneham & St Peters	Recreation & Open Space Asset Management Plan Ageing Strategy City Wide Cycling Plan
City of Prospect	Disability Discrimination Act Action Plan

City of Tea Tree Gully	Building Asset Management Plan
City of Unley	Ageing Strategy Public Arts Strategy
Town of Walkerville	Disability Discrimination Act Action Plan

10 HEALTH, WELLBEING AND SAFETY

10. Health, wellbeing and safety

Description	We value the physical and mental health of the community and the infrastructure and services that support good health, wellbeing and safety, including amongst the Region's ageing population.
Features/aspects of health, wellbeing and safety we value in the Eastern Region	Physical health Mental health Infrastructure to support health (e.g. recreation facilities) Of ageing population Reduced risks to life and property Emergency management

10.1. Existing conditions

Health, wellbeing and safety in the Eastern Region relates to individuals' physical and mental wellbeing, and opportunities in the environment and community to increase and maintain that wellbeing, as well as protection from hazards and response to emergency situations.

Table 20 shows estimates of health amongst people within the Region based on self-reported data collected by the Australian Bureau of Statistics. Amongst the Eastern Region Councils, rates of fair or poor self-assessed health are generally slightly lower than across Greater Adelaide, particularly in Burnside and Walkerville.

Table 20: Self assessed health (Source: Social Health Atlas of Australian Local Government Areas 2014 and 2011)

Area	Estimated population, aged 15 years and over, with fair or poor self-assessed health 2011-13 (indirectly age standardised rate per 100)	Fair or poor self-assessed health (synthetic prediction), persons aged 15 years and over 2007-08 (rate per 100)	Current long-term condition and reporting good, very good or excellent self-assessed health (synthetic prediction), persons aged 15 years and over 2007-08 (rate per 100)
Adelaide LGA	14.7	15.2	68.4
Burnside LGA	10.0	10.6	75.2
Campbelltown LGA	15.8	14.4	69.9
Norwood Payneham & St Peters LGA	14.4	14.4	70.7
Prospect LGA	13.0	13.7	71.6
Tea Tree Gully LGA	13.5	12.3	72.5
Unley LGA	11.3	11.8	74.1
Walkerville LGA	13.0	11.4	74.7
Greater Adelaide	15.3	15.3	69.2

Table 20 shows rates of preparation of Mental Health Care Plans by General Practitioners (GPs) are amongst the Region's Councils are generally slightly lower than for Greater Adelaide.

Table 21: Preparation of Mental Health Care Plan by GP (Source: Social Health Atlas of Australian Local Government Areas 2014)

Area	Preparation of Mental Health Care Plan by GPs 2009-10 (indirectly age standardised rate per 100,000)
Adelaide LGA	5,464
Burnside LGA	6,910
Campbelltown LGA	7,435
Norwood Payneham & St Peters LGA	6,870
Prospect LGA	6,012
Tea Tree Gully LGA	8,226
Unley LGA	7,590
Walkerville LGA	6,231
Greater Adelaide	8,278

Facilities and infrastructure in Eastern Adelaide that supports health, wellbeing and safety includes:

- The Royal Adelaide and Women's and Children's public hospitals;
- Burnside and North Eastern Community private hospitals; and
- Community assets that contribute to community physical and mental health by providing opportunities for social connection, learning and active recreation including:
  - Parks, reserves and trails including National Parks and Wildlife Recreation Parks, the Adelaide Park Lands and the River Torrens Linear Park;
  - Indoor sports and recreation facilities such as the MARS complex and Campbelltown Leisure Centre; and
  - Community and cultural facilities such as local libraries, civic centres and arts facilities.

Health services in the Region include:

- Public emergency care at the Royal Adelaide Hospital;
- Local and regional branches of State Government health services such as mental health, child and youth health and dental health;
- GP Plus Super Clinics at Modbury and Hillcrest, as well as local GP, specialist medical and allied healthcare services throughout the Region;
- Immunisation services provided by the Eastern Health Authority;
- Public health services provided under legislation by State and local government in relation to food safety, environmental health and communicable disease; and

- Programs to support active lifestyles and healthy eating such as Campbelltown City Council's Obesity Prevention and Lifestyle (OPAL) program, and the Healthy Communities Initiative at Tea Tree Gully.

State and local governments in the Region undertake planning and programs relating to emergency preparedness and response, and a range of State and Commonwealth Government and not for profit emergency management initiatives are delivered within the Region, including:

- Emergency response services such as the State Emergency Service (SES) and The Red Cross;
- Emergency communications and information provision services such as Alert SA, Disaster Assist, and local government programs; and
- A regional Zone Emergency Management Plan and Local Government Emergency Response Plans.

Ambulance, firefighting and police stations are located across the Region.

10.2. Sensitivity to climate factors

Extreme heat and heatwave has a relationship to higher presentations at hospital including for renal health and mental health conditions, as well as increased mortality rates.[19]

Opportunities for physical activity and social interaction and connectedness have a key role in supporting mental health. Impacts on community facilities and public spaces have the potential to reduce access to the opportunities they provide and negatively impact mental health in the Region. Physical discomfort caused by extreme heat has the potential to increase mental stress, as do extreme events such as flooding that may require emergency response or damage/threat of damage to property and personal safety.

Heat may impact public health through heat induced algal blooms, increased vermin and mosquitoes, increased risk of asthma and respiratory illnesses due to reduced air quality and production of aero-allergens in some areas, higher demand for investigations into communicable diseases, an increased risk of immunisation products that require storage at low temperatures being compromised, faster food spoilage and people buying less fresh produce.[20]

During heatwaves and extreme heat, opportunities for outdoor recreation and informal exercise are reduced, and formal sport and recreation may be cancelled, postponed or relocated indoors, putting additional pressure on indoor facilities. Infrastructure upgrades to sport and recreation facilities such as playing fields, recreation centres and walking paths may be required to maintain their usability in hot and dry conditions, for example lights to enable evening use, air

[19] SKM (2013) *Western Adelaide Region Climate Change Adaptation Plan - Stage 1* Prepared by SKM for the City of Port Adelaide Enfield, City of Charles Sturt and City of West Torrens.

[20] Resilient South (2013) Stage 1 Stakeholder Engagement Report – Resilient South prepared by URPS as part of the Resilient South consultancy led by URPS, for the Cities of Onkaparinga, Holdfast Bay, Marion and Mitcham in association with the Government of South Australia and the Australian Government, p.20

conditioning of indoor facilities, heat tolerant playing surfaces, and shade structures in parks and playgrounds.

Throughout the Region community infrastructure that supports health and wellbeing includes parks and reserves, walking and cycling paths, recreation facilities, community buildings and health buildings that support the delivery of services and programs and provide opportunities for formal and informal physical activity, learning and social connection. These assets may be impacted by climate change through higher operational costs relating to energy, water and maintenance, as well as more specific impacts described in relation to the values of open and green space, and community engagement, education and participation, and community connection and inclusion (Refer sensitivity discussions relating to those values).

Regular waste collection plays an important role in maintaining public health. Currently, waste collection services are suspended in some areas of the Cities of Burnside, Campbelltown and Tea Tree Gully on days that a Catastrophic Fire Danger Warning is issued by the SA Country Fire Service (CFS).

10.3. Adaptive capacity

Compared to other regions, the Eastern Region is relatively well off in terms of household income and educational attainment and means that households may generally have capacity to make individual decisions regarding climate change adaptation, and the resources to draw upon in responding to climate hazards such as intense rainfall leading to flooding, heatwaves and extreme heat.

Similarly, the general health of the Region is relatively good with higher proportions of good self assessed health and less mental health care plans than Greater Adelaide, contributing to its adaptive capacity.

State and Local Public Health Plans under the Public Health Act 2011 identify preparing for climate change as a priority public health issue. Under this new Public Health Act, the Adelaide City Council and the City of Unley (together with the City of Mitcham) have completed a Public Health Plan, the City of Tea Tree Gully has completed an interim Public Health Plan and the Eastern Health Authority (EHA) comprising the Cities of Burnside Campbelltown, Norwood Payneham & St Peters, Prospect and Town of Walkerville have a Plan in draft form which is due for formal consultation in early 2015. There is opportunity for the Resilient East Adaptation Plan to align with strategies in these documents to build on existing adaptive capacity in the Region around managing public health.

Emergency management planning that is underway in the relation to emergency preparedness and response, also contributes to adaptive capacity, particularly in relation to extreme events such as flooding and bushfire.

The Eastern Region contains higher proportions of non-English speakers than Greater Adelaide. While culturally and linguistically diverse communities enrich many aspects of the Region's cultural life, they can present challenges for information provision and communication in the event of an emergency. In response to research into the effects of very hot weather on the wellbeing of migrants and refugees, SA Health has translated a number of fact sheets associated with staying healthy in the heat into multiple languages, including some simplified information specifically designed for CALD communities.

Research by the National Climate Change Adaptation Research Facility (NCCARF) found that "Community service organisations (CSOs) play a critical role in supporting individuals, families and communities experiencing poverty and inequality to build resilience and response to adverse changes in circumstances". A wide range of community services are delivered in the Eastern Region by public, private and not-for-profit organisations, often within existing partnerships. Community services throughout metropolitan Adelaide are subject to resourcing constraints. The short term nature of funding regimes in the community sector creates uncertainty and difficulties in planning for the long term. This reduces adaptive capacity within Eastern Adelaide and more broadly.

A broad range of community infrastructure and services in the Region – buildings, facilities, parks, footpaths, waste collection – are owned, maintained and delivered by local government. Local governments in the Region as well as more broadly are facing increased resource constraints, along with continuing demand. This context has potential to reduce the adaptive capacity of this infrastructure, which if not maintained, in turn impacts the adaptive capacity of the Region's population in relation to health, wellbeing and safety.

Depending on its form, location, and ability to be maintained under hotter and drier conditions, open space can contribute to adaptive capacity through amelioration of UHI effect and amenity benefits. Provision of water for irrigation of open space will link strongly with WSUD strategies such as stormwater management and schemes such as Water Proofing the East (refer Section 6 Open and green spaces and Section 7, Water).

Health, wellbeing and safety is the subject of a number of strategies and management plans that manage and improve the quality of health and wellbeing and prevent harm from occurring (refer Section 10.4 below) and contributes to the adaptive capacity of the Region.

10.4. Relevant policies and strategies

Regional	Eastern Region Alliance-Eastern Region Youth Action Plan
Adelaide City Council	Adelaide: A Better Place To Live Public Health Plan 2013-2018 Active City Strategy 2013-2023
City of Burnside	Sport and Recreation Strategy Bushfire Hazard Management
City of Campbelltown	Public and Environmental Health Policy 2014 Environmental Health Policy Pedestrian Access & Mobility Plan Physical Activity & Sports Policy Walk 21 Charter Bicycle Plan 2007 Chain of Trails Master Plan
City of Norwood Payneham & St Peters	Recreation & Open Space Asset Management Plan Ageing Strategy
City of Prospect	City of Prospect and Town of Walkerville Draft Ageing Strategy
City of Tea Tree Gully	Ageing strategy 2010 -2015 Public Health Plan 2014: Health and Wellbeing Audit Healthy Communities Initiative Strategic Bushfire Management Plan 2010 Emergency Management Plan Asset Management Policy Open Space Strategy 2011-2030 Leases and Licenses to Sporting and Community Organisations Policy
City of Unley	Webpage re public health & safety Review of the Open Space Recreation Strategy 2004-2014 Recreation Policy Safe Environment Policy Sturt Community Emergency Risk Management Plan
Town of Walkerville	City of Prospect and Town of Walkerville Draft Ageing Strategy Community Fund Program Emergency Risk

11 HABITAT AND BIODIVERSITY

11. Habitat and biodiversity

Description	We value the Region's habitat, biodiversity, remnant vegetation and foothills environments for their intrinsic value and amenity.
Features/aspects of habitat and biodiversity we value in the Eastern Region	Remnant vegetation Habitat diversity Hills Face Zone/peri-urban areas

11.1. Existing conditions

Habitat and biodiversity describes the variety of plants, animals and micro-organisms and the ecosystems or communities that they collectively make up.

Biodiversity provides a wide range of ecosystem services including storage of carbon, pollination, support of people's cultural and spiritual needs, regulation of climate, water filtration, provision of shade and shelter and prevention of soil erosion and provides many of the Region's valued amenity and cultural characteristics.

In the Region, assets are found throughout the foothills, parks and reserves and along watercourses contributing to the amenity of the Region and to recreation and tourism opportunities. Many of the areas that provide habitat and contribute to biodiversity are also key open space features of the Region (refer Section 6, Open and green spaces and Section 7, Water).

The aesthetic value and amenity of the foothills environment in the Cities of Campbelltown, Burnside and Tea Tree Gully means that these localities are a desirable place to live. Examples of such localities include:

- The foothills environment of Waterfall Gully, Stonyfell, Beaumont and Skye in the City of Burnside;
- The rural backdrop of Houghton and Golden Grove and the River Torrens environment of Highbury in the City of Tea Tree Gully; and
- The Park Lands environment of Lochiel Park, and Athelstone and Rostrevor in the foothills in the City of Campbelltown.

In other Councils in the Region the watercourses, parks and reserves and adjacency to the Adelaide Park Lands contributes to their amenity and desirability as attractive places to live.

The biodiversity of the Eastern Region has been significantly altered from its pre-European state with 6% or 1267.1 hectares of remnant native vegetation remaining. Much of the Region's remnant vegetation is degraded, however still provides habitat for a range of native fauna. In many circumstances, native fauna has adapted and relies on introduced vegetation for habitat. For example, blackberry a declared weed, provides a suitable habitat for bandicoots in the Adelaide foothills where native vegetation is not prevalent.

The majority (90%) of this vegetation occurs in the Hills Face in the Cities of Burnside, Campbelltown and Tea Tree Gully (refer Map 3). Table 22 shows the type of remnant vegetation that exists in the Region and Table 23 shows these vegetation types by Council area. This data shows that there is very little remnant vegetation in the Region, and what is left is dominated by eucalyptus woodland.

Table 22: Vegetation Type (Source: Native vegetation (floristic) Statewide spatial dataset, DEWNR, 2014)

General Form	Area (ha)	% of all native veg
woodland	1212.1	95.7%
grassland	33.8	2.7%
shrubland >1m	19.6	1.5%
sedgeland	1.5	0.1%
forest	0.2	0.0%
Grand Total	**1267.1**	**100.0%**

Table 23: Vegetation type by Council area (Source: Native vegetation (floristic) Statewide spatial dataset, DEWNR, 2014)

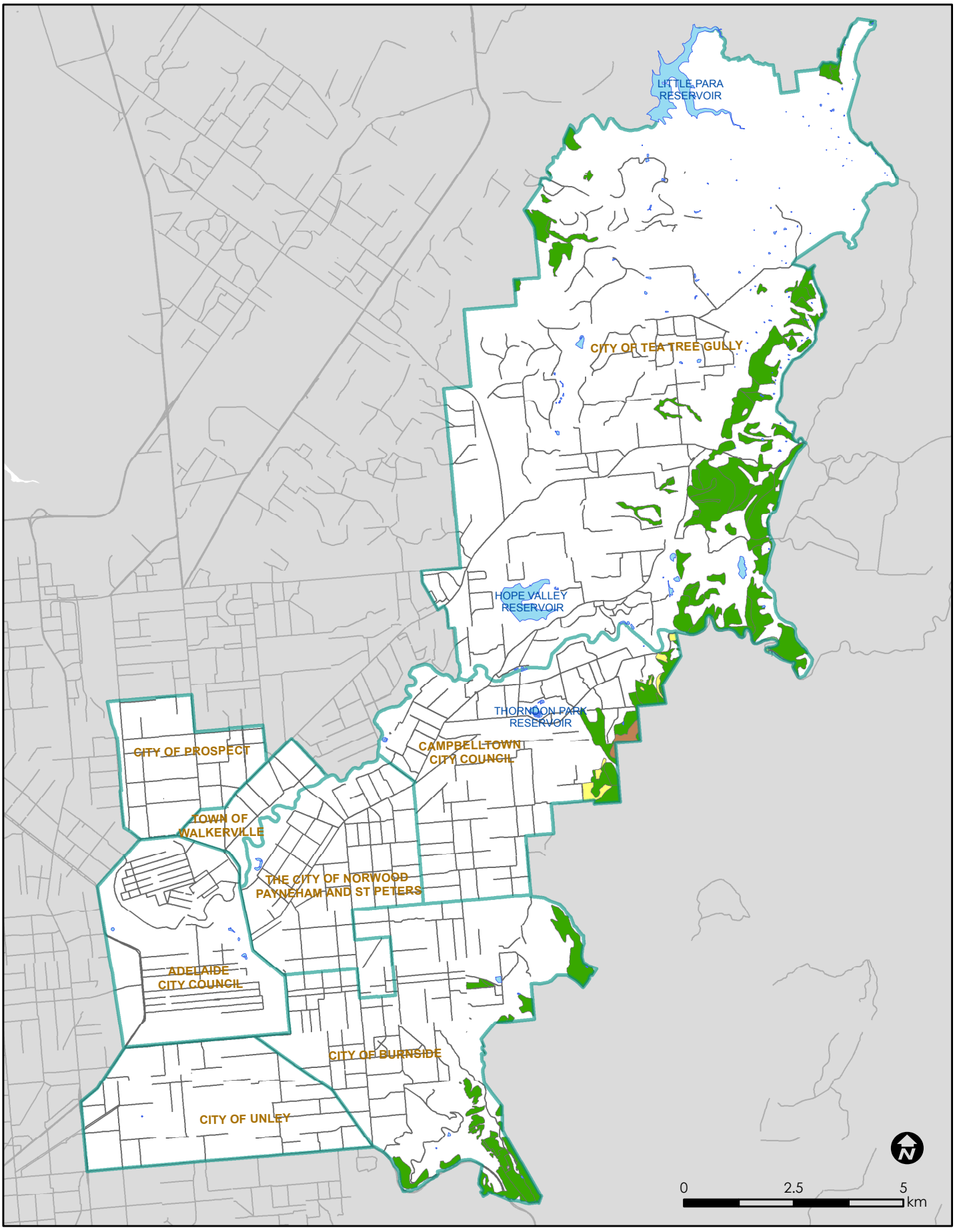
	Area (ha)	% of total Council area
Burnside LGA	244.5	19.3%
forest	0.2	>1%
woodland	244.3	19.3%
Campbelltown LGA	194.0	15.3%
grassland	30.0	2.4%
shrubland >1m	19.6	1.5%
woodland	144.5	11.4%
Tea Tree Gully LGA	828.6	65.4%
grassland	3.9	0.3%
sedgeland	1.5	0.1%
woodland	823.2	65.0%
Grand Total	**1267.1**	**100.0%**

The most common remnant native vegetation communities include:

- SA Blue Gum (*Eucalyptus leucoxylon*) woodland (22 %)
- Pink Gum (*Eucalyptus fasciculosa*) woodland (19%)
- River Red Gum (*Eucalyptus camaldulensis*) (13%)
- Long Leaf Box (*Eucalyptus goniocalyx*) woodland (10%)

Other areas of native vegetation (i.e. non-remnant) exist throughout the Region and include:

- Along River Torrens linear park
- Within the Adelaide Park Lands
- Revegetation projects at parks and reserves within all Councils for example:
  - Cobbler Creek linear reserves
  - Little Para Reservoir Reserve
  - Dry Creek
  - Fourth Creek
  - Second Creek
  - First Creek
  - Brownhill Creek



Waterbodies
Council boundaries
Major Road

Native Vegetation (General Form Description)

Forest
Woodland
Shrubland >1m
Sedgeland
Grassland

Map 3
Remnant Vegetation
Resilient East

Data Source: DPTI, DEWNR

11.2. Sensitivity to climate factors

The Region's habitat and biodiversity are likely to be sensitive to projected climate changes relating to bushfire, reduced rainfall, heatwaves and extreme heat. The potential impacts of climate change on the natural environment are likely to have flow-on effects to the other sectors (social and economic) as a result of the ecosystem services they provide, their contribution to aesthetics, amenity and lifestyle and to making the Eastern Region a desirable place to live.

Remnant native vegetation may experience declining condition as a result of drying, plant loss, and introduction of disease. It may also be damaged by bushfire. Many existing biodiversity threats including pest plants and animals may become greater as pest plants and animals are often opportunistic and have a greater ability to respond to disturbance than native species. These impacts have potential to:

- Impact the amenity of people living in or adjacent natural environments;
- Impact the recreational amenity of open spaces leading to reduced use;
- Compromise the Region's biodiversity; and
- Reduce the ability of native fauna to access suitable habitat for foraging, roosting and breeding.

The intrinsic value and amenity of the foothills environment, particularly as a desirable place to live, is likely to be very sensitive to bushfire. Bushfire can compromise personal safety and wellbeing, damage or destroy homes and other development and infrastructure. Over time this increase in risk may reduce government and community acceptance of undertaking development (including residential development) in the foothills/Hills Face in the Region as risks increase.

11.3. Adaptive capacity

The adaptive capacity of the habitat and biodiversity in the Eastern Region, particularly relating to remnant vegetation is relatively low. This is because there is a small amount of highly fragmented remnant vegetation in the Region situated in highly disturbed areas (i.e. on the urban fringe) which limits its ability to adapt (for example through expanding its extent). The adaptive capacity of native fauna will primarily be affected by their ability to access suitable habitat and if required disperse to new areas of habitat if climate change means existing habitat is lost or shifts.

A range of not for profit and volunteer based organisations such as Trees For Life (with their "Bush For Life" program) and Friends of Parks groups operate within the Eastern Region that can support on-ground works, such as in the maintenance and restoration of vegetation. A range of revegetation projects are undertaken throughout the Region which seek to improve the condition of vegetated areas.

Examples include

- Along the River Torrens;
- In the South Park Lands;
- Along sections of watercourses such as Brown Hill Creek at Forestville Reserve, Second Creek and Dunston Grove Linde Reserve; and
- In various parks and reserves throughout the Region.

Much of the remnant vegetation as well as other vegetation throughout the Eastern Region occurs on Council reserves or in conservation parks and is therefore the subject of a large number of strategies and management plans that seek to maintain and improve their condition (refer Section 11.4 below). The development and implementation of these plans by regional stakeholders (primarily local and state governments) contributes to the adaptive capacity of the Region's habitat and biodiversity by maintaining them in good condition and providing an understanding of the risks and opportunities they are subject to.

There is also extensive knowledge and expertise in the Adelaide & Mount Lofty Ranges Natural Resources regarding the habitat and biodiversity of the Region and the impacts of climate change on the natural environment which will also assist planning efforts and contributes to adaptive capacity.

11.4. Relevant policies and strategies

Adelaide City Council	Biodiversity and Water Quality Action Plan
City of Burnside	Community Land Management Plans Environment and Biodiversity Policy
City of Campbelltown	Wadmore Park Management Tree Management Policy
City of Norwood Payneham & St Peters	Biodiversity Strategy
City of Prospect	Plant Me Instead Brochure 21st Century Street Tree Manual Environmental Action Plan 2008-2011
City of Tea Tree Gully	Biodiversity Strategy 2011 – 2015 Tree Management Policy Green Links Program Urban Landscape Master Plan
City of Unley	Environmental Policy Vegetation Management Policy Community Land Management Plan Sustainable Landscapes and Biodiversity Web Pages
Town of Walkerville	Tree Management Policy
Adelaide and Mount Lofty Ranges Natural Resources	Regional Natural Resources Management Plan

12 GOVERNANCE

12. Governance

Description	We value good governance and coordinated, sustainable delivery of the services and infrastructure that support the success and wellbeing of the Region.
Features/aspects of governance we value in the Eastern Region	Leadership Coordination Financial sustainability Service levels Infrastructure Community expectations Collaboration and partnering

12.1. Existing conditions

The Eastern Region is made up of 8 Local Government Areas (LGAs or 'Councils): Adelaide City Council, the Town of Walkerville, and the Cities of Tea Tree Gully, Campbelltown, Burnside, Unley, Norwood Payneham & St Peters and Prospect. Each Council is governed by an Elected Member body under the *Local Government Act 1999*, supported by an administration that implement the Council's functions and responsibilities day to day.

Under the Local Government Act, local government's role includes to:

- Provide and coordinate various public services and facilities and to develop their communities and resources in a socially just and ecologically sustainable manner;
- Encourage and develop initiatives within their communities for improving the quality of life within them; and
- Exercise, perform and discharge the powers, functions and duties of Local Government in relation to their areas, as contained in the *Local Government Act 1999* and other Acts.

These responsibilities are realised in a large number of activities undertaken by the Eastern Region Councils in the provision of infrastructure and services including but not limited to:

- Provision and maintenance of physical assets such as roads, footpaths, open and public space, formal and informal recreational facilities, and buildings for community use;
- Planning and development strategy, policy, and regulation;
- Public health activities ranging from immunisations to food hygiene inspections to programs to support active lifestyles and healthy eating;
- Community development and education including library services, education, social and cultural programs, and community support such as the Home and Community Care (HACC) program;

- Community engagement and education and the encouragement of civic participation in community life and Council decision making;
- Economic development including initiatives to support local business;
- Waste collection and management; and
- Environmental management.

Each Council is required by legislation to prepare a Strategic Management Plan every 4 years that identifies its objectives, the activities it will undertake, and measures to assess its performance. The Strategic Management Plan must be accompanied by a 10 year financial plan and 10 year infrastructure and asset management plan. Along with the requirements of various legislation (for example the *Development Act 1993* and *Disability Discrimination Act 1992)* form the corporate framework for other documents that guide Councils' activities such as:

- Annual business plans and budgets;
- Strategic Directions Reports that outline a vision for development in the Council area and a program of planning policy change; and
- Service specific plans and strategies such as Open Space Strategies, Ageing Strategies, Emergency Management Plans, and Disability Discrimination Act Action Plans.

Councils may establish subsidiaries or regional subsidiaries to deliver services on their behalf. Examples of regional subsidiaries in Eastern Adelaide are the:

- Eastern Waste Management Authority (East Waste) that provides waste collection services to its member Councils (Adelaide Hills Council, City of Burnside, Campbelltown City Council, City of Norwood Payneham & St Peters, City of Mitcham and the Town of Walkerville), and from time to time to other councils; and
- Eastern Health Authority that provides environmental health services to the constituent Councils of Burnside, Campbelltown, Norwood Payneham St Peters, Prospect and Walkerville.

The Eastern Region Alliance (ERA) is a voluntary partnership of the Cities of Tea Tree Gully, Campbelltown, Burnside, Unley, Norwood Payneham & St Peters and Prospect, and the Town of Walkerville established to benefit the local communities of each partner Council as well as the Eastern Region as a whole. ERA operates under a Business Plan that sets out objectives and programs relating to ageing and health, arts and culture, business and economic development, corporate services, deport/operations, environment, governance, infrastructure and assets, libraries, open space and leisure facilities and planning policy. Current ERA projects include the Resilient East regional climate change project, and Waterproofing Eastern Adelaide, a project to harvest, store, filter, and reuse stormwater throughout the Region.

In delivering their responsibilities in various forms, the Eastern Region Councils work with State Government agencies, not for profit groups and the private sector as partners in planning and strategy, funding, and service or project delivery. Examples include:

- Home and Community Care (HACC) which is a partnership of Councils and the State and Federal governments;
- The St John Community Care Program undertaken by St Johns with the support of the City of Tea Tree Gully;
- The Eastern Health Authority which is funded by Councils to provide immunization services; and
- The Eastside Business Enterprise Centre (EBEC) which is an independent organisation that operates a shopfront out of the Norwood Town Hall and provides advice and support to local businesses.

The Eastern Region forms part of the Adelaide and Mount Lofty Ranges Natural Resources Management Region, within which the *Natural Resources Management Act 2004* is administered by the Adelaide and Mount Lofty Ranges Natural Resources Management Board and Depart of Environment, Water and Natural Resources (DEWNR) staff. The Board works with local governments and the community to deliver projects across the Eastern Region such as land and biodiversity projects, school education programs for students, teachers and parents, and WSUD sites at for example, Unley and Adelaide.

Other State Government services, plans, and legislative responsibilities (for example transport, health, and education services) are delivered in the Eastern Region through local agencies and facilities, for example bus services, schools, and Child and Family Health Centres.

12.2. Sensitivity to climate factors

Governance has a role in all aspects of service delivery and community wellbeing across the Eastern Region, and in all of the Eastern Region values identified by this project. Each value (open and green space; water; community engagement, education and participation; community connection and inclusion; health, wellbeing and safety; habitat and biodiversity; infrastructure and built environment; and economic activity and vibrancy) has a relationship to aspects of governance such as leadership, financial sustainability, agreement on service levels, infrastructure provision, achievement of community expectations, and coordination, collaboration and partnering amongst regional stakeholders.

Accordingly, where aspects of these values are sensitive to climate factors, the implementation of governance arrangements in relation to that value will potentially be affected.

Under future climate conditions (e.g. increased extreme heat, heatwaves, more frequent extreme events such as flood and bushfire), delivery of services by individual Councils, regional subsidiaries, and regional partnerships may be impacted by increasing demand at the same time as static or decreasing resources. For example stormwater infrastructure will be under greater pressure during extreme storm events, people will rely heavily on Council buildings and services to seek refuge during bushfire events, extreme heat will see increased numbers of vulnerable people seeking assistance. These and a number of similar scenarios are expected to be more frequent than currently experienced.

From a governance perspective, the impacts of climate change on the community will create pressure for the Region to do more with less. This has the potential to place strain on financial and human resources, test existing service delivery arrangements, and impact on the achievement of strategic objectives and service level agreements. As demands increase on local governments, servicing of partnership agreements such as ERA may become more challenging. There may be a need for changes to strategic objectives as priorities shift, and for more responsive and adaptable planning and implementation practices to support service delivery. Community expectations will play a role in how organisations can and will respond under future climate conditions in delivery of routine services and in response to extreme events.

12.3. Adaptive capacity

In this context that governance and the Eastern Region's values are linked, features and aspects of governance within the Region also contribute to the Region's adaptive capacity.

The large number of strategies, plans, policies and procedures in place that support the Region's values provide tools with which the Region addresses current objectives and challenges – for example stormwater management, emergency management, asset management, urban development and community health and wellbeing. Implementation of such documents and practices strengthens the Region in their area of focus, contributing to its adaptive capacity, but also forms a mechanism that can be adapted and built upon in responding to future climate challenges. For example, current maintenance regimes and budgets associated with community buildings in the Region support ongoing sustainable use of the infrastructure, and it is easier to adjust the current regime to account for the impacts of hotter and drier weather than attempt to adapt with no current regime in place and where strategic maintenance of buildings has not occurred.

The Region's stakeholders' existing partnership arrangements such as ERA, regional subsidiary organisations, and project delivery partnerships with State Government demonstrate cooperative approaches that deliver community benefit and efficiencies that contribute to financial sustainability in the Region. These cooperative structures contribute to the Region's adaptive capacity by providing mechanisms for a coordinated and integrated approach to issues and goals experienced at a regional scale – which climate conditions will be. The experience of the Region's stakeholders of participating in these partnerships constitutes experience and 'corporate knowledge' that will benefit a collaborative response to future climate challenges.

12.4. Relevant policies and strategies

Adelaide City Council	City of Adelaide Strategic Plan 2012-2016
City of Burnside	Be the Future of Burnside 2025 Climate Change Adaptation Action Plan 2013-2015 Energy Management Action Plan
City of Campbelltown	Strategic Plan 2010-2020
City of Norwood Payneham & St Peters	CityPlan 2030: Shaping Our Future Environmental Management Plan 2020
City of Prospect	Strategic Plan 2012-2016
City of Tea Tree Gully	Strategic Plan 2011-2015 Business Continuity Plan Long Term Financial Plan
City of Unley	Strategic Plan Environment Sustainability Plan 2010-2013
Town of Walkerville	Living in the Town of Walkerville: a strategic plan for the Town of Walkerville Environmental Action Plan 2008-2011
ERA	Business Plan

13 INFRASTRUCTURE AND THE BUILT ENVIRONMENT

13. Infrastructure and the built environment

Description	We value development and infrastructure that is sustainable and contributes to the amenity and quality of life in the Region.
Features/aspects of infrastructure and built environment we value in the Eastern Region	Asset renewal Heritage conservation Iconic buildings (e.g. Adelaide Oval) Balancing growth and heritage/natural environment Energy efficiency Building design Regional coordination of development Transport Essential services (e.g. power) Community facilities Waste management Roads

13.1. Existing conditions

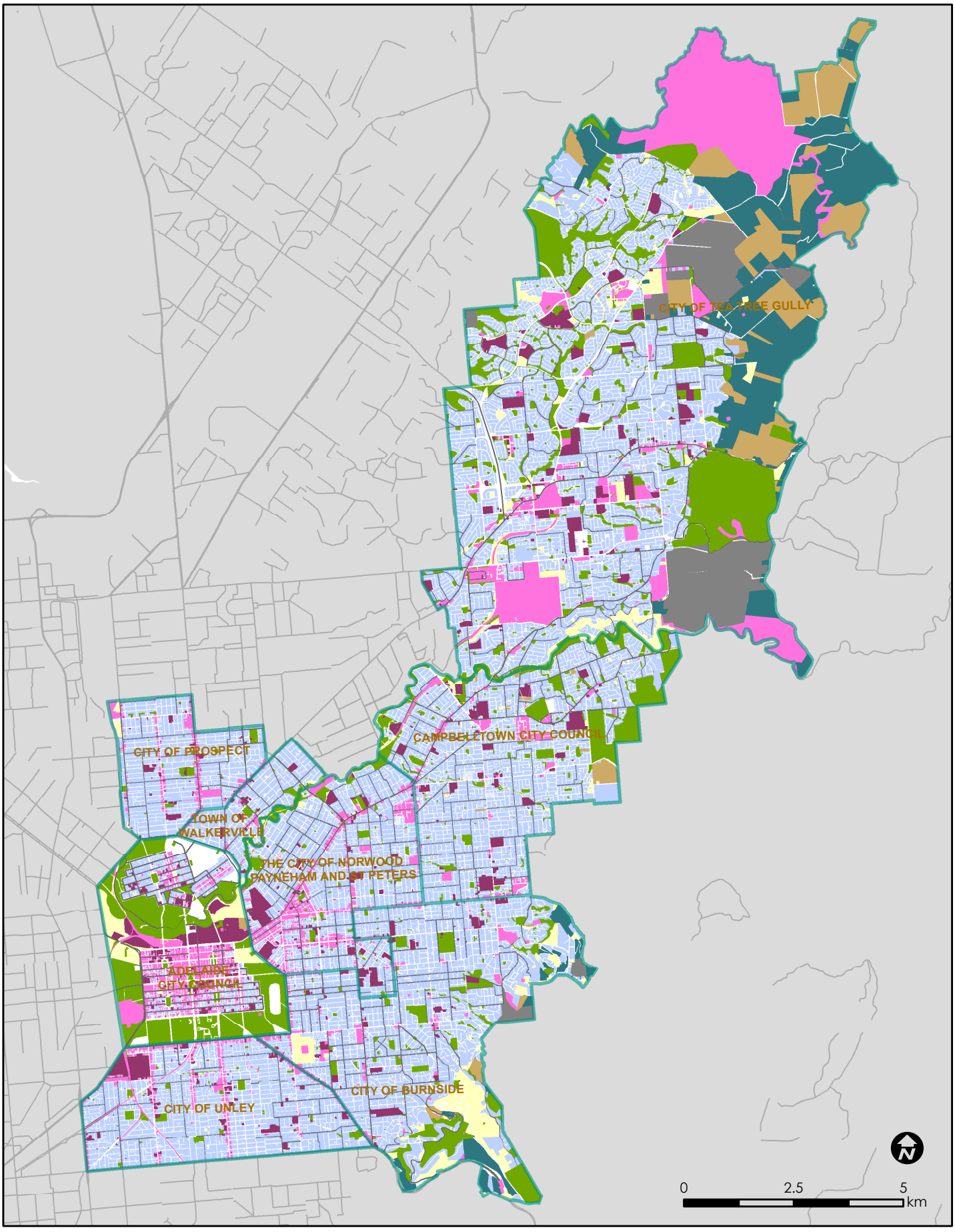
Infrastructure and the built environment underpin the community and the economy. They are fundamental to the provision of essential services such as utilities, and contribute significantly the creation of jobs, facilitation of commerce, the provision of community facilities, commercial buildings and residential housing and the amenity and character of an area.

Infrastructure and the built environment in the Eastern Region describes:

- Land use, zoning, built form and heritage;
- Hospitals and other health facilities;
- Education facilities;
- Community facilities;
- Water and wastewater distribution and treatment systems;
- Council owned buildings and structures;
- Road and rail infrastructure and mobility; and
- Essential services such as electricity and gas.

13.1.1. Land use, zoning, built form and heritage

As shown by Map 4 key land uses in the Eastern Region include residential, commercial, some industry and open space.



Council boundaries

Major Road

Land Use

- Residential
- Commercial and Industry
- Education and Public Institution
- Open Space
- Rural Residential
- Rural
- Mine or Quarry
- Vacant Land

Map 4
Land Use
Resilient East

Data Source: DPTI, DEWNR

Table 24 shows a breakdown of key land uses for each Council and shows that the Region is predominantly residential (55% of the Region) with some commercial and industrial areas, open space and rural areas. Of the key land use types, the City of Tea Tree Gully is the only Eastern Region Council that has mine or quarry and rural land uses.

Table 24: Land use (Source: Department of Planning, Transport and Infrastructure, 2013 Generalised Land Use-Spatial Dataset)

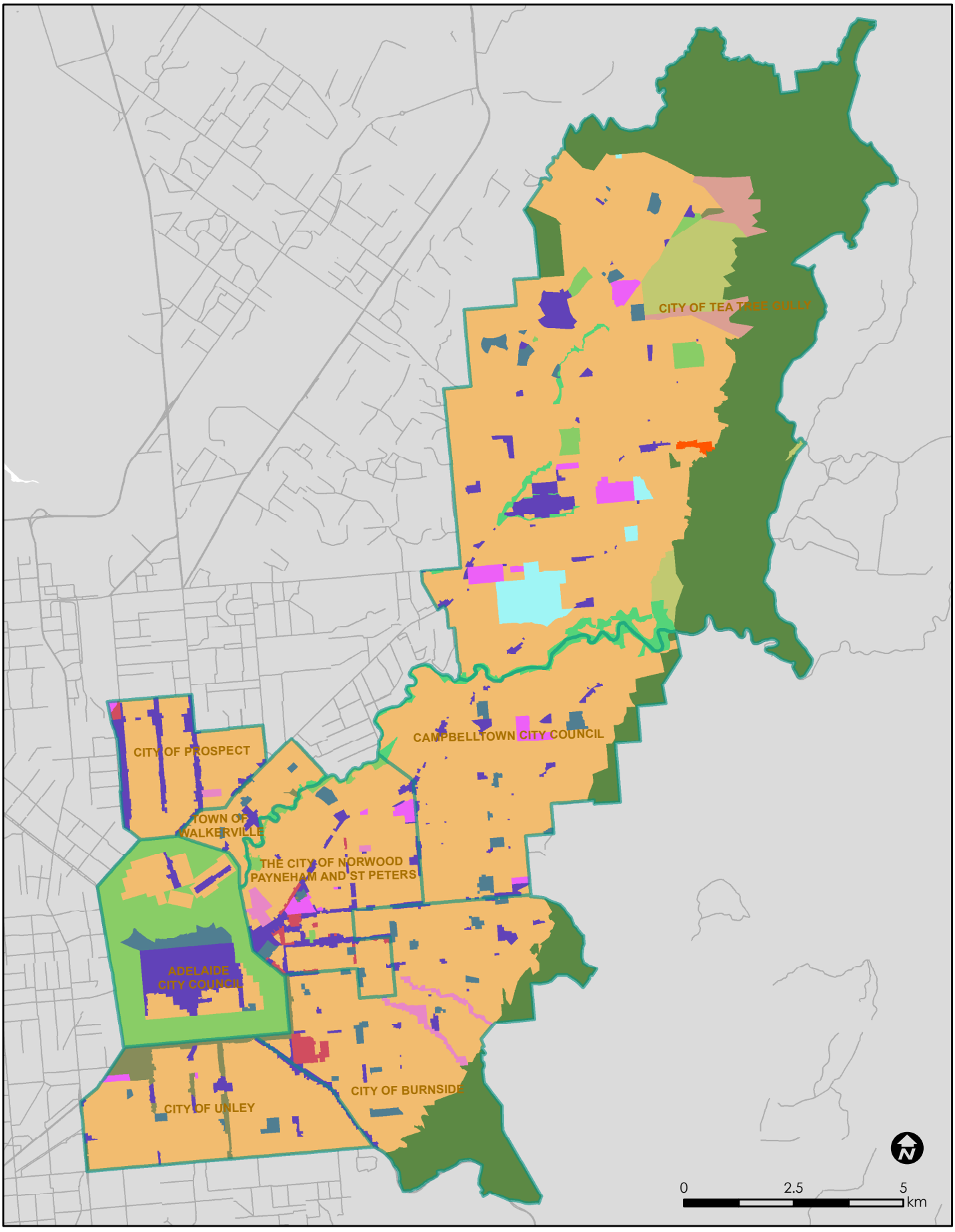
Land use group	Total Area (ha) Eastern Region	Proportion of Eastern Region total	Total Area (ha) Greater Adelaide	Proportion of Greater Adelaide total
Residential	9,210	55%	204,060	24%
Open space	2,480	15%	41,660	5%
Commercial and industry	2,080	12%	26,450	3%
Vacant	800	5%	20,640	3%
Rural	780	5%	533,455	63%
Education and public institutions	765	5%	9,160	1%
Mine or quarry	725	4%	8,710	1%
Grand Total	**16,840**	**100%**	**844,135**	**100%**

Consistent with land use, Table 25 and Map 5 show that the predominant zone type in the Eastern Region is Residential (53%), followed by Watershed/Hills Face Zone (23%).

Table 25: Zone Types (Source: Department of Planning, Transport and Infrastructure, 2014 Land Development Zones-Spatial Dataset)

Zone type	Total Area (ha)	% of Eastern Region
Residential	10846.6	53%
Watershed/Hills face	3763.0	23%
Recreation	1032.7	5%
Historic residential	998.4	5%
Commercial	995.3	5%
Primary production - mining	416.4	2%
Community facilities	328.8	2%
Open space	277.9	1%
Infrastructure	196.8	1%
Rural living	188.9	1%
Industrial	157.7	1%
Miscellaneous	148.7	1%
Special use	99.9	>1%
Mixed uses	85.0	>1%
Industry	47.6	>1%
Country township	14.9	>1%

Excluded	14.8	>1%
Deferred urban	6.8	>1%
Rural	>1	>1%
Grand total	**20339.5**	**100%**



Council boundaries
Major Road

Zone - Development Category

- Commercial
- Community Facilities
- Country Township
- Watershed / Hills Face
- Residential
- Industry
- Infrastructure
- Mixed Use
- Open Space
- Mining
- Recreation
- Rural Living
- Special Use
- Other

Map 5
Development Zones
Resilient East

Data Source: DPTI, DEWNR

In the Eastern Region, 34% of residential development is medium or high density housing which compares to 24% for Greater Adelaide. As shown in Table 25 Adelaide City Council has the highest proportion of medium to high density housing (87%), followed by the City of Unley (41%). The City of Tea Tree Gully has the lowest proportion of medium and high density housing (11%).

Table 25: Proportion of medium and high density housing (Source: ABS 2011 Census of Population and Housing 2011 via profile.id.com.au)

Area	Medium and high density housing	Medium and high density housing (%)
Adelaide LGA	9,327	87
Burnside LGA	6259	33
Campbelltown LGA	4,504	22
Norwood Payneham & St Peters LGA	8,070	47
Prospect LGA	2,102	28
Tea Tree Gully LGA	4,261	11
Unley LGA	6,870	41
Walkerville LGA	4,769	25
Eastern Adelaide	42,556	34
Greater Adelaide	127,245	24

The Region has limited residential broadhectare land, a situation that is not likely to change in the short term. Therefore, dwelling supply will predominantly come from infill development and redevelopment opportunities. The recently completed monitoring report for the Housing and Employment Land Supply Program[21] identified that Eastern Adelaide (not including TTG) has 82.9 ha of residential broadhectare land available which is 1.2% of the Greater Adelaide Region. The majority of this land is located in the City of Burnside (29.5 ha) and City of Campbelltown (33.5ha). The City of Tea Tree Gully has 93.1 ha of residential broadhectare land available but is identified as part of Northern Adelaide planning region.

Amenity of the urban form is maintained through the planning system under the *Development Act 1993* and *Development Regulations 2008*, with new development subject to policies associated with visual impact including bulk, scale, and site coverage. Planning policies seek to ensure that new development can be adequately serviced by infrastructure including roads and stormwater management. Buildings and areas of historical significance are protected by heritage legislation and specific planning policies. The location and form of community infrastructure such as wetlands, parks and open space, and community buildings such as hospitals, schools, and community centres are regulated by planning policies and building rules.

[21] *Residential land supply report Fact Sheet, Greater Adelaide and selected rural townships*, 30 June 2012

Building safety is also regulated through the development assessment process with building rules consent along with planning consent required for new development under the Building Code of Australia.

The Development Act and Regulations and the Building Code of Australia establish rules, policies and initiatives for buildings in the Eastern Region including relating to protection from hazards (e.g. flooding and bushfire) and environmental performance. South Australia's Strategic Plan also contains targets relating to energy efficiency, though these do not have regulatory effect. Table 26 summarises South Australian building policies and initiatives.

Table 26: Building policies and initiatives[22]

Building policies/initiatives	Purpose	Relevant institution
T60: Energy efficiency - dwellings	From South Australia's Strategic Plan. A target to improve the energy efficiency of dwellings by 15% by 2020, with a milestone of 10% by 2014.	Department of Premier and Cabinet (DPC) (SA)
T61: Energy efficiency – government buildings	From South Australia's Strategic Plan. A target to improve the energy efficiency of government buildings by 30% by 2020, with a milestone of 25% by 2014.	Department of Premier and Cabinet (DPC) (SA)
Code of Practice for House Energy Rating Assessors	Helps ensure that house energy ratings for the energy efficiency potential of houses are verified in a credible and reliable manner and in compliance of the Development Act 1993	Department of Planning, Transport and Infrastructure (DPTI) (SA)
Residential energy efficiency scheme (REES)	Requires larger energy providers to assist households in energy saving activities, including energy auditing services, installing energy efficient light globes and power controllers	Department of State Development (DSD) (SA)
National Strategy on Energy Efficiency (NSEE)	Accelerate efforts for the uptake of energy efficiency measures in buildings, streamline roles and responsibilities across all levels of government, and help residents and businesses transition to a low-carbon future	Council of Australian Governments (COAG)
Government Buildings Energy Strategy	Strategy for managing energy use and improving energy efficiency in government buildings in South Australia	Government Buildings Energy Group (GBEG)

[22] Government of South Australia (2014b), *State Government energy efficiency initiatives*

Building policies/initiatives	Purpose	Relevant institution
Six star energy efficiency requirements for new homes	From the *Development Act 1993*. From 2010, all new homes and extensions built in South Australia must meet a 6-star energy efficiency standard	Department of State Development (DSD) (SA)
Development Plans - Adelaide City - Burnside - Campbelltown - Norwood Payneham & St Peters - Tea Tree Gully - Prospect - Walkerville - Unley	Detailed criteria for assessment of development applications in each Council area. Outlines objectives and principles of development control for development	- Adelaide City Council - City of Burnside - City of Campbelltown - City of Norwood Payneham & St Peters - City of Tea Tree Gully - City of Prospect - Town of Walkerville - City of Unley

Built heritage of the Eastern Region is diverse with State and Local heritage places identified by the South Australia Heritage Register and Council Development Plans. Across the Eastern Region there are 4,793 heritage places[23] (refer Map 6).

Many of these heritage places extend back to the early days of European settlement in South Australia and examples include:

- Significant landmark buildings such as the Adelaide Town Hall, Adelaide GPO and Ayers House in Adelaide City Council, Norwood Town Hall and former Norwood Wesleyan Methodist Church in the City of Norwood Payneham & St Peters, Burnside Town Hall and Administrative Building at Glenside Hospital in the City of Burnside, Walkerville Town Hall, Vale House at Vale Park and St Andrew's Anglican Church in the Town of Walkerville and the Carmelite Monastery, Capri Cinema, Tabor College (former Orphanage) and Fullarton Park Community Centre (formerly Hughes Estate) in the City of Unley;
- Parks and structures such as Hazelwood Park, Beaumont Common and the bridges and wading pool at Tusmore Park in the City of Burnside, sandstone water troughs in the City of Campbelltown, and the Former Coachhouse and Bandstand at St Helen's Park in the City of Prospect;
- A range of dwelling styles such as villas, cottages and row cottages throughout all of the Council areas;
- Vegetation such as Prescott Terrace Soldier's Memorial Avenue Memorial Trees and Alexandra Avenue Plantation in the City of Burnside, the Pine Plantation at Haines Road in the City of Tea Tree Gully and War Memorial Gardens in the City of Unley;

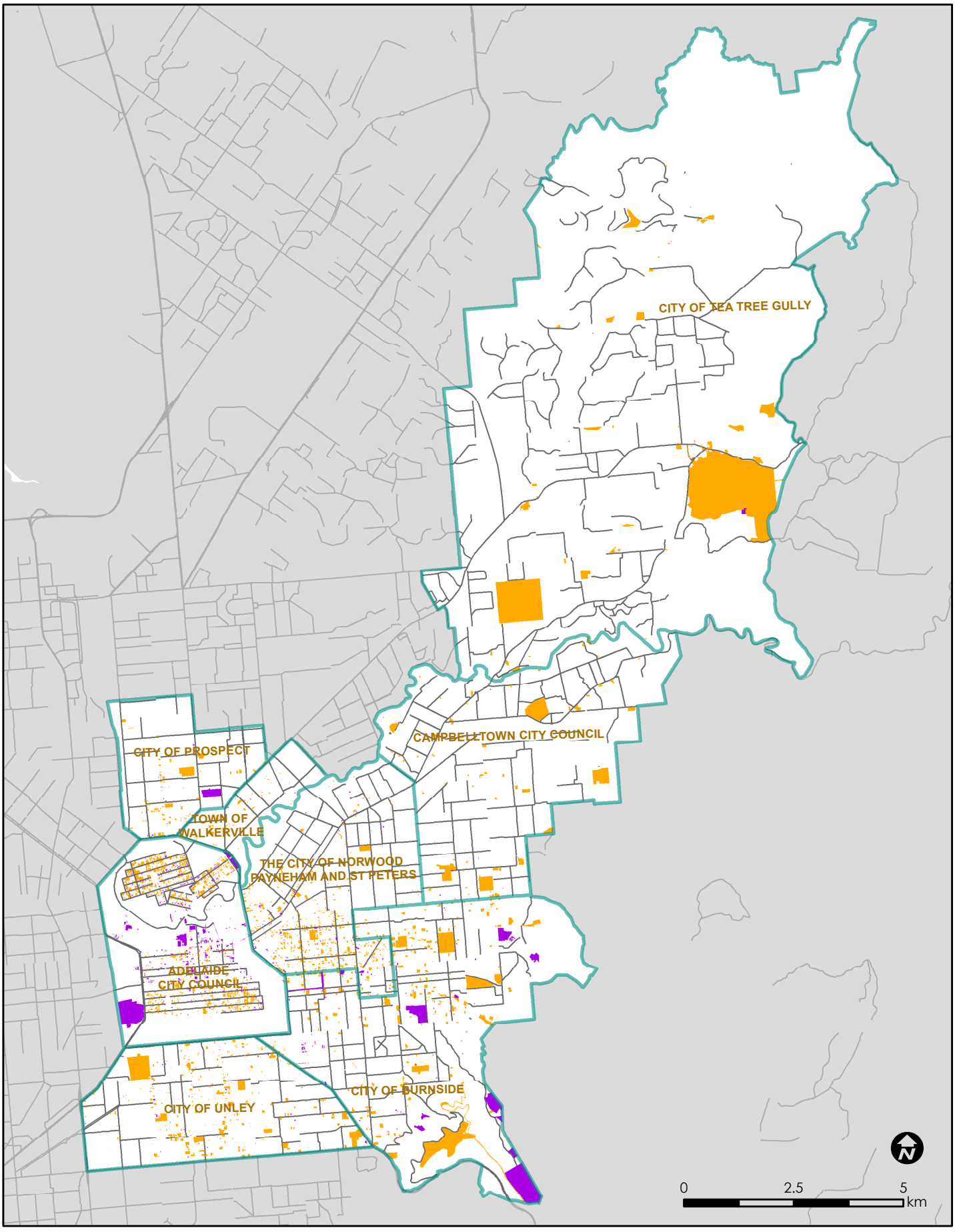
[23] Department of Planning, Transport and Infrastructure, 2014, Heritage Places State Spatial Dataset

- Examples of economic/industrial activity such as Magill Stone Mines, Penfold's Cottage, vineyards and winery complex, Charcoal Pits-Wedderburn and Menangle Railway Viaduct in the City of Campbelltown, former Newman's Nursery site at Anstey Hill Recreation Park in the City of Tea Tree Gully, shop and house at Clifton Street in the City of Prospect, the Tram Barn and the Maid & Magpie Hotel in the City of Norwood Payneham & St Peters;
- Buildings and places of social significance (i.e. associated with a particular personality or event) such as 10 Palmerstone Road in the City of Unley which was associated with the Ingham family.

Table 27 shows that Adelaide City Council and the City of Norwood Payneham & St Peters have the most heritage places and the City of Campbelltown has the least.

Table 27 Heritage places (Source: Department of Planning, Transport and Infrastructure, 2014 Heritage Places-Spatial Dataset)

LGA	Number of Local Heritage Sites	% of total Local Heritage in Eastern Region	Number of State Heritage Sites	% of total State Heritage in Eastern Region
Adelaide LGA	1878	49%	688	71%
Burnside LGA	409	11%	107	11%
Campbelltown LGA	82	2%	6	1%
Norwood Payneham & St Peters LGA	731	19%	105	11%
Tea Tree Gully LGA	102	3%	9	1%
Prospect LGA	61	2%	16	2%
Unley LGA	464	12%	29	3%
Walkerville LGA	97	3%	9	1%
Total	3824	100%	969	100%



Council boundaries

Major Road

Local Heritage Place

State Heritage Place

Map 6
Heritage Places
Resilient East

Data Source: DPTI, DEWNR

13.1.2. Water and wastewater

Most of the water and sewage distribution, supply and treatment assets in the Region are owned by SA Water. Water treatment plants are located at Anstey Hill and at Little Para and Hope Valley reservoirs.

The City of Tea Tree Gully provides a Community Wastewater Management System (CWMS) network to approximately 4400 properties. The City of Tea Tree Gully also owns and operates both a wastewater and stormwater treatment plant, and a network of Managed Aquifer Recharge (MAR) sites.

Stormwater assets are the responsibility of Councils, and include pipes, culverts, pits, channels, pump stations, basins (retention and detention), wetlands and biofiltration systems.

13.1.3. Waste management

For the Cities of Burnside, Campbelltown, Norwood Payneham & St Peters and the Town of Walkerville waste collection and management is undertaken by the Eastern Waste Management Authority (East Waste) which provides waste collection services. This service includes collection of waste to landfill, organic waste and recycling. The Cities of Unley, Tea Tree Gully and Prospect have separate waste management contracts.

Waste from the City of Tea Tree Gully is collected by Solo and processed by Jeffries (organics), IWS (landfill) and Visy (recycling) at Wingfield. The City of Tea Tree Gully also manages a green waste drop-off services for residents at St Agnes.

Adelaide City Council's three-bin kerbside waste system is collected by a contractor and disposed to waste, comingled recycling and organics processors. Adelaide City Council also operates a green waste centre in North Adelaide and provides a is serviced by Wingfield Waste & Recycling Centre and also operates a Green Waste Centre at North Adelaide and provides a free weekly kerbside cardboard collection for small businesses in high density business zones.

13.1.4. Community facilities

Other Council assets include offices, libraries and depots as well as recreation reserves and centres, community centres, child care centres, halls, car parks and heritage sites. Many of these assets are associated with community facilities and provide important services to the community and specific community groups (refer Section 6, Open and Green Spaces, Section 9, Community Connection and Inclusion, and Section 10, Health, Wellbeing and Safety for more detail).

13.1.5. Essential services

ElectraNet owns and manages the electricity transmission network across the Region. Their major assets in the Region include the high voltage lines from Cherry Gardens to Happy Valley and Morphett Vale East.

SA Power Networks operates the electricity distribution network, delivering electricity to properties from the high voltage lines through substations and distribution lines.

Envestra owns the natural gas distribution network in the Region.

13.1.6. Road and rail infrastructure and mobility

Roads, footpaths, shared paths, street lighting and traffic safety and control assets are maintained by both State government (arterial roads) and Councils (local roads). The tram line, railtracks and associated stations of the metropolitan transport system are owned and maintained by the State Government. The Eastern Region is served by Anzac Highway, Main North Road, the Belair, Gawler and Noarlunga railway lines, the Northeast Busway (O-Bahn) and the Glenelg-Adelaide tramway.

13.2. Sensitivity to climate factors

Infrastructure and the built environment in the Eastern Region is likely to be sensitive to projected climate changes such as increased intensity of rainfall events, extreme heat, increased frequency and intensity of bushfire and reduced rainfall

Infrastructure in the Eastern Region is vulnerable to flooding and extended heatwaves. This can cause damage to buildings and structures, erosion of road reserves and degradation of pavements. Fluctuating hydrological patterns may also cause the drying of land, ground movements and changes to the integrity of structures, affecting buildings and underground services such as pipes.

Stormwater infrastructure comprises assets such as pipes, culverts, local and main drains, pits, open channels, junction boxes, pumping stations, wetlands and trunk drains. These infrastructure elements provide protection to homes and infrastructure from major flooding and storm events and may not be effective due to increased rainfall intensity. Some of the current stormwater planning does not consider future climate projections in flood modelling due to uncertainty and the lack of data.

Increased strain on electricity transmission and distribution infrastructure may be experienced due to higher temperatures and increased use of air conditioning. This has the potential to result in network capacity issues, failures and strategic power outages. The energy efficiency of new development, and the capacity for existing buildings to be retrofitted, will significantly impact on this.

Community infrastructure including parks, walking and cycling paths, recreation facilities, playgrounds, community buildings and health buildings throughout the Region may experience higher operational costs (energy, water and maintenance), unreliability of power and other utilities, and damage caused by storms, heat, flooding and inundation. This could result in increased maintenance costs and the need for more frequent upgrade or replacement.

Higher temperatures and heatwaves may impact the amenity of residential areas, potentially affecting housing, roads, and public and private open spaces. Increasing temperatures may require energy efficiency and thermal comfort measures (passive and active) of existing buildings to be upgraded and adapt to changing conditions. Lower income households are likely to be disproportionally affected by this.

Preferences with regard to built form and housing assets (e.g. swimming pools, rainwater tanks, and shaded areas) may change in response to climate conditions, which require greater efforts from developers to meet demands. Some residential areas may be more restricted in their capacity to adapt to newer, more energy efficient building technologies due to policy conditions (e.g. heritage and character protection) or the existing built environment (e.g. land use interfaces, siting and appearance of structures).

Development and infrastructure located in bushfire prone areas is very sensitive to bushfire and can result in damage or destroy homes and other development and infrastructure.

Public transport services may be disrupted due to flooding events and transport networks may experience delays and disruptions as a result of power outages and malfunction of traffic lights.

13.3. Adaptive capacity

The Region's adaptive capacity in relation to infrastructure and the built environment is influenced by current and planned future land uses, and the policies in place to regulate development. A strong basis for the Region's adaptive capacity exists in the regional and council specific systems, policies and projects currently in place. This includes the regional stormwater management plans addressing flood mitigation and the significant levels of investment to deliver on these plans, Council Development Plan and current and planned infrastructure projects such as stormwater management projects. Potential constraints on adaptive capacity include inconsistency of policy across the Region, challenges to implementing existing policy in an informed way, and competing strategic and policy objectives.

Council Development Plan policies in place across the Region relate to a range of issues relevant to both the regional values and climate change sensitivities including environment and natural resources, open space, stormwater management and WSUD, and hazards including flooding and bushfire. These policies require new development to occur with some consideration of climate change sensitivities. Given some planning policies are qualitative and performance based, how application of these policies is realised in practice, and whether adequate information is available to apply them is less clear, but plays a significant role in actual adaptive capacity.

Building rules in place across the Region through the BCA and State building codes put structural standards in place that contribute to the resilience of buildings to climate change impacts such as heat, storm and flooding. The quantitative and mandatory nature of building rules make such codes an effective driver for adaptation.

Around 15% of the Region is zoned for open space. Open spaces such as parks, reserves and golf courses can ease climate change impacts such as UHI effect by moderating temperature, as well as acting as stormwater retention areas during periods of intense rainfall. Planning for open space will become increasingly important as much of the Region continues to densify under *The 30-Year Plan for Greater Adelaide* which identifies 2,560 hectares or 30% of the Region (excluding City of Tea Tree Gully)[24] for infill up-zonings for residential and employment land uses. This infill will primarily occur via development along corridors for example along The Parade and Unley Road, regeneration of areas for example in the City of Campbelltown and increased density and building heights, for example in Adelaide City Council.

The intensively developed nature of the Region, as well as the future directions in place for further densification of built form, makes stormwater management a key priority. Progress has been made on the major regional stormwater project Waterproofing the East as well as a significant number of individual Council and other initiatives to capture and reuse stormwater which contribute to adaptive capacity of the Region.

Adaptive capacity of the assets and infrastructure in the Region is highly variable due to the nature of how public and private assets and infrastructure are managed in the Region. Technical and governance challenges exist for both public and private sectors and the adaptive capacity of key private assets and infrastructure, such as Westfield Tee Tree Plaza, Norwood Place Shopping Centre, electricity distribution networks and SA Water infrastructure is largely influenced through their strategic planning activities.

There is also a lack of market incentives for private asset owners to facilitate private adaptation measures. [25] There are very few incentives for climate change adaptation measures to be implemented by private asset owners, with most incentives revolving around reduction in energy and greenhouse gas emissions. [26]. Some market mechanisms actually act as a barrier to adaptation, such as the network pricing approach of the Australian Energy Regulator (AER). One financial incentive offered by DEWNR is the 'Prospering in a changing climate grant program', which provides funding to sectors for the support of projects that demonstrate innovation and leadership in climate change adaptation.

Adaptation planning for public infrastructure is evident for assets owned by SA Water, through their Strategic Plan 2012-16. This plan outlines the integrated water planning and asset stewardship strategies through which SA Water intends to optimise asset functionality and reliability and the capacity of the stormwater system in the Region. Actions such as asset lifecycle planning and system capacity adaptation are to be implemented by SA Water, while collaborating with the Essential Services Commission of South Australia (ESCOSA). [27]

Institutional arrangements also play a role in the Region's capacity to adapt to the impacts of climate change. The functionality of governance arrangements affects the ability of decisions to

[24] The 30-Year Plan for Greater Adelaide identifies the City of Tea Tree Gully as part of the Northern Adelaide.
[25] Johnston et al. (2013) *Climate change adaptation in the boardroom*, p.16
[26] Government of South Australia (2014a) *What organisations, business and industry can do*
[27] SA Water (2012) *SA Water Strategic Plan 2012-16*

be made and implemented in a range of areas associated with planning and development (refer Section 12, Governance).

Section 13.4 identifies those plans and strategies that contribute to the adaptive capacity of infrastructure and the built environment in the Eastern Region.

13.4. Relevant policies and strategies

Adelaide City Council	Asset Management Policy Asset Management Plans (currently being finalised) Smart Move Strategy 2012-2022 Waste Management Action Plan 2011-2015
City of Burnside	Asset Management Policy Community Transport Program
City of Campbelltown	Infrastructure and Asset Management Plans for Bridges, Buildings , Footpaths, Stormwater, and Transport 2012 Playground and fitness equipment maintenance and development policy Transport Plan 2006-2016 Local Area Traffic Plans – Campbelltown & Paradise Infrastructure and Asset Management Plan – Transport Assets
City of Norwood Payneham & St Peters	Asset Management Plans for: Buildings and Infrastructure, Civil Infrastructure, Stormwater, Recreation & Open Space City Wide Cycling Plan
City of Prospect	Movement Management Plan & Movement Action Plan Local Area Traffic Management Plan
City of Tea Tree Gully	Asset Management Plans for: Buildings, CWMS, Footpaths, Roads Community Transport and Accessibility Strategy 2003/2008 Environmental Sustainability Policy Waste Management Policy Asset Management Policy
City of Unley	Integrated Transport Strategy 2002 Strategic Asset Management Plan 2010 Asset Management Policy Environmental Policy Waste Management Plan Waste & Recycling Web Page
Town of Walkerville	Buildings Infrastructure and Asset Management Plan Transport Infrastructure and Asset Management Plan A Connected Community: The Town of Walkerville Urban Master Plan

14 ECONOMIC ACTIVITY AND VIBRANCY

14. Economic activity and vibrancy

Description	We value economic activity for the contribution it makes to the quality of life of residents and visitors alike through the provision of goods and services, employment and investment opportunities and vibrant destinations for shopping, recreation, socialising and celebration.
Features/aspects of economic activity and vibrancy we value in the Eastern Region	Main streets Activity hubs Events Essential services (e.g. power) Business

14.1. Existing conditions

Economic activity and vibrancy is about the Region's activities, services and events that underpin the generation of commerce, investment and employment in the Region and create vibrant destinations for shopping, recreation, socialising and celebration.

The Eastern Region is home to the State's capital city and inner and middle ring Council areas that are key contributors to the economic activity and vibrancy of Greater Metropolitan Adelaide and the State. Key contributions the Region makes to economy and vibrancy include:

- 30.6 billion dollars in Gross Regional Product, which is 32.6% of the Gross State Product (GSP);
- 18.12 billion dollars in Gross Regional Product (GRP) by Adelaide City, with the remaining Eastern Region Councils combined contributing 11.94 billion dollars to GRP;
- 248,961 jobs, with 171,975 or 70% of these being undertaken by residents of the Region;
- Key activity centres and main street environments which attract people from within and outside the Region for shopping, entertainment and recreation; and
- Cultural activities, celebrations, events and festivals of local, regional, State, National and International significance. Significant economic generators for the State include:
  - Royal Adelaide Show ($165.1 million, attendance of 473,000 people) [28]
  - Tour Down Under ($45.9 million)[29]
  - Clipsal 500 (over 12 years has contributed $285.48 million to State economy)[30]
  - WOMAD ($5.7 million to GSP)[31]

[28] *The Society Annual Report* 2013, page 4
[29] www.tourdownunder.com.au, viewed 25.2.15
[30] www.clipsal500.com.au, viewed 25.2.15
[31] www.womadelaide.com, viewed 25.2.15

- Festival of Arts ($62.9 million to State economy)[32]
- Fringe Festival ($66.3 million to State economy)[33]

In the Eastern Region there is 2,080 hectares of commercial and industrial landuses which is 12% of the Region. Economic activity is predominantly associated with retail and professional/ administrative services. There are also some industrial activities for example like those at Stepney and Glynde in the City of Norwood Payneham & St Peters and larger industry zones in the City of Tea Tree Gully. As shown by Map 7 much of this activity is situated along key main roads in the Region. There are also a number of home-based businesses throughout the Region, for example in the City of Prospect and the City of Norwood Payneham & St Peters.

There are a range of activity hubs and main streets across the Eastern Region. Examples include:

- The Adelaide Central Business District in Adelaide City Council which includes a wide variety of activities that contribute to commerce and vibrancy such as Rundle Mall, the Adelaide Central Market, numerous educational institutions such as the University of Adelaide, University of South Australia (City East and City West Campuses), TAFE SA (Adelaide Campus and Adelaide College of the Arts) and the South Australian Institute of Business & Technology, cultural centres such as Her Majesty's Theatre, Festival Theatre Art Gallery of South Australia and South Australia Museum, the Adelaide Convention Centre and Adelaide Casino and a wide range of professional services offices and commercial areas;
- Burnside Village and retail areas, business and offices along Fullarton, Kensington and Greenhill Roads in the City of Burnside;
- Newton shopping centre in the City of Campbelltown;
- Retail, café and/or business activities along The Parade, Magill Road, Payneham Road, Glynde Corner and at Firle Plaza in the City of Norwood Payneham & St Peters;
- Westfield Tea Tree Plaza and Golden Grove Village in the City of Tea Tree Gully;
- Retail and commercial areas along Unley, King William and Glen Osmond Roads in the City of Unley;
- Retail and commercial areas along Prospect, Churchill and Main North Roads in the City of Prospect; and
- Walkerville Terrace in the Town of Walkerville.

The Gross Regional Product of the Eastern Region is 30.6 billion dollars, which is 32.6% of the Gross State Product (GSP). Activities in the Adelaide City LGA are the largest generator at 18.12 billion dollars.

As shown by Table 28 there main employment industries in the Eastern Region comprise 'Health Care and Social Assistance', 'Professional, Scientific and Technical Services', 'Retail Trade', 'Education and Training' and 'Public Administration and Safety'. The largest employment industry is 'Health Care and Social Assistance' (13.8%), followed by 'Retail Trade' (14.6%) and

[32] www.festivalsadelaide.com.au, viewed 25.2.15
[33] www.adelaidefringe.com.au, viewed 25.2.15

'Professional, Scientific and Technical Services' (12.8%). In the City of Tea Tree Gully 'Construction' is the third highest industry of employment (10%), and in the City of Campbelltown 'Manufacturing' is the fourth highest (9%).

Table 28: Largest employment industry (Source: economy.id.com.au)

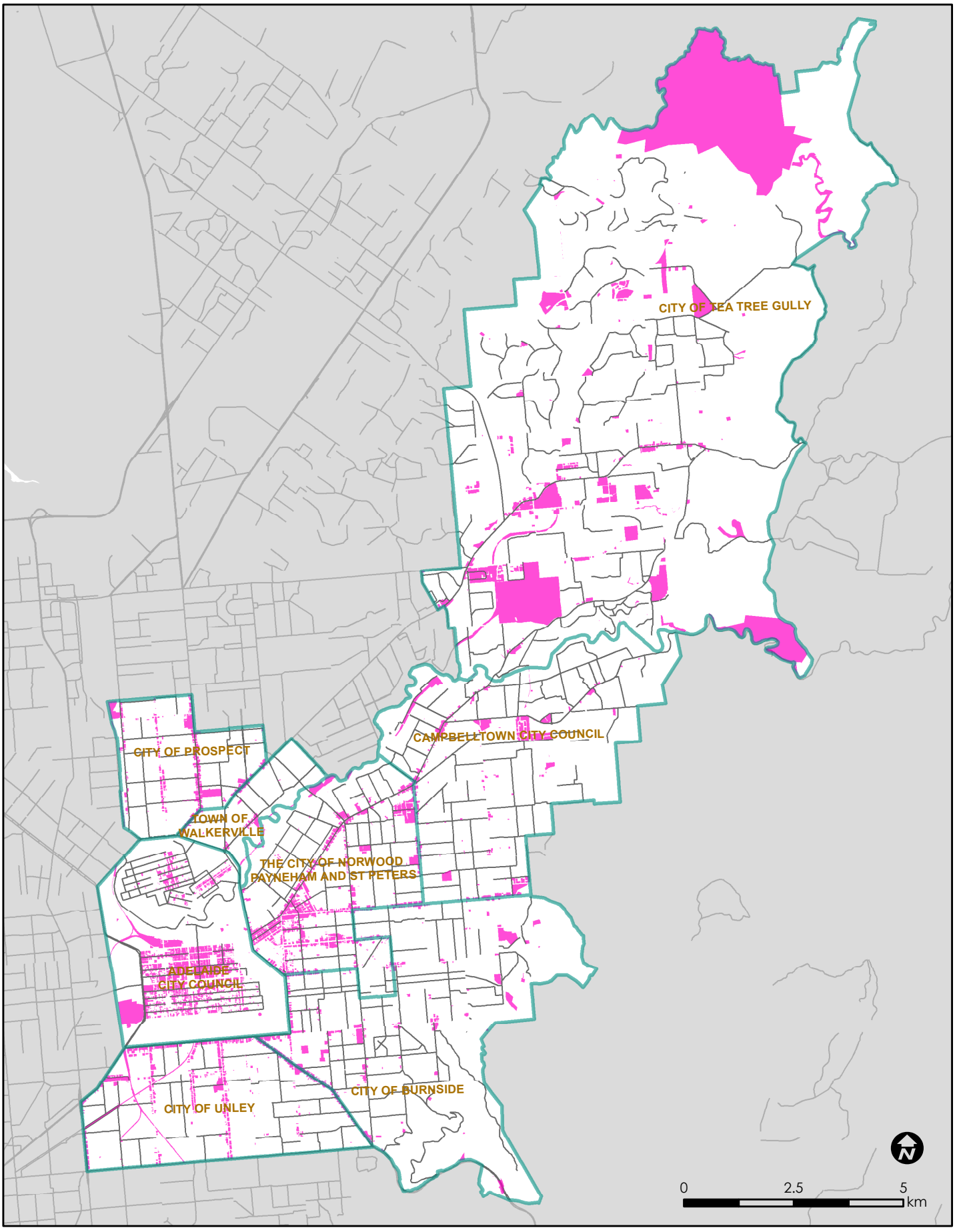
LGA	Largest employment industry	Largest employment industry as percentage of total employment by LGA
Adelaide LGA	Public Administration and Safety	18%
	Health Care and Social Assistance	15.5%
	Professional, Scientific and Technical Services	13.3%
Burnside LGA	Health Care and Social Assistance	21.6%
	Professional, Scientific and Technical Services	13%
	Retail Trade	10.5%
Campbelltown LGA	Health Care and Social Assistance	18.9%
	Retail Trade	15.6%
	Education and training	15.1%
Norwood Payneham & St Peters LGA	Health Care and Social Assistance	15.5%
	Retail Trade	14.6%
	Professional, Scientific and Technical Services	12.8%
Tea Tree Gully LGA	Retail Trade	21.3%
	Health Care and Social Assistance	16.1%
	Construction	10.7%
Prospect LGA	Health Care and Social Assistance	14.7%
	Education and Training	10.7%
	Retail Trade	10.4%
Unley LGA	Health Care and Social Assistance	21.3%
	Professional, Scientific and Technical Services	13.7%
	Retail Trade	10.7%
Walkerville LGA	Health Care and Social Assistance	20.1%
	Education and Training	10.2%
	Professional, Scientific and Technical Services	10%
Eastern Region	Health Care and Social Assistance	15.5%
	Retail Trade	14.6%
	Professional, Scientific and Technical Services	12.8%
South Australia	Health Care and Social Assistance	13.8%

LGA	Largest employment industry	Largest employment industry as percentage of total employment by LGA
	Retail Trade	11.4%
	Manufacturing	10.6%

Table 29 shows the number of local jobs in each LGA, with the largest amount of jobs being located within the Adelaide City Council. Across the Eastern Region, the highest proportion of residents that work in the same area as they live is also in Adelaide City Council (54.7%).

Table 29: Local jobs and residents working in the same area as they live (Source: economy.id.com.au)

LGA	Number of local jobs	Residents working in the same area as they live
Adelaide LGA	138,718	54.7%
Burnside LGA	18,943	18.2%
Campbelltown LGA	9,614	15.6%
Norwood Payneham & St Peters LGA	27,958	19.9%
Tea Tree Gully LGA	22,845	20.5%
Prospect LGA	6,534	11.3%
Unley LGA	22,161	17.8%
Walkerville LGA	2,188	11.6%



Council boundaries

Commercial and Industry / Utility Landuse

Major Road

Map 7
Commercial and Industrial Activity
Resilient East

Data Source: DPTI, DEWNR

In addition to creating employment and investment opportunities, the economic activity of the Region provide destinations for shopping, recreation, socialising and celebration.

Key activity centres and main street environments such as the Adelaide CBD, The Parade, Prospect Road, King William Road, Burnside Village and Tea Tree Plaza attract people from within and outside the Region for shopping, entertainment, recreation and events.

These wide range of activities contribute to generating vibrancy across the Region and provide a range of experiences and attractions for residents and visitors. Examples include:

- Dining at the numerous cafes along Rundle Street, O'Connell Street, The Parade or King William Street;
- Shopping at numerous locations including Rundle Mall, Tea Tree Plaza, Burnside Village, The Parade, Prospect Road and Newton Shopping Centre;
- Exhibitions at the Art Gallery or Museum of South Australia and the Prospect Gallery;
- Large events such as the Royal Adelaide Show, Tour Down Under, Clipsal 500 and WOMAD;
- Festivals such as the Festival of Arts, Fringe Festival, OZAsia, Adelaide International Guitar Festival, Adelaide Film Festival, Adelaide Cabaret Festival and SALA Festival
- Local community events such as Ignite Unley (outdoor cinema), Norwood Place Parades, Moonlight Markets at Thordon Park, Prospect Farmers Market and Events@thepark; and
- Celebrations to mark key dates such as Australia Day, ANZAC Day and Christmas or to honour the contributions of others for example National Volunteer Week.

14.2. Sensitivity to climate factors

Economic activity and the vibrancy of the Eastern Region is likely to be sensitive to projected climate changes related to increased intensity of rainfall events, extreme heat, bushfire and reduced rainfall.

Economic activity may be impacted by disruption to essential services such as electricity and telecommunications during extreme weather. With many residents needing to travel beyond their own LGA to work, employees may experience difficulties getting to work as disruptions occur to public transport services and traffic lights. Infrastructure and buildings may be damaged during extreme events requiring shut down periods. Similar impacts may be felt by home-based businesses.

A number of flow-on impacts may result from this, including higher operating costs associated with power usage and insurance excesses, increased capital costs associated with retrofitting and additional maintenance, disruptions to supply chains, disruptions and delays to asset function (e.g. power outages, increased stormwater detention), reduced safety of energy infrastructure and the accelerated depreciation of assets.

Heatwaves and extreme heat can reduce organisational productivity and the cost of doing business such as by absenteeism of staff caused by health impacts or transport disruptions and increasing the need to change operating hours. Even where changing operating hours to minimise work during the hottest times of the day is an option, this could raise other issues such as noise impacts on people in neighbouring residential areas.

The occupational health and safety of employees working outdoors may be affected by extreme heat, heatwaves and extreme rainfall. This may require rescheduling of rosters to enable work to be undertaken earlier in the day during extreme heat or periods of time when outdoor work cannot occur.

Extreme events such as extreme heat, heatwaves or intense rainfall may reduce opportunities to participate in activities that contribute to the vibrancy of the Region as they are cancelled or rescheduled, particularly those that are held outdoors. This is particularly pertinent for the Eastern Region given the amount of activities and events that are held in the Region that are significant economic generators for the State (e.g. Royal Adelaide Show, Clipsal 500, Fringe Festival, WOMAD and Tour Down Under).

Health impacts may increase at outdoor events as people suffer from heat exhaustion, sunburn and dehydration.

The ability to maintain the amenity of streetscapes and open spaces which are often the venue for events and festivals is sensitive to reduced rainfall, heatwaves and increased temperatures. Public realm infrastructure which underpins some events and festivals such as paths, streetscapes, street trees, street furniture and shade structures is sensitive where climate hazards cause direct damage or impact on the usability of infrastructure, leading to increased maintenance, repair and replacement costs.

The desire to visit destinations in the Eastern Region such as for tourism, shopping, recreation and socialising is also sensitive to extreme events such as intense rainfall, extreme temperature and heatwaves as people may decide to stay home or utilise alternative indoor destinations, thereby adversely impacting the economic contribution generated by these activities in the Region. Outdoor dining and main street shopping environments compared to large indoor malls may be less attractive due to exposure to the elements and reduced amenity.

Extreme heat may impact public health through faster food spoilage and people buying less fresh produce, or occur as a result of disruption to power supplies during extreme events.

Increased bushfire frequency could impact on the ability for customers to access shopping centres or in direct damage to buildings and infrastructure. Damage caused by extreme events may place financial pressure on residents through increased insurance and repair costs, leading to reduced spending in the Region.

14.3. Adaptive capacity

The predominance of professional services and retail services in the Region which underpin the economy means that adaptive capacity resides significantly with private enterprises and asset owners. As discussed in Infrastructure and Built Environment (refer Section 13), there is a lack of market incentives for private asset owners to facilitate private adaptation measures and there are very few incentives for climate change adaptation measures to be implemented by private asset owners, with most incentives revolving around reduction in energy and greenhouse gas emissions.

The adaptive capacity for many private enterprises is likely to be linked with the ability to maintain power during extreme events and the ability to access transport and supply chains.

In relation to vibrancy, a key determinant of adaptive capacity of the Eastern Region will be the ability to continue to undertake the range of events, festivals and activities. Indoor facilities such as art galleries, museums, restaurants and shopping malls are generally well serviced by air conditioning and protected from intense rainfall. Outdoor events have less adaptive capacity and are more vulnerable to cancellation and/or rescheduling. Current event planning practices already include measures which aim to reduce impacts of heat for example, provision of free water and misting tents and attendance of first aid officers contributing to adaptive capacity.

Public health services provided under legislation by State and local government in relation to food safety are in place and will assist with managing risks in relation to food safety during heatwaves.

Streetscapes, open space and public realm are critical to the vibrancy of the Eastern Region and are often the venue for events and destinations for shopping and socialisation. Much of this infrastructure is owned, maintained and delivered by local government as well as privately. Local governments in the Region as well as more broadly are facing increased resource constraints, along with continuing demand. This context has potential to reduce the adaptive capacity of this infrastructure, which if not maintained, in turn impacts the adaptive capacity of the Region's population.

The ability to irrigate open space and streetscapes to maintain amenity contributes to adaptive capacity. In the Eastern Region many initiatives are in place to harvest and reuse stormwater as well as recycled wastewater including for the Adelaide Park Lands which is a key event space and other open space areas in the Region.

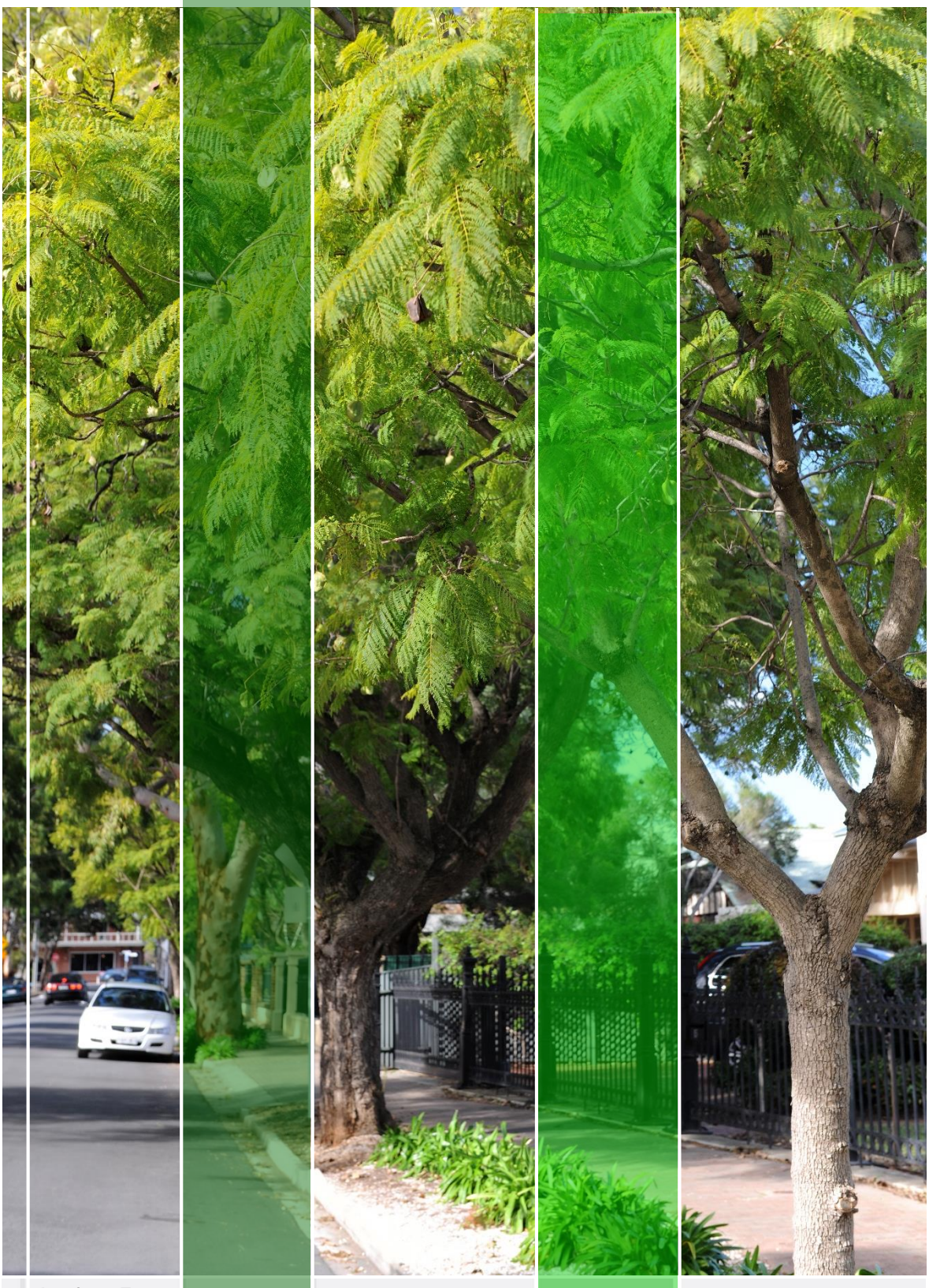
There are a number of organisations or committees which support businesses and their development in the Region and contribute to their adaptive capacity. For example, some Councils have Precinct Committee or Main Street Committees such as those in the City of Norwood Payneham & St Peters, Adelaide City Council and City of Unley. The Eastside Business Enterprise Centre (EBEC) is an independent organisation supported by a partnership of Australian and local government together with the corporate sector. EBEC has a shopfront which operates out of the Norwood Town Hall at the City of Norwood Payneham & St Peters.

Section 14.4 identifies those plans and strategies that contribute to the adaptive capacity of economic activity and vibrancy in the Eastern Region.

14.4. Relevant policies and strategies

Adelaide City Council	Arts and Culture Strategy 2010-2014 Events in Park Lands Policy and Guidelines
City of Campbelltown	Arts & Cultural Awareness Policy Economic Development Framework
City of Norwood Payneham & St Peters	The Parade Masterplan
City of Prospect	Prospect Road Final Masterplan Churchill Road Final Masterplan Draft Strategic Economic Plan 2014-2018 (underway)
City of Tea Tree Gully	Annual Business Plan Policy Annual Business Plan Live Life Modbury Masterplan Modbury Sporting Precinct Masterplan
City of Unley	Council's Role in Economic Development Policy Public Arts Policy Long Term Financial Plan Event Planning Toolkit Main Street Improvement Program
Town of Walkerville	Collections Policy Annual Business Plan Long Term Financial Plan

15 NEXT STEPS



15. Next steps

The information collated in this report provides the framework and key point of reference moving into the next stage of the Resilient East Project.

This report is a key a source of information to assist in completion of stage two which involves undertaking an Integrated Vulnerability Assessment (IVA), which in turn will form the basis of the Resilient East Regional Climate Change Adaptation Plan.

Information within this report such as the values and regional profile supports key aspects of the IVA including the selection of indicators against which to assess vulnerability, and consideration of the sensitivity and adaptive capacity of the Region in relation to those indicators.

The discussion of sensitivity and adaptive capacity provided in the regional profile section will inform more detailed consideration of sensitivity and adaptive capacity in collaboration with stakeholders in the IVA stage of the project.

The vision and key decisions documented in Section 3 will continue to be reflected upon and integrated into the final stage of the project when the adaptation plans is prepared.

16 REFERENCES

16. References

Adelaide and Mount Lofty Ranges Natural Resources Management Board (2013) *Concept Statement-Preparation of a Water Allocation Plan for the Adelaide Plains*

Australian Bureau of Statistics, 2011 Census of Population and Housing 2011 via profile.id.com.au

Australian Bureau of Statistics 2014 Population Estimates by Age and Sex, Local Government Areas (ASGS 2013), released August 24, 2014, http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/3235.0, accessed February 25, 2015.

CSIRO and BOM (2007) *Climate Change in Australia*. www.climatechangeinaustralia.com.au

Department of Planning, Transport and Infrastructure (2014) Heritage Places-Spatial Dataset

Department of Planning, Transport and Infrastructure (2014) Land Development Zones-Spatial Dataset

Department of Planning, Transport and Infrastructure (2014) Government Lands-Spatial Dataset

Department of Planning, Transport and Infrastructure (2013) Generalised Land Use-Spatial Dataset

Department of Environment, Water and Natural Resources (2014) Native vegetation (floristic) State-wide Spatial Dataset

Government of South Australia (2010) *The 30-Year Plan for Greater Adelaide*

Government of South Australia (2014a) What organisations, business and industry can do

Government of South Australia (2014b), State Government energy efficiency initiatives

Government of South Australia (30 June 2012) *Residential land supply report Fact Sheet, Greater Adelaide and selected rural townships*

IPCC (2014) Annex II Glossary in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press UK and New York, NY, USA, pp. 1757-1776.

Jacobs, B., Mikhailovich, N., and Delaney, C. (2014) *Benchmarking Australia's Urban Tree Canopy: An i-Tree Assessment*, prepared for Horticulture Australia Limited by the Institute for Sustainable Futures, University of Technology Sydney.

Johnston et al. (2013) *Climate change adaptation in the boardroom*

Public Health Information Development Unit, (2104 and 2011) *Social Health Atlas of Australian Data by Local Government Areas*

Resilient South (2014) *Regional Profile - Resilient South*, prepared by URPS as part of the Resilient South consultancy led by URPS for the Cities of Onkaparinga, Holdfast Bay, Marion and Mitcham in association with the Government of South Australia and the Australian Government.

Royal Agricultural and Horticultural Society of South Australia, (2013) The Society Annual Report

SA Water (2012) *SA Water Strategic Plan* 2012-16

SKM (2013) *Western Adelaide Region Climate Change Adaptation Plan - Stage 1* Prepared by SKM for the City of Port Adelaide Enfield, City of Charles Sturt and City of West Torrens.

17 APPENDICES

17. Appendices

Appendix A

Summary of climate change risks and impacts

Development planning

	Extreme Temperature (# days >35 degrees)	Reduced Average Rainfall	Extreme Rainfall	Extreme Bushfire Weather
Adelaide City Council	y	y		y
City of Burnside	y	y	y	y
City of Campbelltown	y	y		
City of Norwood Payneham & St Peters				
City of Prospect	y			
City of Tea Tree Gully	y	y		y
City of Unley		y	y	
Town of Walkerville	y			

Health and wellbeing

	Extreme Temperature (# days >35 degrees)	Reduced Average Rainfall	Extreme Rainfall	Extreme Bushfire Weather
Adelaide City Council	y			y
City of Burnside	y		y	y
City of Campbelltown	y			
City of Norwood Payneham & St Peters				
City of Prospect	y			
City of Tea Tree Gully	y	y		
City of Unley	y		y	
Town of Walkerville				

Emergency management

	Extreme Temperature (# days >35 degrees)	Reduced Average Rainfall	Extreme Rainfall	Extreme Bushfire Weather
Adelaide City Council				y
City of Burnside				y
City of Campbelltown				
City of Norwood Payneham & St Peters				
City of Prospect				
City of Tea Tree Gully				y
City of Unley			y	
Town of Walkerville	y			

Sustainability and environmental management

	Extreme Temperature (# days >35 degrees)	Reduced Average Rainfall	Extreme Rainfall	Extreme Bushfire Weather
Adelaide City Council	y	y		
City of Burnside	y	y		
City of Campbelltown	y	y		
City of Norwood Payneham & St Peters	y			
City of Prospect				
City of Tea Tree Gully	y	y		
City of Unley	y	y	y	
Town of Walkerville	y	y		

Community infrastructure

	Extreme Temperature (# days >35 degrees)	Reduced Average Rainfall	Extreme Rainfall	Extreme Bushfire Weather
Adelaide City Council	y	y	y	
City of Burnside	y			
City of Campbelltown	y			
City of Norwood Payneham & St Peters	y	y		
City of Prospect	y	y		
City of Tea Tree Gully	y			
City of Unley		y	y	
Town of Walkerville	y			

Council prosperity

	Extreme Temperature (# days >35 degrees)	Reduced Average Rainfall	Extreme Rainfall	Extreme Bushfire Weather
Adelaide City Council	y			
City of Burnside	y	y	y	y
City of Campbelltown	y			
City of Norwood Payneham & St Peters	y			
City of Prospect	y	y		
City of Tea Tree Gully	y	y		y
City of Unley	y			
Town of Walkerville	y			

Recreation and community services

	Extreme Temperature (# days >35 degrees)	Reduced Average Rainfall	Extreme Rainfall	Extreme Bushfire Weather
Adelaide City Council				
City of Burnside	y		y	y
City of Campbelltown				
City of Norwood Payneham & St Peters	y	y		
City of Prospect				
City of Tea Tree Gully	y	y		
City of Unley		y	y	
Town of Walkerville	y			

Appendix B

Review of Council strategies and plans

Adelaide City Council

Adelaide City Council embraces climate change adaptation. It has its own climate adaptation plan and the theme is strong in Council's strategic plan. Adelaide City Council is the only council which demonstrates that climate adaptation is a clear consideration throughout all themes.

City of Burnside

The City of Burnside's long term strategic community plan, 'Be the Future of Burnside 2025' acknowledges South Australia's Strategic Plan target of climate change adaptation but its corresponding desired outcome is limited to sustainable resource use and waste minimisation – mitigation responses to address climate change rather than adaptation measures in response to the risks it poses. This lack of strategic direction is evident in that very few of its strategic plans and policies acknowledge climate change adaptation. The only values areas which discuss the need to prepare for the impacts of climate change are 'Open and Green Spaces', 'Health, Wellbeing and Safety' and 'Habitat and Biodiversity'.

City of Campbelltown

The City of Campbelltown Strategic Plan 2010-2020 identifies the objective to "address climate change through local action by adapting to a changing climate, understanding and responding to issues, and reducing emissions". This direction is carried through to most of the values areas that this report focuses on. 'Water', 'Community..' and 'Infrastructure and Built Environment' area areas which require revision so as to include adaptive measures which address the risks of climate change.

City of Norwood Payneham & St Peters

The City of Norwood Payneham & St Peters' Strategic Plan: City Plan 2013 acknowledges that by 2030, the impacts of climate change will underpin everything we do. There is a high level of coordination with other strategic plans that have been recently updated, with only the areas of 'Community...' and 'Habitat and Biodiversity' lacking consideration of climate change adaptation. It is understood that Council has endorsed a new environmental management plan but that was not accessible at the time of this review. Most of the asset management plans recognised climate change and environment as a future influence on demand.

City of Tea Tree Gully

The City of Tea Tree Gully recognises the imperative to adopt adaptation and mitigation measures in response to climate change at a strategic level. This is set out in the Strategic Plan 2011-2015 and flows through to strategic documents that contain most of the value areas identified in this assessment. The areas lacking in coordination with broader strategic climate change adaptation measures are 'Infrastructure and Built Environment', with Council's asset management plans not including reference to climate change adaptation, and 'Community engagement, education, participation, connection and inclusion'. Of note is that the City of Tea Tree Gully, like other Councils, has developed its asset management plans using a template

developed by the Local Government Association, thus presenting an opportunity to update this template to better integrate climate change adaptation considerations.

City of Prospect

Climate Change Adaptation is addressed in the City of Prospect's Strategic Plan 2012-2016.

There are relatively few strategic documents available on Prospect Council's website, compared to other ERA Councils. However, of those documents available, climate change is addressed in two other strategic documents: Environmental Action Plan 2008-2011 and the Annual Business Plan 2014.

Town of Walkerville

The Walkerville Strategic Plan does not acknowledge climate change adaption. The only strategic plan in which this is considered is 'A Connected Community: The Town of Walkerville Urban Master Plan'. Notably, none of the Asset Management Plans acknowledge climate change adaption as a demand factor with a projected impact on services.

City of Unley

Climate Change Adaptation is not addressed in Unley Council's Strategic Plan: 4 Year Plan 2013-2016. It is addressed in other strategic documents though. These include: Stormwater Management Plan, Community Plan 2033, Environmental Sustainability Plan, Public Arts Strategy, Vegetation Management Policy.

Gaps in the acknowledgement of climate change adaptation measures are noted in the areas of 'Open and Green Spaces', 'Health, Wellbeing and Safety', 'Infrastructure and Built Environment' and 'Economic Activity and Vibrancy'.