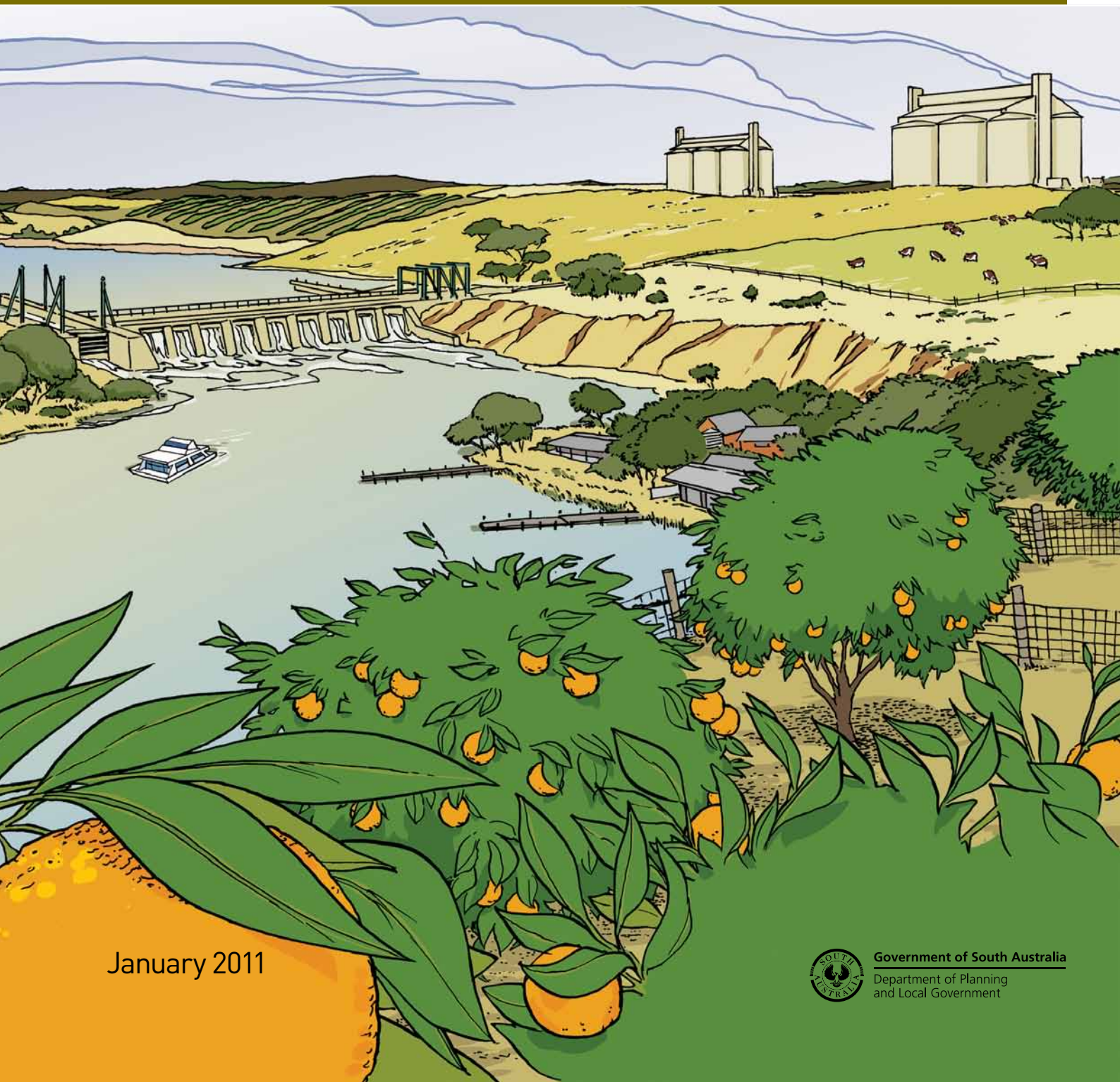
Murray and Mallee Region Plan

A volume of the South Australian Planning Strategy



January 2011

Government of South Australia
Department of Planning and Local Government

Murray and Mallee Region Plan

A volume of the South Australian Planning Strategy

This document is the *Murray and Mallee Region Plan*.

The document has been prepared by the South Australian Government, through the Department of Planning and Local Government, as a volume of the South Australian Planning Strategy pursuant to section 22 of the *Development Act 1993* and is subject to change.

For further information

Please visit www.dplg.sa.gov.au or telephone the Department of Planning and Local Government on 08 8303 0600.

Additional copies of this document can be downloaded from www.planning.sa.gov.au/go/murray-mallee-plan or are available at Level 5, Roma Mitchell House, 136 North Terrace, Adelaide SA 5000.

Government of South Australia
Department of Planning and Local Government

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MINISTER FOR URBAN DEVELOPMENT AND PLANNING

A message from Paul Holloway

The Murray and Mallee region is one of the most economically and ecologically diverse regions in South Australia.

While much of the Murray and Mallee region's economy revolves around agriculture—it accounts for about 25 per cent of South Australia's dairy and pig production, one quarter of Australia's crushed wine grapes and more than 50 different kinds of horticultural crops—it also has a growing processing and manufacturing sector, which adds considerable value to its primary production base.

The heart of the region is the River Murray, which winds its way among plains, ranges, mallee scrub and lakes before emerging at the world renowned Coorong. More than 700,000 tourists are drawn each year to this rich and varied landscape and the wide range of recreational and nature-based activities it offers.

The region's diversified economic base provides it with a strong platform for ongoing growth and development. The *Murray and Mallee Region Plan* highlights the many strengths and comparative advantages that support the region's future prospects. The Plan also examines the critical issues that must be addressed in the near future, as identified during consultation with the councils, communities and other stakeholders in the region.

Chief among these issues is, of course, reduced water availability in the face of climate change. It is generally accepted that the region must continue to reduce its reliance on the River Murray and groundwater resources, and focus on more efficient water use, recycling of wastewater, harvesting of stormwater and water-sensitive urban design. Soil quality is another important issue, with salinity, soil loss and disturbance of acid sulfate soils on the rise in the river system. The Plan sets out land-use principles and policies that both support the protection and management of these critical environmental assets and help sustain steady economic growth through to 2036.

The Plan concentrates on land use and development that will encourage further economic diversification, expansion of infrastructure, establishment of alternative energy industries and growth in tourism. It also recognises the importance of social and community services, which not only support community cohesion but also help attract investment and skilled workers.

The *Murray and Mallee Region Plan* is the result of an extensive consultation process involving state government, local councils, regional development and natural resources management bodies, communities and industries. Realising the objectives of the Plan will require continued collaboration and commitment to ensure the region's liveability, competitiveness and sustainability during for next three decades.

Paul Holloway

Minister for Urban Development and Planning

The **regional volumes** of the South Australian Planning Strategy provide a link between broad, statewide planning aims and local, council-specific planning needs. They give direction on **land use and development**, outline where people are likely to live so that agencies can plan for the provision of **services and infrastructure**, and set out policies to manage **changes in population and climate**. Local councils, the state government and regional development and natural resources management bodies are working with communities and industry to develop **effective strategies** that will lead to a **sustainable future**. They recognise that population growth and economic prosperity must be balanced with preservation of the **environment** and retention of the **heritage, history and character** of regional communities to attract and retain **skilled workers** and for the benefit of **future generations.**

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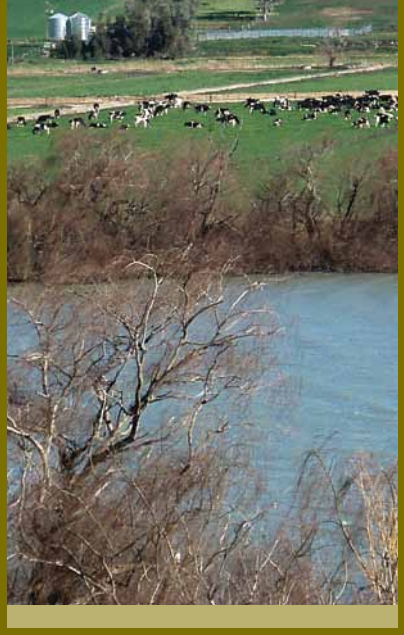
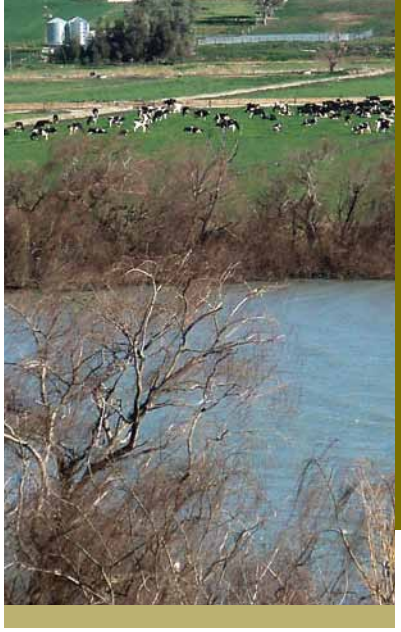


OVERVIEW

Chapter A



OVERVIEW

Chapter A

Background

The *Murray and Mallee Region Plan* (the Plan) guides future land use and development in the region.

It has been prepared by the South Australian Government, through the Department of Planning and Local Government, in collaboration with Regional Development Australia–Murraylands and Riverland[1], the Riverland Development Corporation, the South Australian Murray–Darling Basin Natural Resources Management Board, other state agencies and the eight local government areas of the region:

- Renmark Paringa Council
- District Council of Loxton Waikerie
- Berri Barmera Council
- Mid Murray Council
- Rural City of Murray Bridge
- District Council of Karoonda East Murray
- Southern Mallee District Council
- Coorong District Council.

The authors of the Plan have drawn on the most recent data and statistics available on the region, including the Australian Bureau of Statistics' *2006 Census of Population and Housing*, which was the latest Census at the time of publication. Consultation on the draft Plan was undertaken in 2007–08 and involved workshops with local industry, councils and state government agencies to identify the key issues and new and developing trends in the region.

Additional submissions received from industry, interest groups, agencies, Regional Development Australia–Murraylands and Riverland, and local councils and communities during a two-month public consultation period in 2010 have also contributed to improving and finalising the Plan.

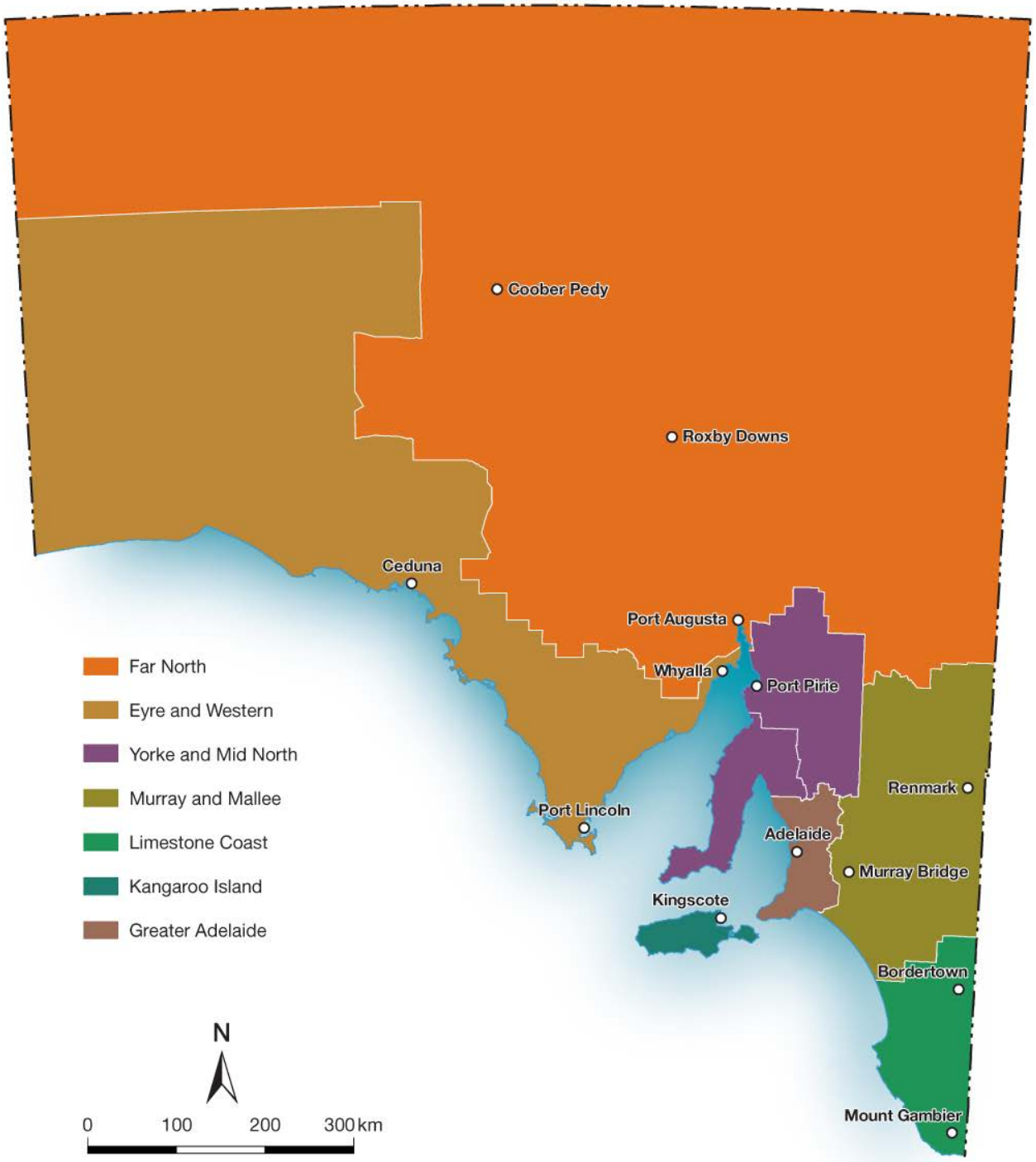
For more information about how the Plan was developed, see Appendix 1.

The *Murray and Mallee Region Plan* supersedes the relevant sections of the *Planning Strategy for Regional South Australia* (January 2003, as amended at December 2007). Under that strategy, the region was considered as two planning and development areas—the Murraylands and the Riverland (see Glossary for definitions).

The Plan is applicable to the township of Murray Bridge and is additional to the planning provisions applicable to Murray Bridge in *The 30-Year Plan for Greater Adelaide*. In the event of any inconsistency between this volume and applicable provisions in *The 30-Year Plan for Greater Adelaide*, the provisions in *The 30-Year Plan for Greater Adelaide* will prevail.

1 The Murraylands Regional Development Board became Regional Development Australia–Murraylands and Riverland in 2009–10.

Map A1


Coober Pedy
Roxby Downs
Ceduna
Port Augusta
Whyalla
Port Pirie
Port Lincoln
Renmark
Adelaide
Murray Bridge
Kingscote
Bordertown
Mount Gambier
Far North
Eyre and Western
Yorke and Mid North
Murray and Mallee
Limestone Coast
Kangaroo Island
Greater Adelaide
N
0
100
200
300 km

The role of the South Australian Planning Strategy

The *Murray and Mallee Region Plan* is one of seven regional volumes that, together with *The 30-Year Plan for Greater Adelaide*, make up the South Australian Planning Strategy. The regions covered in the regional volumes of the Planning Strategy are: Eyre and Western, Far North, Kangaroo Island[2], Limestone Coast, Murray and Mallee, and Yorke and Mid North[3] (refer to Map A1).

In the regional volumes the State Government, in partnership with local government, gives direction on land use and development for the period 2010–2036. These volumes set out how the State Government proposes to balance population and economic growth with the need to preserve the environment and protect the heritage, history and character of regional communities. They also outline where people are likely to live and the projected make-up of the population so that state and local government agencies can plan for the provision of services and infrastructure, such as transport, health, schools, and aged care and community facilities.

At a local level, the regional volumes provide guidance and resources for councils as they undertake their Strategic Management Plans and review and amend their Development Plans. Development Plans contain the zones, maps and explicit rules that specify what can and cannot be done with land in a council area. Councils must ensure that their Development Plans and Development Plan Amendments are consistent with the land-use policies and directions of the relevant regional volume. The regional volumes also guide Development Plans and Development Plan Amendments in unincorporated (out of council) areas, as undertaken by the Minister for Urban Development and Planning.

The Structure Plans for the state's major regional cities, including Mount Gambier, Murray Bridge, Port Augusta, Port Lincoln, Port Pirie and Whyalla, flow from the regional volumes.

The South Australian Planning Strategy is a requirement of section 22 of the *Development Act 1993*. The Minister for Urban Development and Planning is responsible for its preparation on behalf of the State Government and for reporting to the South Australian Parliament annually on its implementation. Each volume of the strategy must be reviewed at least every five years.

2 Kangaroo Island is part of the Fleurieu and Kangaroo Island Government Region, but for planning purposes it is covered in a separate regional volume of the South Australian Planning Strategy, the *Kangaroo Island Plan*. The Fleurieu Peninsula is covered in *The 30-Year Plan for Greater Adelaide*.

3 The Yorke and Mid North regions are currently covered in the South Australian Planning Strategy as separate volumes. These will be combined into one volume, the *Yorke and Mid North Region Plan*.

The objectives of the regional volumes

To maximise the state's opportunities and respond to its challenges, the regional volumes of the South Australian Planning Strategy have three interlocking objectives. They are to:

- maintain and improve liveability
- increase competitiveness
- drive sustainability and resilience to climate change.

Figure A1 shows how these three objectives interrelate.

Alignment with state government policies

The regional volumes of the South Australian Planning Strategy provide a link between broad, statewide planning aims and local, council-specific planning needs, and they work in tandem with key state policies, leading to a consistent approach to land use and development across the state.

Firstly, the volumes support the achievement of a range of social, economic and environmental targets in *South Australia's Strategic Plan*. Second, they feed into the *Strategic Infrastructure Plan for South Australia* (2005–06) by identifying the infrastructure priorities needed to support economic and population growth. Third, they tie in with the *Housing Plan for South Australia* (2005), *Water for Good—A Plan to Ensure our Water Future to 2050* (2009), the *Economic Statement* (2009), the *State Natural Resources Management (NRM) Plan* (2006), the *South Australian Murray–Darling Basin NRM Plan* (2009); and *South Australia's Waste Strategy* (2005).

Figure A1 – Objectives of the regional volumes of the South Australian Planning Strategy

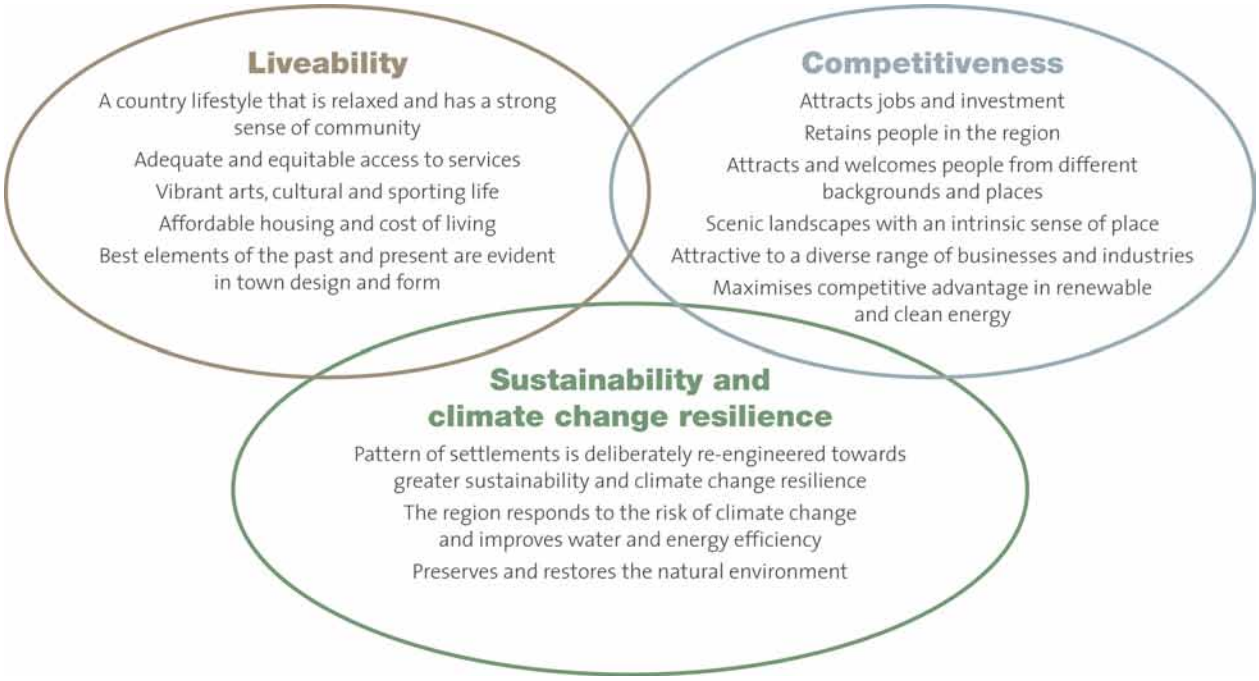
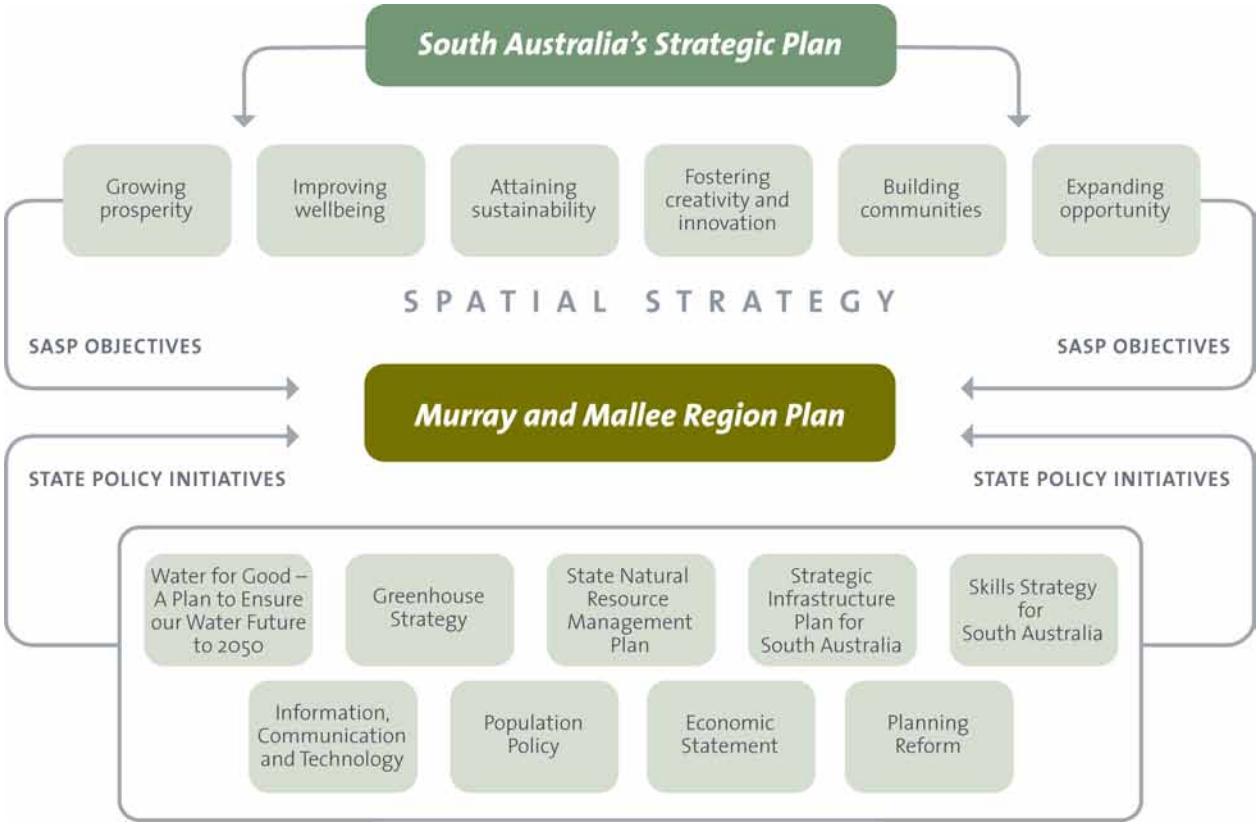


Figure A2 – The *Murray and Mallee Region Plan's* relationship with key state government policies



Relationship to *South Australia's Strategic Plan*

Figure A2 shows the relationship of the regional volumes with *South Australia's Strategic Plan* (SASP) and its targets, as well as the links to several state policy initiatives.

See Appendix 3 for further information about how the *Murray and Mallee Region Plan* contributes to specific SASP targets.

How the regional volumes will work at regional and local government levels

While the regional volumes will primarily operate at a regional level, local government will play a pivotal role in their implementation, in collaboration with DPLG, other state government agencies and stakeholders such as regional development and natural resources management boards. The collaborative process will feature regional forums, which will bring councils and relevant bodies together each year to agree on long-term land-use and infrastructure priorities, appropriate targets, and the need to focus their respective resources on implementing the priorities.

Consideration of Commonwealth environmental matters

The regions encompass many matters of National Environmental Significance (NES) that are protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These matters include:

- nationally listed species and ecological communities
- migratory species
- wetlands of international importance under the Ramsar Convention (Ramsar-listed wetlands)
- national and World Heritage items/areas.

Councils' decision-making processes and development controls should provide for early consideration of matters of NES and recognition that actions that potentially have a significant impact on matters of NES require a referral to the Commonwealth Department of the Environment, Water, Heritage and the Arts under the auspices of the EPBC Act.

Planning for change in regional South Australia

The regional volumes of the South Australian Planning Strategy set out land-use policies to manage the changes that are forecast to occur across the regions. Of particular concern are changes in population and climate, which are having, and will continue to have, significant impact on the demand for services and infrastructure, the natural environment, the character of communities and the economic prosperity of the regions.

Regional population change

The State Government believes that sustainable population growth is essential to maintain healthy communities and a labour force that can support our economy. While much of the state's population growth is expected to occur in Greater Adelaide, regional areas are targeted to grow as well.

The make-up of the state's population is also changing dramatically—it is ageing at a faster rate than the other Australian states and this will bring significant challenges for planning, particularly in terms of the type and location of housing and its proximity to services.

Table A1 – Population trends and targets by region 1996–2036

	Population trends		SASP T5.9 Target—Maintain regional SA's share (18%) of state population[a]			
Region	ERP in 2008[b]	Average annual growth rate 1996–2008 (%)	Share of 2008 regional population[c] (%)	Population target in 2036[d] (based on 2008 share)	Population increase 2008–36 (persons)	Population growth 2008–36 (persons per year)
Eyre and Western	58,072	0.19	19.54	77,385	19,313	715
Murray and Mallee	70,125	0.23	23.60	93,446	23,321	864
Far North	28,460	–0.46	9.58	37,925	9,465	351
Limestone Coast	65,402	0.35	22.01	87,152	21,750	806
Yorke and Mid North	**75,112**	**0.15**	**25.28**	**100,092**	**24,980**	**925**
Total	297,171	0.17	100.00	396,000	98,829	3660

Notes to Table A1:

a *The regional population targets are aspirational, based on the all-of-state population target developed for* The 30-Year Plan for Greater Adelaide. *The timeframes cited are uncertain and the growth targets will be amended as the results of more recent demographic analyses become available.*

b *ERP (estimated resident population). Australian Bureau of Statistics,* Regional population growth, Australia, *cat. no. 3218.0, ABS, Canberra, Apr. 2009.*

c *Department of the Premier and Cabinet,* South Australia's Strategic Plan, *DPC, Government of South Australia, Adelaide, 2007, <www.saplan.org.au>.*

d *South Australia's population is expected to reach 2.2 million by 2036. Department of Planning and Local Government,* The 30-Year Plan for Greater Adelaide: Background Technical Report, *DPLG, Government of South Australia, Adelaide, 2009, p. 16, <www.plan4adelaide.sa.gov.au>.*

SASP calls for regional South Australia to maintain an 18 per cent share of the state's total population (Target 5.9). Based on the all-of-state population target developed for *The 30-Year Plan for Greater Adelaide*, this would equate to about 99,000 additional people taking up residence in regional areas, resulting in a regional population of 396,000 people by 2036.

Table A1 breaks down this population target by region and indicates the past population growth rates (1996–2008). Each region requires an average annual growth rate of 1.03 per cent to achieve its population target increase and maintain its 2008 share of the estimated resident population (ERP).

While overall population numbers in regional areas have remained relatively static during the past decade, there have been significant changes in where people are choosing to live.

Numbers have declined in the more sparsely populated areas, particularly those in the Far North, and in settlements with less than 1000 people (with the exception of coastal communities). Changes to population distribution are being driven by the restructuring of farming enterprises, resulting in larger and fewer agricultural properties; the interstate and intrastate migration of people seeking a regional lifestyle; and changing industry demands.

Generally, towns with more than 1000 people have grown; several of these towns have had the fastest rates of population growth in the state. Larger centres such as Port Lincoln, Murray Bridge and Mount Gambier have continued to expand, while in Port Pirie, Port Augusta and Whyalla the population has stabilised and shown some improvement after a sustained period of decline.

The demographic profile of the regions also has been changing, with an ageing population and generally declining numbers of young people.

However, increasing economic investment in the regions and the expansion and diversification of primary industries, aquaculture, mining and the services that support tourism and older populations are expected to attract and maintain more young people and people from overseas. This will contribute to the achievement of the SASP population growth target.

Any potential impacts on natural resources, the environment, biodiversity, the unique landscapes and character of communities as a result of these changing population patterns and related development will need to be carefully managed.

In relation to employment, the State Government, through the Department of Further Education, Employment, Science and Technology, has a wide range of initiatives to support the attainment of the skills and workforce requirements needed by the economy. These initiatives include:

- TAFE SA campuses delivering services to individuals and businesses throughout regional South Australia
- South Australia Works—a flagship program supporting those who are disadvantaged in the labour market
- Productivity Places Program, which provides State and Federal funding to support businesses to develop the skills of existing workers
- Professional development programs that enhance the skills of education and training service providers and reforms that lead to greater effectiveness and responsiveness in service delivery.

Climate change

The potential effects of climate change on the regions range from threats to water supply, increased risk of bushfire, sea level rise and greater fragmentation of native habitats to increased pressure on health care services from more vulnerable people, such as the elderly.

The State Government believes it is critical to intervene now to help the regions prepare for and adapt to long-term climate change. Securing water and energy supplies is fundamental to economic, social and environmental wellbeing in the face of such change.

In recent years state and local government and regional communities have improved water security through augmentation of supply, the introduction of permanent water conservation, and measures such as wastewater re-use and stormwater harvesting. Increased housing density, improved water efficiency of buildings and the incorporation of water-sensitive urban design (WSUD) principles in the development process will lead to more efficient water consumption in regional towns.

State and local governments are developing regional demand and supply plans, to be in place by 2014, as outlined in *Water for Good—A Plan to Ensure our Water Future to 2050*, as well as investigating how regional communities can diversify their water supply sources.

In addition, state and local governments continue to investigate ways to organise land use such that it supports renewable and clean energy technologies. These opportunities will give South Australia a competitive advantage in a carbon-constrained economy. Investment in infrastructure will be critical to realise such opportunities.

These initiatives will extend the life and reliability of our water and energy supplies and allow the population and the economy to grow without placing unsustainable demands on our natural resources.

Our understanding of climate change and its ramifications is evolving rapidly. It is critical that policies and decisions are based on the best current information and can be adjusted in the future if required.

Managing change

South Australia's regions face the challenge of managing the impacts of climate change and population growth to protect viable primary production industries and the natural resources upon which they depend. This challenge has been compounded by reduced rainfall during several drought years. During this time rural communities have again shown their resilience and capacity to manage in both good and bad years.

Local councils, regional and economic development boards, natural resources management boards and the state government have been working with the community, local groups and industry to develop effective strategies for specific sectors (for example, primary industries and tourism) and specific parts of the region (for example, individual towns and council areas) that will lead to a sustainable future for the region.

They recognise that population and economic growth must be balanced with protection of the environment, including biodiversity, and retention of the regions' unique qualities for the benefit of future generations and to attract and retain skilled workers.

THE CONTEXT FOR THE PLAN

Chapter B

THE CONTEXT FOR THE PLAN

Chapter B

The Murray and Mallee region at a glance

The Murray and Mallee region:

- covers 53,938 square kilometres[4]
- had a population of 69,341 people at the 2006 Census[5]
- has an economy based on primary production and processing, including horticulture/viticulture, dairying and intensive livestock production
- is situated in the South Australian Murray–Darling Basin Natural Resources Management (Murray–Darling Basin NRM) region, which can be divided into five units: the river corridor, the Coorong and Lower Lakes, the Murray Mallee, the Eastern Mount Lofty Ranges and Murray Plains, and the South Olary Plains
- has a major centre, Murray Bridge, which has an economy based on food production and processing, and is also the centre for government services in the region
- has three other important regional services centres—Loxton, Berri and Renmark
- contains several major road and rail routes to the eastern states
- is a popular tourism destination featuring houseboat holidays and nature-based tourism associated with the River Murray and various conservation parks, attracting more than 711,000 overnight visitors a year.

See Appendix 2 for detailed information about the Murray and Mallee region, including its population distribution, economy and infrastructure.

Key issues for the Murray and Mallee region

The following issues were identified as critical to the region's future during workshops and consultations with councils, state government agencies and regional development boards in 2007-08. These issues, which are key drivers for the *Murray and Mallee Region Plan*, are grouped under four themes:

- environment and culture
- economic development
- population and settlements
- infrastructure and services provision.

4 This figure includes land under the control of local councils and the unincorporated land in the region's north.

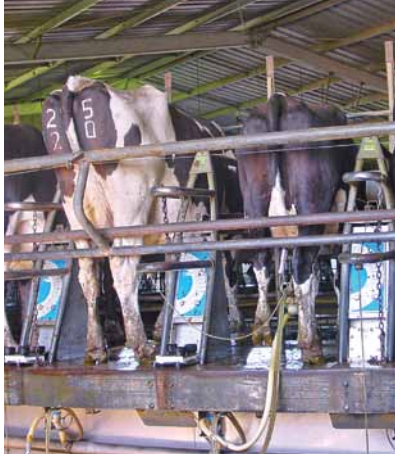
5 Australian Bureau of Statistics, 'Basic Community Profile', *2006 Census of Population and Housing*, ABS, Canberra, 2007.

Environment and culture

- Reducing reliance on the River Murray and groundwater resources by developing strategies to recycle wastewater, harvest stormwater and maximise water use efficiency
- Managing salinity levels and salinity impacts within the River Murray System
- Managing increasing salinity of agricultural land and key water supplies
- Managing the potential increase in acid sulfate soils due to the River Murray system's flow variability, including the impacts on ecological assets
- Planning for the impacts of climate change - including increasing average temperatures and changing rainfall patterns - on agricultural production and demand for water resources
- Supporting carbon trading
- Ensuring development protects and preserves the region's environmental assets, including areas of international and national importance, conservation parks, marine parks, riverine, lake and coastal habitats, wetlands, threatened species, ecological communities, terrestrial habitats and water resources
- Supporting the creation of biodiversity corridors and NatureLinks (including wetlands) to enhance landscape connectivity for biodiversity
- Ensuring development is appropriately located and does not adversely affect environmentally significant areas, scenic landscapes and heritage places
- Ensuring development is located to achieve an appropriate separation between conflicting land uses
- Managing land to prevent soil loss.

Economic development

- Attracting and retaining a highly skilled and flexible workforce to support a stronger economic base
- Developing an integrated plan to guide the expansion of tourism, particularly nature-based, eco- and cultural tourism, building on the strong regional character and natural and heritage assets
- Improving transport logistics
- Encouraging the development of alternative energy industries (for example, solar, wind, geothermal and bio-fuels)
- Encouraging economic diversification as a means of reducing the region's economic dependence on water resources
- Attracting industry to the region, particularly where there is infrastructure capacity for growth (for example, electricity, gas, roads, rail, wastewater re-use and telecommunications infrastructure)
- Fostering development and diversification of primary industries, and planning for sustainable adaptation to climate change and unpredictable river flows
- Developing innovative ways to use saline groundwater (for example, for aquaculture of fish and algae) using salt interception schemes
- Positioning the region to capitalise on the opportunities arising from expansion of mining activities across the state
- Managing visitors' perceptions of the environment, which have shown an acute sensitivity to negative publicity, especially in relation to the River Murray.



Population and settlements

- Valuing the region's strong sense of community spirit
- Discouraging residential development outside towns
- Ensuring housing developments are energy and water efficient to reduce their ecological footprint
- Catering for the needs of an ageing population by developing a range of housing alternatives around existing health and community services
- Maintaining town character and heritage and promoting towns and settlements with distinctive built heritage and historical importance, (both Indigenous and non-Indigenous) to the state
- Ensuring an adequate supply of residential land is available for future development
- Providing greater employment recreation and other opportunities to retain young people.

Infrastructure and service provision

- Improving the capacity of community wastewater management systems (CWMS) infrastructure to support the growth of population, tourism and industry
- Expanding the recycling of wastewater and the harvesting/ use of stormwater
- Encouraging recycling and re-use of waste products
- Expanding the local generation of electricity through solar, wind farms and peaking plants to increase capacity for economic activity
- Providing strategic electricity infrastructure corridors for augmentation and extension of the transmission network
- Making the best use of existing and planned infrastructure for water, including re-use
- Extending and upgrading access to broadband and mobile phone services across the region to support industry and expand distance education
- Implementing a waste management strategy, including regional solid waste-disposal sites
- Upgrading public transport to service local and regional communities
- Upgrading rail infrastructure to facilitate rail transport
- Supporting the development and maintenance of social and community services and facilities, including sporting, education, health, recreational and other facilities to service the local population.

THE VISION FOR THE MURRAY AND MALLEE REGION

Chapter C

THE VISION FOR THE MURRAY AND MALLEE REGION

Chapter C

An integrated approach

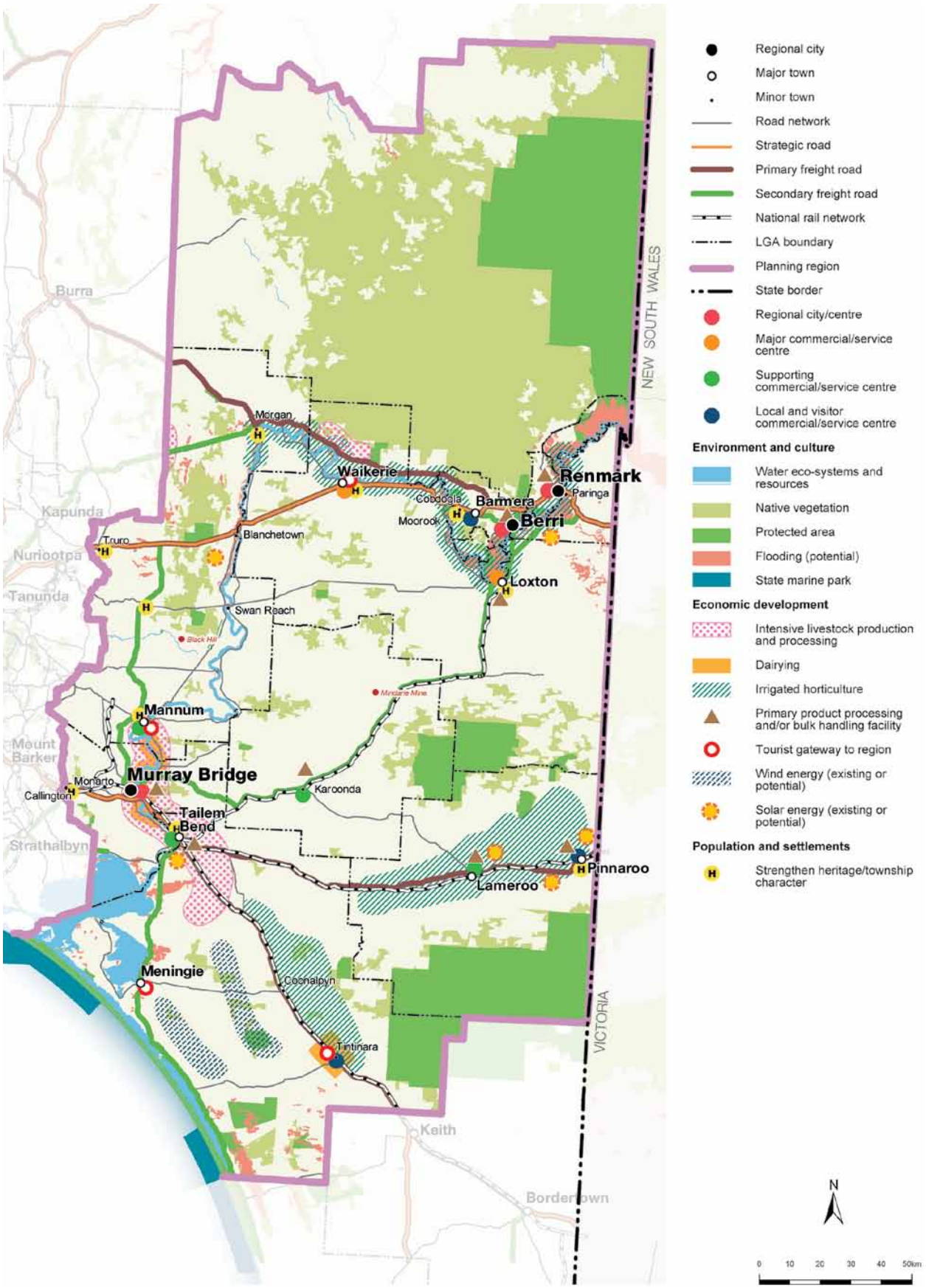
The *Murray and Mallee Region Plan* is a coordinated and integrated vision for land use and development across the region. It responds to the opportunities and challenges facing the region and identifies the planning priorities, principles and policies necessary to achieve the vision (see Map C1).

The Plan allows for communities to develop and grow, and encourages initiatives that help retain the special qualities of the Murray and Mallee while fostering vibrant and distinctive towns that support a range of lifestyles. It supports activities that benefit the local and regional economy, provide local employment and attract people to the region. It recognises the region's variations in geographical features, economic strengths and community aspirations, and seeks to make the most of the different opportunities each presents. It seeks to balance the needs of people today with those of future generations.

The aims of the vision are to:

- promote industrial growth, particularly in Murray Bridge, Tailem Bend, Monarto, Berri and Renmark
- encourage industrial and commercial development opportunities in all towns (in appropriate locations) to facilitate employment opportunities and ensure the long-term viability of towns
- assist primary production industries to adapt to variations in climate and water availability and become more sustainable
- support and strengthen emerging industries in other industry sectors and locations
- recognise and promote the region's strong, vibrant and healthy communities, their attachment to the region and the value these communities provide to the socio-economic fabric of the state
- strengthen the roles and functions of towns to build sustainable centres supported by strategic infrastructure and services planning
- support regional communities through the effective provision of physical and social infrastructure, including broadband access; waste management, effluent disposal and water re-use facilities; social, community, education and health facilities and services
- manage town growth to protect environmental and industry assets
- facilitate long-term sustainability, taking into account variations in climate and water availability
- promote the generation and use of renewable energy supplies such as solar, wind and thermal rock technologies
- manage development to protect areas of environmental and conservation significance across the region, including the Ramsar-listed wetlands, the River Murray and Floodplain, the Coorong and Lower Lakes, and remnant terrestrial biodiversity (including the Mallee)
- expand and strengthen nature-based and ecotourism (with accommodation located in already cleared areas), focusing on the Coorong, the Lower Lakes, the River Murray, Marine Parks and the wilderness and conservation parks in the Mallee
- retain built heritage, promote cultural heritage and link these with tourism
- manage land to reduce and prevent soil loss through erosion and salinity.

Map C1


Regional city
Major town
Minor town
Road network
Strategic road
Primary freight road
Secondary freight road
National rail network
LGA boundary
Planning region
State border
Regional city/centre
Major commercial/service centre
Supporting commercial/service centre
Local and visitor commercial/service centre
Environment and culture
Water eco-systems and resources
Native vegetation
Protected area
Flooding (potential)
State marine park
Economic development
Intensive livestock production and processing
Dairying
Irrigated horticulture
Primary product processing and/or bulk handling facility
Tourist gateway to region
Wind energy (existing or potential)
Solar energy (existing or potential)
Population and settlements
Strengthen heritage/township character
NEW SOUTH WALES
VICTORIA
Burra
Kapunda
Nuriootpa
Tanunda
Mount Barker
Strathalbyn
Callington
Keith
Morgan
Waikerie
Renmark
Paringa
Cobdogla
Barmera
Moorook
Berri
Loxton
Blanchetown
Truro
Swan Reach
Black Hill
Mindarie Mine
Mannum
Murray Bridge
Monarto
Karoonda
Tailem Bend
Lameroo
Pinnaroo
Meningie
Coonalpyn
Tintinara
Bordertown
N
0
10
20
30
40
50km

PRINCIPLES AND POLICIES

Chapter D

PRINCIPLES AND POLICIES

Chapter D

This chapter outlines the principles and the policies that are required to realise the vision for the Murray and Mallee region. These are set out under three themes:

- environment and culture
- economic development
- population and settlements.

Under each theme the Plan identifies:

- planning-related priorities for councils (and the Minister in out-of-council areas) to consider when developing Strategic Management Plans and updating Development Plans
- principles to guide land-use planning and development
- planning-related policies that provide ongoing direction to councils (and which must be reflected in their Development Plans).

While the policies and priorities of the *Murray and Mallee Region Plan* may change over time, the principles will be a constant driving force for future generations to ensure that the region is competitive, liveable, sustainable and resilient to climate change.

The contribution of the principles to *South Australia's Strategic Plan* targets is described in Appendix 3.

The principles are:

1. Recognise, protect and restore the region's environmental assets
2. Create conditions for the region to become resilient to the impacts of climate change
3. Protect people, property and the environment from exposure to hazards
4. Identify and protect places of heritage and cultural significance, and desired town character
5. Protect and build on the region's strategic infrastructure
6. Retain and strengthen the economic potential of primary production land
7. Reinforce the region as a preferred tourism destination
8. Provide and protect serviced and well-sited industrial land to meet projected demand
9. Focus commercial development in key centres and ensure it is well sited and designed
10. Strategically plan and manage the growth of towns
11. Design towns to provide safe, healthy, accessible and appealing environments
12. Provide residential land for a supply of diverse, affordable and sustainable housing to meet the needs of current and future residents and visitors.

ENVIRONMENT AND CULTURE

Overview

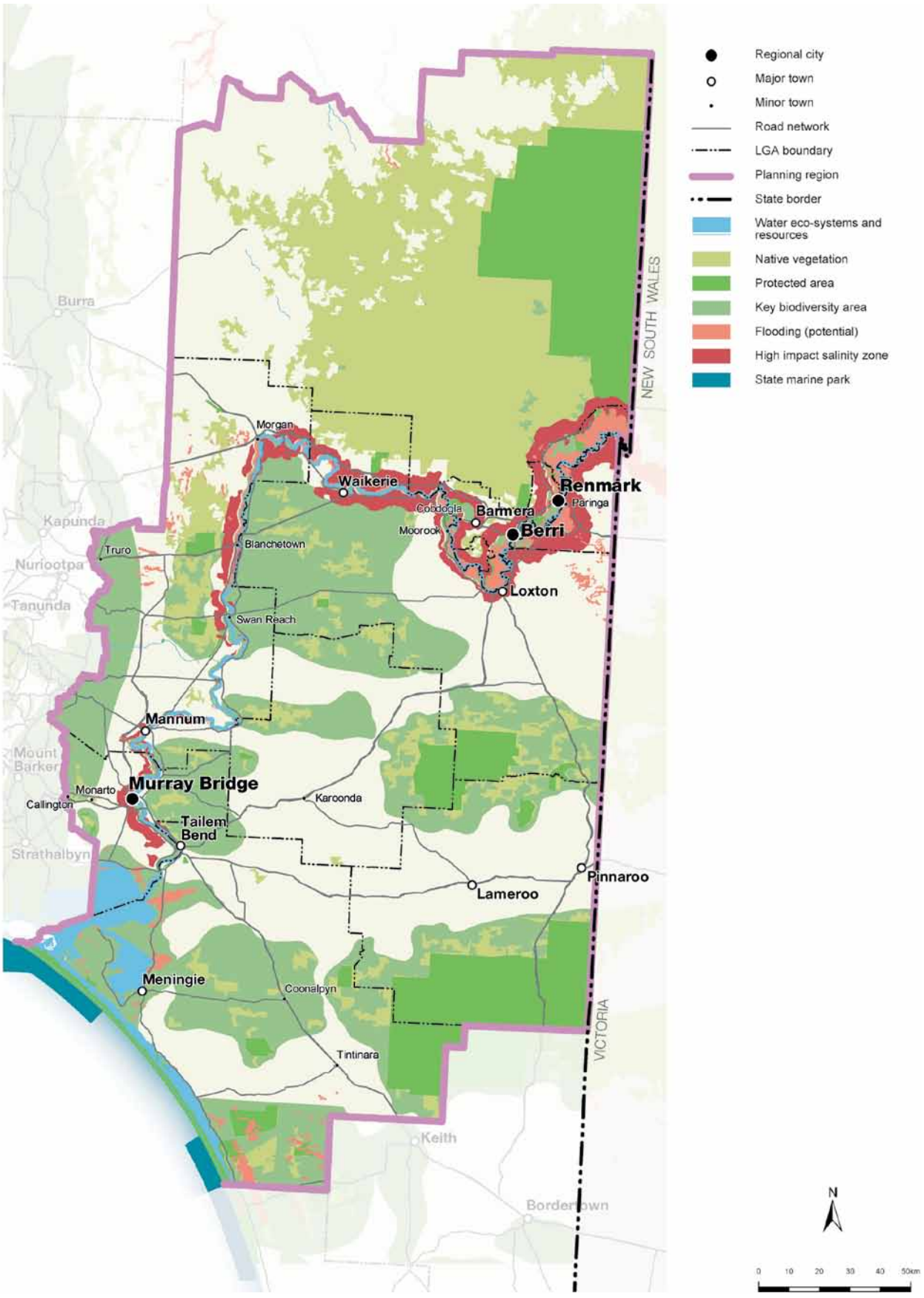
The region's natural environmental and cultural assets play essential roles in guiding its future development, underpinned by a range of existing plans, strategies and agreements. Settlements and industry are inextricably dependent on climate and water resources, as well as land- and water-dependent ecosystems. As well, heritage sites and structures of significance provide an essential sense of identity and connection with place.

The central features of the Murray and Mallee region are the River Murray and the towns and irrigation areas that have been developed close to it, often on rising land that is protected from floods but has easy access to the river. In the south-eastern part of the region, the dominant landscape is made up of sandy soils and mallee scrub, with low rainfall but reliable groundwater supplies. However, these groundwater supplies have been depleted during a protracted period of drought conditions across the region while the quality of these water resources has been affected by increasing levels of salinity.

The design, siting and management of all development must prevent adverse impacts on these critical assets and minimise the exposure of people and property to danger from natural hazards, such as floods, bushfires, strong winds and storms.

Achieving sustainable levels of demand for water is also essential, particularly considering the effects of climate change and the over-allocation of River Murray water to upstream irrigators.

Several organisations have policies to guide the management of the environment, including state and regional natural resources management (NRM) plans; Environment Protection Authority (EPA) policies, codes of practice and guidelines; the *Living Coast Strategy for South Australia* (2004); Coast Protection Board policies; the *Biodiversity Plan for the South Australian Murray-Darling Basin* (2001); *No Species Loss: A Biodiversity Strategy for South Australia 2006–2016*; *Securing the Future: A Long-Term Plan for the Coorong, Lower Lakes and Murray Mouth* (2010); *Guide to the Basin Plan (Murray-Darling Basin Authority 2010)*; *Heritage Directions: A Future for Built Heritage in South Australia* (2003); *Tackling Climate Change: South Australia's Greenhouse Strategy 2007–2020; Wetlands Strategy for South Australia* (2003); the *Marine Planning Framework for South Australia* (2006); and the *Blueprint for the South Australian Representative System of Marine Protected Areas* (2004).


Regional city
Major town
Minor town
Road network
LGA boundary
Planning region
State border
Water eco-systems and resources
Native vegetation
Protected area
Key biodiversity area
Flooding (potential)
High impact salinity zone
State marine park
NEW SOUTH WALES
VICTORIA
Burra
Morgan
Waikerie
Renmark
Paringa
Cobdogla
Barmera
Moorook
Berri
Loxton
Blanchetown
Truro
Kapunda
Nuriootpa
Tanunda
Swan Reach
Mannum
Mount Barker
Monarto
Murray Bridge
Callington
Karoonda
Tailem Bend
Strathalbyn
Pinnaroo
Lameroo
Meningie
Coonalpyn
Tintinara
Keith
Bordertown
N
0 10 20 30 40 50km

Several more specific studies, initiatives and programs further guide the management of the environmental resources in the region, particularly on the River Murray:

- salinity/water quality—salt interception schemes, salinity zones for agriculture use, code of practice for vessel and facility management (marine and inland waters), and the River Murray and Lower Lakes catchments risk assessment for water quality
- horticulture—guidelines for sustainable irrigation development
- agriculture—Lower Murray Reclaimed Irrigation Areas restructure and rehabilitation
- recreation/tourism—*Riverland Integrated Strategic Tourism Strategy* (2005), *River Murray Sustainable Recreation Site Planning and Implementation Guide* (2003) and *Murraylands Integrated Regional Strategic Tourism Plan* (2009)
- biodiversity—River Murray Forest, Murraylands Biodiversity Conservation Programs
- wetlands—*Integrated Floodplain Management and Wetland Strategy* (1998) and *Securing the Future: A Long-Term Plan for the Coorong, Lower Lakes and Murray Mouth* (2010)
- threatened species—various recovery plans
- River Murray–South East NatureLink.

Councils should take these policies, plans and studies into account when they review and update their Development Plans.

Priorities for councils

- Reduce reliance on River Murray and groundwater resources by developing strategies to recycle wastewater, harvest stormwater and maximise water use efficiency
- Incorporate information from environmental studies and State and Commonwealth environmental databases (for example, on biodiversity, water dependent ecosystems, the effects of climate change, dry-land salinity) to inform the review and updating of Development Plans, including identifying areas of high environmental significance to be protected and buffered
- Develop and maintain local heritage registers and identify heritage-listed sites in Development Plans
- Develop and maintain local historical land use registers and identify sites where a potentially contaminating activity has been undertaken
- Further understanding of the impacts of climate change on natural resources and habitats to inform future strategic planning for development and land use
- Prevent unsustainable use of water resources by using Water Allocation Plans to determine ecologically sustainable limits of water use and to inform Development Plans
- Identify areas suitable for revegetation with native species to achieve targets identified in the River Murray–South East NatureLink and to improve biodiversity
- Support the establishment of environmental corridors to enhance biodiversity
- Encourage the implementation of water-sensitive urban design (WSUD) principles to improve water use efficiency and the ecological health of water and coastal resources
- Ensure future development and land use is appropriately sited in respect to existing and closed landfills to minimise the risk to people and property from landfill gas emission.

Principle 1

Recognise, protect and restore the region's environmental assets

While the River Murray is the region's major water ecosystem, the lower Murray–Darling Basin also contains large groundwater supplies. The River Murray ecosystem includes the main channel and floodplain, and anabranches, backwaters, wetlands, estuaries, coastal and marine areas (including the Coorong and Lower Lakes) and tributaries (including the tributaries of the Eastern Mount Lofty Ranges, such as the Marne River).

For many years the health of the River Murray has been affected by human activities, including water extraction for, and run-off from, agriculture and horticulture; water extraction for domestic purposes; recreation; stormwater run-off from urban catchments; and wastewater discharge. More recently, the lower River Murray system has experienced a series of riverbank collapses, leading to property loss and significant additional spending by local authorities to re-build access roads and ensure the public's safety.

The health of the River Murray ecosystem and the Murray–Darling Basin is vital for their continued use, and land and development decisions must therefore seek to support it. The recently released *Guide to the Basin Plan (Murray-Darling Basin Authority 2010)* proposes to increase the quantity of water available for environmental purposes across the Basin, which will go some way to improving the health of the lower reaches of the River Murray, Lower Lakes and Coorong. Current debates over precisely how much water will be given over to environmental purposes will have significant implications for the region, especially in light of the structural adjustment that has already occurred in response to a prolonged period of drought conditions and over-allocation of water upstream. The Basin Plan is due for final release and implementation in 2011.

Water

Policies

1.1 Protect the quality and function of water ecosystems by preventing the adverse impacts of land use and development, such as the overuse of resources, erosion, impeded surface and subsurface water flows, increase in exposure of acid sulfate soils, land degradation and pollution. This will include:

- ensuring that development is adequately set back from watercourses and incorporates water-sensitive urban design (WSUD) measures to avoid adverse impacts on the natural hydrological regime (such as soil erosion and diffuse pollution) and to achieve water quality and water efficiency benefits
- applying WSUD techniques in new developments (including residential, retail, commercial, institutional, industrial and transport) by 2012

Box 1—Water-sensitive urban design (WSUD)

WSUD techniques help to improve water quality and quantity, and reduce flood risk in urban areas, while enhancing biodiversity. They can be incorporated into development projects across a range of types and scales, including homes, streets, parking areas, subdivisions and multi-units, commercial and industrial developments, and public land. These techniques include:

- permeable paving of footpaths, common areas and parking spaces above underground water storage facilities
- water efficient fittings and appliances
- maintaining fixtures (for example, stopping leaks and drips from plumbing and taps)
- green roofs and living walls (that is, plantings on roofs and down walls)
- appropriate landscaping (for example, efficient irrigation, mulching, wind and sun protection, minimising lawn area and selection of suitable plants)
- wetlands to capture and treat run-off water
- the capture and storage of rainwater and stormwater for residential re-use, or to irrigate parks, sporting fields and other open space
- the capture, treatment and re-use of wastewater.

More information about WSUD principles and techniques can be found in the *WSUD Technical Manual for Greater Adelaide*, available at <www.planning.sa.gov.au/go/wsud>. While the manual focuses on Greater Adelaide, many WSUD techniques can be applied in the Murray and Mallee region.

- maintaining a positive balance on the Murray–Darling Basin Authority salinity register, while continuing to implement strategies and actions to manage salinity in the lower reaches of the River Murray (from the New South Wales border to the sea) to ensure water quality remains suitable for human consumption and flora and fauna health
- encouraging land use and development policies that help shift water to higher value uses (including environmental use), taking into account broad land-use planning objectives and site suitability
- supporting the SA Murray-Darling Natural Resource Management Board's integrated water management planning across the region.

1.2 Design developments and open spaces to retain natural drainage patterns and hydrological regimes by applying WSUD principles at the earliest stages (see Box 1).

1.3 Where ecologically appropriate, encourage water harvesting initiatives such as Murray Bridge Sewerage Treatment Plant and the opportunities such initiatives present for water re-use.

1.4 Establish off-river marinas in suitable locations where environmental conditions allow (see Box 2), such that they:

- adjoin or are close to existing towns, due to the need for associated infrastructure and services
- are away from SA Water intake points and other town intake points for domestic water supply
- minimise any required earthworks
- are on the floodplain and include a reasonably wide part of the floodplain to accommodate a marina basin and a riverine buffer zone
- are backed by land above the 1956 River Murray Floodplain to accommodate associated residential and/or commercial development

Box 2—Marina site suitability

Generally, off-river marinas should be developed on sites that adjoin or are close to existing towns, due to the need for associated infrastructure and services. The physical proportion of a site should include a reasonably wide part of the floodplain to accommodate a marina basin and riverine buffer zone. Marinas must also comply with the Code of Practice for Vessel and Facility Management (Marine and Inland Waters).

Enough land should also be provided for a constructed and carefully managed wetland to improve the water quality of discharges to the river, unless an existing wetland can be used (without any detrimental impacts). Ideally the floodplain should also be backed by sloping land to enable any residential or commercial development to be located above the 1956 River Murray Floodplain. No housing should be allowed on the floodplain and only a limited amount of housing should be allowed along the edge of the flood level. Any new reclamation of the floodplains for residential development (canal estates) should not be permitted, except at the Jane Eliza Estate in Renmark which is already zoned for that purpose.

From an environmental perspective, sites of high environmental significance should not be considered. Locations close to SA Water and other town intake points for domestic water supply should also be avoided, as should places that are of Aboriginal significance, and/or are protected by law.

For more information on the site suitability factors contact the Chief Environmental Officer, Department of Planning and Local Government, on 08 8303 0600.

- do not involve new reclamation of land located within the 1956 River Murray Floodplain for residential canal development (an exception is the existing Jane Eliza Estate at Renmark)
- allow for the construction of wetlands to provide habitat and improve the quality of water discharges to the river, or use existing wetlands if there are no detrimental impacts
- do not affect areas of high conservation, environmental or cultural significance, including places of Aboriginal significance and places protected by law.

Riverine and coastal environments

Policies

1.5 1.5Minimise the adverse impacts of development on the ecological health of riverine, estuarine and coastal environments, especially those important to the health of the River Murray, the Ramsar-listed Coorong wetlands and the Lower Lakes ecosystem.

1.6 Protect areas of high environmental significance or landscape value by limiting development in these areas and:

- preventing disturbance and promoting restoration of natural riverine and coastal habitats and native vegetation
- providing buffer areas of sufficient width to separate new developments from sensitive riverine and coastal features.

1.7 Provide for development that promotes the re-establishment of the natural environment where degradation has occurred.

1.8 Protect coastal features and biodiversity of the Coorong by retaining its existing Conservation zoning and protecting:

- habitats that are highly sensitive to the direct impacts of development
- important geological and/or natural features of scientific, educational or cultural importance
- landscapes of very high scenic quality.

1.9 Integrate coastal management requirements in Development Plans, including:

- coast protection policies under the *Coast Protection Act 1972*
- marine parks under the *Marine Parks Act 2007*
- aquatic reserve areas under the *Fisheries Management Act 2007*
- relevant provisions of the *River Murray Act 2003*
- relevant provisions of the *National Parks and Wildlife Act 1972*
- relevant provisions of the *Native Vegetation Act 1991*
- relevant provisions of the *Natural Resources Management Act 2004*.

Land biodiversity

The protection of the region's environmental assets and associated biodiversity is essential. A healthy ecology and rich biodiversity are valuable in their own right, and help create more liveable towns that can strengthen the region's competitive advantage. Protecting these assets also enhances the overall capacity of the region to respond to and be resilient to the effects of climate change.

Areas of remnant vegetation on both public and private land play an important role in supporting biodiversity. Remnant native vegetation is protected and managed with State Conservation and National Parks, Wilderness Areas, Council and non-government organisation reserves. Remnant vegetation is also protected within Heritage Agreements, which are privately owned areas protected in perpetuity. A large percentage of the region's remnant vegetation occurs on private property.

A number of programs have been implemented in the region to assist landholders to manage natural assets for biodiversity and carbon sequestration benefits. Such programs should be supported by Development Plan policy as far as practicable.

Policies

1.10 Introduce a clear hierarchy of environmental areas to be protected to improve development certainty and transparency, and incorporate the protection of these areas into Development Plans and Structure Plans. The three categories in the hierarchy, which will be managed through Structure Plans and Development Plans, are:

- areas of high environmental significance, including protected public lands (such as National Parks, Conservation Parks, Marine Parks and Ramsar-listed wetlands), private/public lands under a Heritage Agreement, land containing high-value native vegetation, important habitat for nationally listed threatened ecological communities, species and/or migratory species and high or very high valued wetland habitats identified by the South Australian Wetland Inventory database. These areas will be protected from development unless a specific regulatory exemption applies
- areas of environmental significance, including habitat areas and lands that have human uses, such as primary production lands, that also support biodiversity because they are of relatively low environmental impact. Higher impact land uses in these areas should be avoided. If development cannot be avoided, the impacts will be minimised and offsets provided
- areas designated for human use, where human use is the principal consideration. Development is to be consistent with Development Plans and existing legislation.

1.11 Avoid any adverse impact on biodiversity, where possible; if such impact is unavoidable, the effects should be minimised and offset. A comprehensive offset scheme, based on existing offset provisions and drawing on models such as bio-banking, will be developed to provide for a net gain to biodiversity through flexible offsets. Offsets could be made across regions or by funding designated rehabilitation programs.

1.12 Locate and design development to prevent the loss, degradation and/or fragmentation of native vegetation and the loss of species and/or ecological communities.

1.13 Provide for the creation of landscape connections to link areas of biological significance, and create buffers as a means of managing the interface at the boundaries of conservation areas.

1.14 Identify new areas of conservation significance and ensure their protection

1.15 Identify and maximise opportunities to increase biodiversity into the urban form, either at the streetscape level or through open space.

Scenic landscapes

The region has many riverine, coastal, mallee and rural landscapes that are highly valued by residents and visitors alike.

Policies

1.16 Preserve areas of high landscape and amenity value and areas forming an attractive background or entrance to towns and tourist developments, and along the river, lakes and coast.

1.17 Design development to retain high quality landscapes that can be viewed from tourist routes, walking trails, the river and the sea, and discourage development that may adversely affect these landscapes by addressing the location, height, materials and colour of buildings.

1.18 Focus development in towns to protect scenic landscapes.

Principle 2

Create conditions for the region to become resilient to the impacts of climate change

Reduced rainfall in recent years continues to affect the region's agricultural and horticultural activities while reducing the recharge of aquifers. Climate predictions indicate a future of rising temperatures (leading to increased evaporation rates), longer and more frequent dry spells and less reliable rainfall patterns. This will challenge the region's capacity to maintain or increase economic output, particularly given its focus on primary production, as well as the tourism industry.

The region's attractiveness as a place to live, work and experience will result in continued pressure on its natural resources, particularly water. It is important that Development Plan policy supports the region's Natural Resources Management planning framework, which incorporates Water Allocation Plans and policies for the control of Water Affecting Activities.

There are opportunities to make positive and long-lasting changes in water management in the region. While the outcomes of the Murray-Darling Basin Plan will be of immense importance in rectifying some of the imbalances in water allocation across the region, a well-managed water supply will include water-efficient technologies and measures to save or reduce water consumption in both urban and rural areas.

All new development should incorporate water-sensitive urban design (WSUD) principles. The *Water for Good* plan envisages that by 2013 South Australia will develop and implement the best regulatory approach in Australia to mandate WSUD. Targets will be introduced by 2010.

Sea level rise will exacerbate beach erosion and foredune erosion at ocean beaches. Recessions of 5 to 30 metres over 50 years can be expected, depending on beach topography, sand supplies and littoral sediment movement. The coastline seaward of the Coorong is a high-energy coastline at greatest risk.

Coastal erosion threatening buildings and infrastructure can be managed with structures such as levees, groynes and sea walls. These are costly to construct, however, and may impact on the amenity of coastal areas, the longshore transport of sand and the deposition of sand in other coastal areas.

Protection or maintenance of existing infrastructure and coastal assets (town beaches, boat launching facilities, roads, service infrastructure, housing, moorings and berths) in some areas will become increasingly difficult and expensive as a result of sea level rise. Planning within and around areas of sea level rise risk should therefore seek to address and mitigate these risks.

Box 3—Improving water and energy efficiency

Many subdivisions and buildings are now designed to maximise the re-use of stormwater and wastewater in residential and industrial developments. For example, at Mawson Lakes in Adelaide, stormwater is filtered and plumbed into houses for use in toilets. Some industries also re-use wastewater and stormwater for cooling and washing down machinery.

Energy demand can be reduced through innovative housing design and methods such as co-generation, which produces electricity and heat in a single process. More information is available on the Energy SA website, at <www.sustainable.energy.sa.gov.au>. The Energy Smart Toolbox, available at <www.energysmart.com.au/sedatoolbox>, provides tools to help industry reduce energy costs.

Energy supply is limited in many parts of the region. Building design and innovative local energy technologies, including solar, wind and co-generation, can help make the best use of available and planned energy sources (see Box 3). Initiatives such as the Regional Development Australia (Murraylands and Riverland) Carbon Credit program, which aims to increase opportunities to reduce greenhouse gas emissions from the forestry industry, should also be supported.

Growing industry, residential and tourism-related development will place further pressures on energy and water supplies. Visitors to the region, in addition to the permanent resident population, are already increasing demands on these resources. Managing this demand for water and energy use by raising awareness among both residents and visitors is essential to achieving the region's sustainable water and energy efficiency targets.

Policies

2.1 Promote carbon sequestration and greenhouse gas mitigation activities through sustainable land-use management practices, taking into account climate, land and soil suitability and species characteristics.

2.2 Provide buffer areas of sufficient width to separate development from riverine and coastal features and ensure they are wide enough to accommodate long-term physical processes, including sea level rise.

2.3 Increase the energy efficiency of buildings through building standards and design guidelines.

2.4 Enhance and protect existing native and remnant vegetation through revegetation and biodiversity programs.

2.5 Encourage commercial and industrial developments to include green buffers (where appropriate), WSUD features and shaded areas.

2.6 Encourage town/settlement-level energy efficiency through the promotion of renewable energy supplies such as embedded generation.

2.7 Provide for the development of alternative and innovative energy generation and water supply, including guidance on environmental assessment requirements.

2.8 Provide for the incorporation of sustainable energy generation and water supply in the design of developments and subdivisions (for example, stormwater re-use, and wind and solar photovoltaic technologies).

2.9 Promote energy and water conservation and efficiencies for residential, commercial and industrial activities.

2.10 Increase the energy efficiency of buildings through the implementation of the six-star rating for new buildings and new efficiency standards for air-conditioning in line with the Council of Australian Governments (COAG) *National Strategy for Energy Efficiency*.

2.11 Set out building standards and design guidelines to improve the water, thermal and energy efficiency of buildings.

Principle 3

Protect people, property and the environment from exposure to hazards

Hazards can occur naturally or result from development activity. Inappropriately located or designed development and land uses can increase the exposure to and impact of hazards, including floods, riverbank collapse, disturbance of acid sulfate soils, bushfires, erosion, salinity, landslides, wind storms, sand dune drift hazard, the diversion of watercourses, site contamination, and water, air and noise pollution. The impacts of climate change, such as sea level rise and extreme weather events, are likely to increase the risk of hazards. Councils should take into account the South Australian Biosecurity Strategy 2009–2014 (in preparation in 2009) when reviewing and updating their Development Plans.

Policies

3.1 3.1 Design and plan for development to prevent the creation of hazards (including exposing residents to unacceptable noise and air pollution) and minimise the impacts of naturally occurring hazards, including flooding and sea level rise.

3.2 Decrease the risk of loss of life and property from extreme bushfires by creating buffers around new growth areas adjacent to native bushland, and by:

- developing policies to minimise the impact of extreme bushfires in line with the findings of the 2009 Victorian Bushfires Royal Commission
- developing partnerships and agreements between state and local governments (particularly emergency services agencies) to address risks and hazards and protect the health and wellbeing of the community.

3.3 Integrate adaptation to climate change and disaster risk reduction and hazard avoidance policies, standards and actions into Strategic Management Plans, Development Plans and development assessment processes using best practice models to:

- reduce the social, environmental and economic impacts arising from extreme events and sea level rise
- achieve more consistent and rigorous decision making for long term land-use planning aimed at reducing emergency and hazard risks
- enhance protection of critical infrastructure
- develop building standards and urban design approaches that create resilient environments for the future
- reduce risks while protecting natural areas and biodiversity

- protect human health and the environment where contamination has occurred
- adopt appropriate processes and methods when remediating contaminated land and ensure its suitability for the proposed zoning
- address risk, hazard and emergency management issues in structure and precinct planning for new and existing urban areas.

3.4 Protect people, property and the environment from exposure to hazards (including coastal flooding, erosion, dune drift and acid sulfate soils) by designing and planning for development in accordance with the following principles:

- avoidance – avoid permanent development in and adjacent to areas subject to unacceptable risk from hazards
- adaptation – design buildings and infrastructure to minimise risk in the long term
- protection – establish works to protect existing development or facilitate major development (including stormwater discharge management to accommodate higher tide levels).

3.5 Identify and rehabilitate areas and sites where land is contaminated as a part of development processes.

3.6 Ensure new development is appropriately sited in relation to existing and closed landfills to minimise the risk to people and property from landfill gas emissions. Continue to monitor gas emissions from existing and closed landfill sites to ensure development is not placed at unnecessary risk.

Principle 4

Identify and protect places of heritage and cultural significance, and desired town charact

The Murray and Mallee region's heritage and culturally significant buildings and places give it a distinct character linked to the attitudes and values that have shaped its role in South Australian history. Identification and careful management of these sites can enliven history, engender a sense of identity and provide a window on the past that can guide us in the future.

It is essential that heritage places be protected and preserved in a way that retains their heritage value. Acts that identify and protect places of heritage and cultural significance include the *Heritage Places Act 1993*, the *Historic Shipwrecks Act 1981* and the *Aboriginal Heritage Act 1988*, which prohibits any damage, disturbance or interference with Aboriginal sites, objects and remains without an authorisation by the Minister for Aboriginal Affairs and Reconciliation.

Aboriginal people and the State Government's Aboriginal Affairs and Reconciliation Division should be involved early in the planning and/or development process to help identify and protect sites of cultural significance and for guidance in relation to native title and Indigenous Land Use Agreement (ILUA) requirements.

Heritage surveys should be undertaken to identify local heritage places for incorporation into Development Plans.

Public art can reflect and build town character and is encouraged in public places and along walking and cycling trails in the region.

Policies

4.1 4.1 Protect and conserve places of heritage and cultural value, including national, state and local registered sites.

4.2 Identify the desired character of towns and parts of towns, and ensure the design of buildings and public places, such as streetscapes and entrances, supports the desired character.

4.3 Encourage and incorporate public art into the design and development of public spaces.

4.4 Preserve and enhance the character of towns that are strongly valued for their unique design and character buildings.

4.5 Identify and protect sites that have Aboriginal cultural significance and provide guidance in relation to native title and Indigenous Land Use Agreement (ILUA) requirements.

ECONOMIC DEVELOPMENT

Overview

The South Australian Government is planning for an additional 23,321 people in the Murray and Mallee region over the next 30 years. Economic development will play a key role in facilitating this population growth by providing additional employment opportunities.

Creation of employment depends on an adequate supply of development-ready land (supported by infrastructure) as well as opportunities presented in the primary production sector. The region's economy is based on primary production, including horticulture/viticulture, dairy, forestry, fishing and associated processing. Value-adding to these activities may generate employment growth, while opportunities from emerging industries should also be supported.

Regional Development Australia (Murraylands and Riverland) has recently estimated, in its *Jobs Growth and Investment Report 2009/10*, that the region is likely to experience significant economic growth in the future despite the prolonged drought, water restrictions, an unfavourable global economy and threat of climate change. Over 2800 new jobs are expected across the region up to the end of 2011 largely as a result of a growing manufacturing sector. Of these new jobs, some 2100 (or 75 per cent) are anticipated in Murray Bridge, reflecting its increasing prominence in the region.

Owing to their importance to the regional economy, state government agencies in partnership with local government, Regional Development Australia (Murraylands and Riverland) and the SA Murray-Darling NRM Board are examining the impacts of economic growth and climate change on land and water resources to ensure that land use is sustainable. Research into the impacts of climate change is ongoing, with advice being made available to enable producers to modify their operations if required.

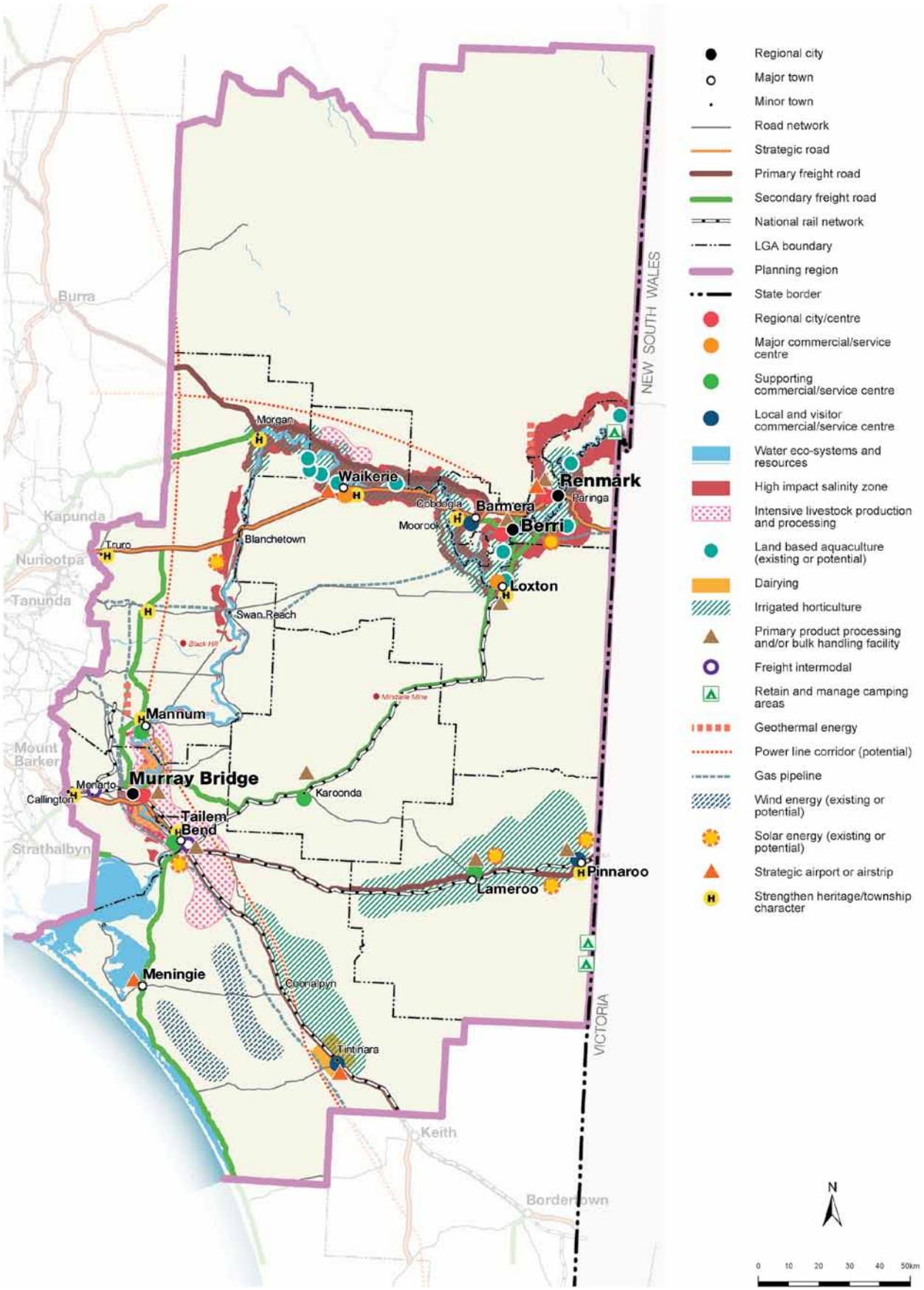
The region has major rail and road freight transportation networks that provide access to key markets in Adelaide and the eastern states. Additional key infrastructure includes the electricity network, with transmission network service provider ElectraNet undertaking regular reviews to identify the need for upgrades, as well as gas pipeline infrastructure, which may need enhancement in some areas (particularly the Mallee and Riverland) in order to attract industrial and commercial investment.

South Australia has the potential to be a 'green' energy hub and help other states achieve the Commonwealth Government's target of 20 per cent renewable energy by 2020. To reach this goal, the renewable energy sector should be supported with improvements to South Australia's transmission lines to encourage large energy companies to invest in renewable energy production.

The geothermal, biomass and wind potential of the region is particularly significant, and future upgrades and modification to the transmission and distribution networks will be required in order to realise this potential.

Services sectors associated with increased population, such as health and aged care, are also likely to grow. Educational opportunities, particularly at a tertiary level, are also vital in supporting and retaining young people, and ensuring a skilled future workforce.

Tourism is another key economic driver in the region, generating revenue of approximately $180 million per year, and it offers potential for further growth. The main tourism themes are natural assets—unspoilt landscapes, ecotourism and unique wildlife—and riverine and coastal recreation, such as canoeing, hiking, fishing, photography, boating, camping and adventure four-wheel driving in some (limited) areas.


Regional city
Major town
Minor town
Road network
Strategic road
Primary freight road
Secondary freight road
National rail network
LGA boundary
Planning region
State border
Regional city/centre
Major commercial/service centre
Supporting commercial/service centre
Local and visitor commercial/service centre
Water eco-systems and resources
High impact salinity zone
Intensive livestock production and processing
Land based aquaculture (existing or potential)
Dairying
Irrigated horticulture
Primary product processing and/or bulk handling facility
Freight intermodal
Retain and manage camping areas
Geothermal energy
Power line corridor (potential)
Gas pipeline
Wind energy (existing or potential)
Solar energy (existing or potential)
Strategic airport or airstrip
Strengthen heritage/township character
NEW SOUTH WALES
VICTORIA
Burra
Kapunda
Nuriootpa
Tanunda
Mount Barker
Strathalbyn
Morgan
Waikerie
Renmark
Paringa
Cobdogla
Barmera
Berri
Moorook
Blanchetown
Truro
Loxton
Swan Reach
Black Hill
Mindarie Mine
Mannum
Murray Bridge
Monarto
Callington
Karoonda
Tailem Bend
Pinnaroo
Lameroo
Meningie
Coonalpyn
Tintinara
Keith
Bordertown
N
0 10 20 30 40 50km

Regional economic development opportunities will only be realised with supportive council Development Plan policies, Structure Plans, Urban Growth Plans, investment in infrastructure, expansion of local training opportunities, and attraction of skilled labour. Detailed Development Plan policies will be informed by industry plans, regional development organisations and state government agencies such as the Department for Transport, Energy and Infrastructure (DTEI); Primary Industries and Resources South Australia (PIRSA); the South Australian Tourism Commission (SATC); and the Department of Trade and Economic Development (DTED), working closely with industry.

In addition, the work produced by the Riverland Futures Taskforce, in partnership with the Department of Planning and Local Government, provides an important framework through which to shape future development in the region.

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Priorities for councils

- Protect strategic infrastructure (existing and potential) from encroachment by incompatible development
- Strengthen the economic potential of high-quality primary production land (both irrigated and broadacre) and foster sustainable farming practices
- Reflect in local Strategic Management Plans and Development Plans the directions of regional tourism plans (*Riverland Integrated Strategic Tourism Strategy* and *Murraylands Integrated Regional Strategic Tourism Plan*), which address positioning and branding, tourism infrastructure priorities, partnerships and development opportunities
- Plan for the expansion of industrial land in appropriate locations at Murray Bridge, Tailem Bend, Berri, Renmark and Monarto
- Promote renewable energy developments in appropriate locations.

Principle 5

Protect and build on the region's strategic infrastructure

Proximity to major freight transport networks and freight storage facilities are strengths of the Murray and Mallee region. Strategic infrastructure such as roads, rail and high pressure gas pipelines are crucial elements in the value chain, providing comparative advantage to local agricultural, mining, and manufacturing industries. They enable the region to build on the opportunities presented by close proximity to the growing industrial areas of northern metropolitan Adelaide (for example, Edinburgh Parks), the Barossa wine region, and agricultural activities in the Mid North and Fleurieu Peninsula. They also link the region to export facilities and interstate markets.

Protecting these infrastructure assets and providing for the expansion of export-related and value-added industry near these transport and storage hubs will enable capitalisation on investment in these assets, provide opportunities for more industry to move into the region, and give support and certainty to existing industries. A number of initiatives aimed at expanding road and rail freight networks across the region and linking these to growing industrial/commercial areas, interstate markets and export facilities are currently being investigated (see Chapter E: Infrastructure and Service Provision).

The South Australian and Commonwealth governments have developed draft transport corridor strategies that identify the long-term priorities, including addressing corridor safety, such as maintenance and rehabilitation of ageing road sections, and managing mixed traffic conditions and general traffic growth.

Policies

5.1 Encourage industry clusters (including mining, primary production and aquaculture value-adding processing and storage activities) in strategic locations such as freight transport nodes to maximise transport efficiencies and support industry development.

5.2 Establish appropriate buffers to protect existing strategic infrastructure, as well as sites and corridors identified as potential locations for future infrastructure, from encroachment by uses that may compromise their operation or expansion.

5.3 Provide for strategic electricity infrastructure corridors for augmentation and extension of the transmission network.

5.4 Promote the development of renewable energy in appropriate locations and facilitate the establishment of supply chains in association with renewable energy developments.

5.5 Manage interfaces between infrastructure and residential areas and other sensitive land uses to ensure adequate protection against noise and air pollution.

5.6 Reinforce the capability of airports, aerodromes and airstrips to support economic and social development and the Royal Flying Doctor Service, and protect these facilities from incompatible development in surrounding areas by specifying Principles of Development Control for building heights and defining noise zones within which residential development should be avoided.

5.7 Ensure land uses surrounding airports, aerodromes and airstrips are compatible with these facilities and do not detract from their operation.

5.8 Identify land suitable for waste management and resource recovery facilities to optimise opportunities for re-use and recycling of waste while maximising economic efficiencies, and protect this land from encroachment by sensitive land uses such as housing.

5.9 Protect the transport functionality of road and rail corridors through planning policy in Development Plans.

5.10 Designate and protect strategic freight corridors as identified on Maps C1 and D2.

5.11 Protect high pressure gas pipeline easements through planning policy in Development Plans and in accordance with Australian Standard 2885: Pipelines—Gas and Liquid Petroleum.

Principle 6

Retain and strengthen the economic potential of primary production land

Retaining primary production land across the Murray and Mallee region is a priority, especially as wine grape, grain and horticulture crops will continue to underpin the regional and state economies. New irrigated horticulture development is encouraged in low salinity impact zones. Existing and appropriate new irrigated horticulture should be permitted in high salinity impact zones where salt interception schemes are in place.

Conversion of productive land to residential and other sensitive uses through inappropriate town expansion or subdivision into 'rural living' (large residential) allotments is strongly discouraged as it can create conflicts at interfaces and compromise the capacity and productive efficiency of farm operations.

Livestock production, which accounts for about $420 million of the region's primary production output[6], is dependent on the continued availability of broadacre agriculture land. Support for the dairy industry in the lower reaches of the River Murray should also be encouraged, especially in view of the significant restructuring of dairying activities that has occurred in recent years as a result of the drought.

A 2010 Land Capability Assessment undertaken by the South Australian Murray-Darling Basin Resource Information Centre (SAMRIC) identified suitable areas for various tree species in the region. Appropriately located forestry has the potential to improve the condition and sustainability of natural resources by addressing resource degradation issues such as water quality, soil erosion, salinity, water logging and fragmentation of tree cover. Direct forest products include biomass fuel, with additional value-adding opportunities through the establishment of wood-pellet processing facilities. Sequestration of atmospheric carbon by trees can also offset greenhouse gas emissions and provide opportunities to participate in emerging carbon markets.

6 Murraylands Regional Development Board, extrapolated from the Murraylands Regional Food Scorecard 2005–06, South Australian Food Centre, PIRSA.

Mining and minerals processing are important to the region, but must be undertaken in an environmentally sensitive way to minimise negative impacts on the environment, neighbouring businesses and the community. The Hillgrove mine in Kanmantoo provides an excellent example of a mining activity that embraces environmentally-sensitive practices through the proposed use, from 2011, of recycled water from the Mount Barker Community Wastewater Management System. Mining operations, other significant mineral resources and associated transport corridors should be protected from encroachment by incompatible development.

Agriculture and horticulture

Policies

6.1 Prevent loss of productive agricultural land and potential conflict with incompatible uses by:

- focusing housing (including rural living allotments) and industrial development in and adjacent to towns and industrial estates, unless directly related to primary industry
- preventing fragmentation of viable and productive agricultural land
- limiting and carefully locating rural living areas
- managing interfaces with residential areas and other sensitive activities through the use of buffers
- ensuring tourism-based developments are sited away from agricultural land where practicable
- designating areas of primary production significance (in particular high-value agricultural and horticultural land) in Development Plans and introducing planning controls to protect their use.

6.2 Provide for irrigation developments in suitable areas that are in low-salinity impact zones.

6.3 Rehabilitate unproductive and degraded primary production land affected by salinity through revegetation using native species, increasing the vitality and integrity of remnant stands of native vegetation, and introducing perennial pastures.

6.4 Provide for land-based aquaculture zones in close proximity to salt interception schemes, in accordance with environmental requirements, including provision for land-based waste-disposal facilities and boat and net washing facilities capable of properly containing and disposing of waste and wastewater.

6.5 Remove unnecessary regulatory barriers to the adjustment of primary production activities. Development Plans should be flexible enough to allow property holders to change agricultural practices or commodity type, particularly where the change would enable increased productivity or better environmental outcomes.

6.6 Encourage the development of small- and large-scale value-adding activity that complements primary production in the local area, provided it does not adversely impact on areas of primary production significance (see Box 4).

6.7 Maximise opportunities for processing plant waste and establishing other value-adding activities (for example, co-location of biofuel production with livestock enterprises).

Box 4—Supporting the value chain

The term 'value chain' refers to the various value-adding activities that occur along the supply chain of every industry sector—from primary production through processing and transport to marketing and sales. Competitive advantage is gained by improving the movement of goods and adding value at every link in the chain.

Combining spatial analysis with value-chain analysis is a powerful tool for strategic land-use planning. It involves identifying key infrastructure and synergies or potential conflicts between activities and assists in deciding the best use of land and locations for development to maximise a region's economic competitiveness.

Dairying and livestock production and processing

6.8 Co-locate intensive primary industries and compatible processing activities to reduce land use conflict and achieve efficiencies in production, processing, distribution, energy use and waste recycling, taking into account environmental, infrastructure and rural amenity issues while ensuring the integrity of biosecurity.

6.9 Focus dairy farming in the lower River Murray and Lower Lakes in order to maximise the use of existing and planned infrastructure (for example, water, energy and waste facilities), particularly around processing facilities that are buffered from residential areas

6.10 Maximise opportunities for processing animal waste and the establishment of other related activities.

6.11 Plan for intensive dairy production in the inland areas from Tailem Bend to Meningie and down to Tintinara in accordance with PIRSA, EPA and NRM guidelines to meet biosecurity, environmental and public health requirements.

Forestry

6.12 Support appropriately located low to medium rainfall plantation forestry and associated industries.

Mineral resources

6.13 Establish and maintain appropriate separation distances around mining operations, other significant mineral resources to prevent encroachment by housing and other development that may affect the viability of resource extraction.

Principle 7

Reinforce the region as a preferred tourism destination

The Murray and Mallee region contains some of the state's most valued natural and heritage assets, picturesque landscapes and rustic towns that are uniquely South Australian. The region's clean, green and natural image enhances its appeal as a tourist destination.

The main drawcards are the River Murray and the Coorong. River-based recreation is the most important contributor to tourism. The houseboat business in particular relies on the character and natural environment of the river for its survival.

The southern part of the region offers opportunities for camping and four-wheel drive expeditions in Conservation Parks, including the Ngarkat, Carcuma, Peebinga and Karte. The northern part offers similar opportunities in the mallee and rangeland areas associated with the Riverland Biosphere Reserve (for example, the Birds Australia Gluepot Reserve). Important tourism opportunities also exist in the eastern parts of the region, in particular the Mount Lofty Ranges.

The Monarto Zoological Park is an internationally recognised conservation facility providing over 1000 hectares of flora and fauna sanctuary and open zoological park for the purposes of wildlife conservation and public education, tourism and recreational opportunities. A proposed multi-million dollar investment to improve and extend the park's accommodation, eco-camping and conference facilities would assist in meeting the demand for high-class ecotourism facilities in the region.

While the *South Australian Tourism Plan 2009–2014* provides broad direction for the marketing and management of the industry, the *Responsible Nature-Based Tourism Strategy 2004–2009* provides detailed guidance on the development of nature-based tourism in the region (see Box 5). The recently released *Murraylands Integrated Tourism Strategy* provides similar guidance at regional and local levels. There are also opportunities to promote the region's cultural heritage assets and link these to the tourism industry.

Box 5—The relationship between sustainable, nature-based and ecotourism

Sustainable tourism meets the current needs of tourists and regions while protecting and enhancing opportunities for the future. It involves management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems.

Nature-based tourism is any sustainable tourism activity or experience that relates to the natural environment, whether for relaxation, discovery or adventure.

Ecotourism is a niche segment where the key motivation is learning, appreciation and conservation. It is low-capacity, discrete, educational, conservation-minded and returns tangible benefits to the local community and/or natural resource.

Source: South Australian Tourism Commission.

A recent initiative of the Coorong Council in partnership with Regional Development Australia (Murraylands and Riverland) is the acquisition of the former Mitsubishi Test Track at Tailem Bend and establishment of the Tailem Bend Motorsports Park. An investment of $100 million has been secured to develop this facility and attract major motor sport events and associated commercial/industrial activities to the region.

A fundamental issue affecting tourism is the availability of good quality budget (two- to three-star) and high end (four- to five-star) accommodation, particularly:

- the development of quality accommodation for diverse interest groups that is linked to existing and planned scenic trails (for example, the Mallee tracks) and Conservation Parks
- the maintenance and upgrading of existing accommodation, including caravan parks and camping facilities, to contemporary and eco-friendly standards
- the provision of good quality, environmentally sound and affordable accommodation that is linked to the natural riverine, mallee and coastal landscapes, conservation parks and/or character of towns
- the provision of facilities that incorporate and support the business/conventions and meetings trade
- the provision of opportunities for high-quality, low-impact, eco-friendly, walk-in/walk-out tourism in suitable environments
- the development of off-river marina and mooring facilities for houseboat businesses and vessel owners.

Policies

7.1 Protect, enhance and promote the assets that attract tourists and are of value to the community, including:

- open space and walking and cycling trail networks, including potential trails along the River Murray and former rail corridors
- scenic tourist drives, particularly through the Riverland, the Coorong and the eastern hills to the mid-Murray
- designated four-wheel drive trails, especially in the Mallee
- natural and rural landscapes, including historic farmhouses in scenic locations
- the River Murray, creeks and anabranches
- Ramsar-listed wetlands; wilderness protection areas; National Parks and conservation reserves; Lakes Bonney, Albert and Alexandrina; and the Riverland Biosphere Reserve, including Danggali Wilderness Protection Area and Conservation Park, Chowilla Regional Reserve and Chowilla Game Reserve
- heritage, cultural and/or built character of towns, including town entrances or gateways

- caravan parks, campsites, motor homes facilities (that is, large sites with effluent disposal facilities) outside of the floodplain
- unique archaeological and geological features.

7.2 Reinforce the desired roles of various towns and areas in the Murray and Mallee tourist experience, including:

- Mannum as the visitor gateway to the River Murray; Meningie as the gateway to the Coorong; and Waikerie as the gateway to the Riverland
- Murray Bridge and Tailem Bend as important gateways to and tourism destinations for the region
- Barmera and Meningie as lakeside towns with unique character
- Blanchetown, Swan Reach and Morgan as service towns for tourists along the southern River Murray
- Lameroo, Pinnaroo and Tintinara as centres for nature-based and four-wheel drive tourism; Pinnaroo is also a gateway to South Australia for interstate visitors
- Renmark as the launching point for eco- and water-based tourism in the Chowilla Regional Reserve, as well as a gateway to South Australia for interstate visitors
- the Riverland as a wine, food and cultural heritage destination.

These towns and areas should be protected by facilitating their limited and compact expansion; retaining and strengthening towns' functions; ensuring visual separation of these towns; and promoting high quality design to protect scenic landscapes and productive agricultural/horticultural areas.

7.3 Provide for good quality, environmentally sound tourist accommodation that is linked to the natural landscape and/or character of towns, and upgrade existing caravan parks and camping facilities to contemporary standards, including the provision of high-quality, low-impact, eco-friendly, walk-in/walk-out tourism in suitable environments.

7.4 Increase visual access to the riverine environments by establishing lookouts, walking trails, picnic areas and interpretive signage in appropriate locations.

7.5 Support the houseboat holiday experience along the River Murray by providing mooring sites linked to towns, conservation reserves and natural environments while protecting environmentally sensitive areas.

7.6 Facilitate tourism-related developments such as restaurants, specialist retail and accommodation that add value to existing economic activities.

7.7 Develop the foreshore areas in towns for community/public recreation to attract tourists and create an inviting link between towns and water bodies.

Principle 8

Provide and protect serviced and well-sited industrial land to meet projected demand

Industries supporting the processing of primary produce and minerals play a critical role in the regional economy, providing local employment and strengthening the comparative advantage of the region. Industry activities are best located on identified road and rail freight routes.

These industries range from major agricultural equipment manufacturing and maintenance to small-scale engineering firms and home-based trades. The identification of suitable sites for these activities and ensuring appropriate zoning to meet demand will provide greater certainty to potential investors and inform the planning and provision of infrastructure. This is particularly important as the region is positioned to take advantage of proximity to the emerging mining ventures in the north and east of the state, while building on its existing industrial base.

Policies

8.1 Provide a supply of well-sited and serviced industrial land in Berri, Renmark, Murray Bridge, Monarto and Tailem Bend, and encourage the clustering of related activities.

8.2 Ensure an adequate supply of appropriately located industrial land to provide opportunities for small-scale and local industries in towns where there is sufficient demand and where such developments would support the desired town character.

8.3 Site and locate industrial land to facilitate:

- management of interfaces with residential areas and other sensitive uses to ensure adequate protection from noise
- protect existing industrial areas from encroachment by residential and other non-industrial land uses
- optimal use of existing and planned infrastructure (for example, wastewater re-use plants)
- provision for future expansion
- accordance with EPA policies, codes of practice and guidelines
- an efficient, safe and functional arterial road freight network that minimises the impacts of freight movements on neighbouring areas
- access to required energy and water supplies.

8.4 Support the growth of renewable energy and green technologies by setting aside employment lands and ensuring flexibility in zoning to allow new industries to establish.

8.5 Retain and support ongoing industrial operations by providing for appropriate buffers to minimise conflicts and manage external impacts, such as noise, vibrations, odour and native vegetation disturbance.

8.6 Provide for the development of well-sited and appropriately scaled value-adding (processing and storage) activities that complement local agriculture, horticulture, livestock, and mining activities.

8.7 Provide for the establishment of facilities in appropriate locations to support new markets and products for recycled materials, including animal waste products.

Principle 9

Focus commercial development in key centres and ensure it is well sited and designed

The business and administrative services, retail and wholesale sectors employ nearly one quarter of the region's workforce. In land-use planning terms, these sectors are collectively known as 'commercial activities', and include shops, offices, banks, retail showrooms, personal services, and government services such as motor registration.

Tourism and population growth will drive further expansion of commercial activities in the region.

Focusing major commercial activities that service the region or major subregions in a selected number of towns supports the ongoing viability of these activities and enables people to undertake several activities in one place. This approach aims to support the future provision of public transport services.

Policies

9.1 Reinforce the regional commercial and service role of Murray Bridge, Renmark and Berri as the foci of major retail, commercial, administrative, education, health, justice and recreational developments in the region.

9.2 Reinforce the major commercial and services role of Loxton and Waikerie as the foci of secondary retail, commercial, administrative, education, health and recreational developments in the region.

9.3 Reinforce the supporting commercial and services role of Mannum, Lameroo, Karoonda and Tailem Bend.

9.4 Reinforce the supporting rural services role of Pinnaroo and Swan Reach.

9.5 Proposals for major commercial areas in towns other than those identified in 9.1–9.4 must demonstrate that they support and complement the commercial functions of these towns both incrementally and cumulatively in the long term.

9.6 Locate commercial activities in existing town centres or commercial zones, which should be expanded where necessary to support activity commensurate with the town role.

9.7 Commercial areas proposed outside of town centres must demonstrate that they:

- will avoid adverse incremental or cumulative impacts on existing town centres
- will avoid adverse impacts on primary production activities
- are clustered rather than linear development and do not adversely affect the efficiency and safety of arterial roads
- are convenient, accessible and safe, including by walking and cycling
- are supportive of the desired future character of the town
- are not using land of strategic importance to industry.

9.8 Prevent linear/ribbon development along major roads to support an efficient road network.

9.9 Ensure new commercial development and commercial zones do not expose residents to unacceptable noise levels.

POPULATION AND SETTLEMENTS

Overview

The region is planning for an additional 23,321 people during the next 30 years. To accommodate this growth, a significant number of new homes will need to be built with the number dependent on prevailing occupancy rates (that is, the average number of people living in each home).

Table D1 illustrates the number of dwellings that would be required (depending on the occupancy rate) and the land area (in hectares) necessary to accommodate the new homes, depending on the overall density (that is, the average number of dwellings per hectare).

Table D1 – Murray and Mallee region: land area required for dwellings based on density (dwellings per hectare) and occupancy rate (people per dwelling)

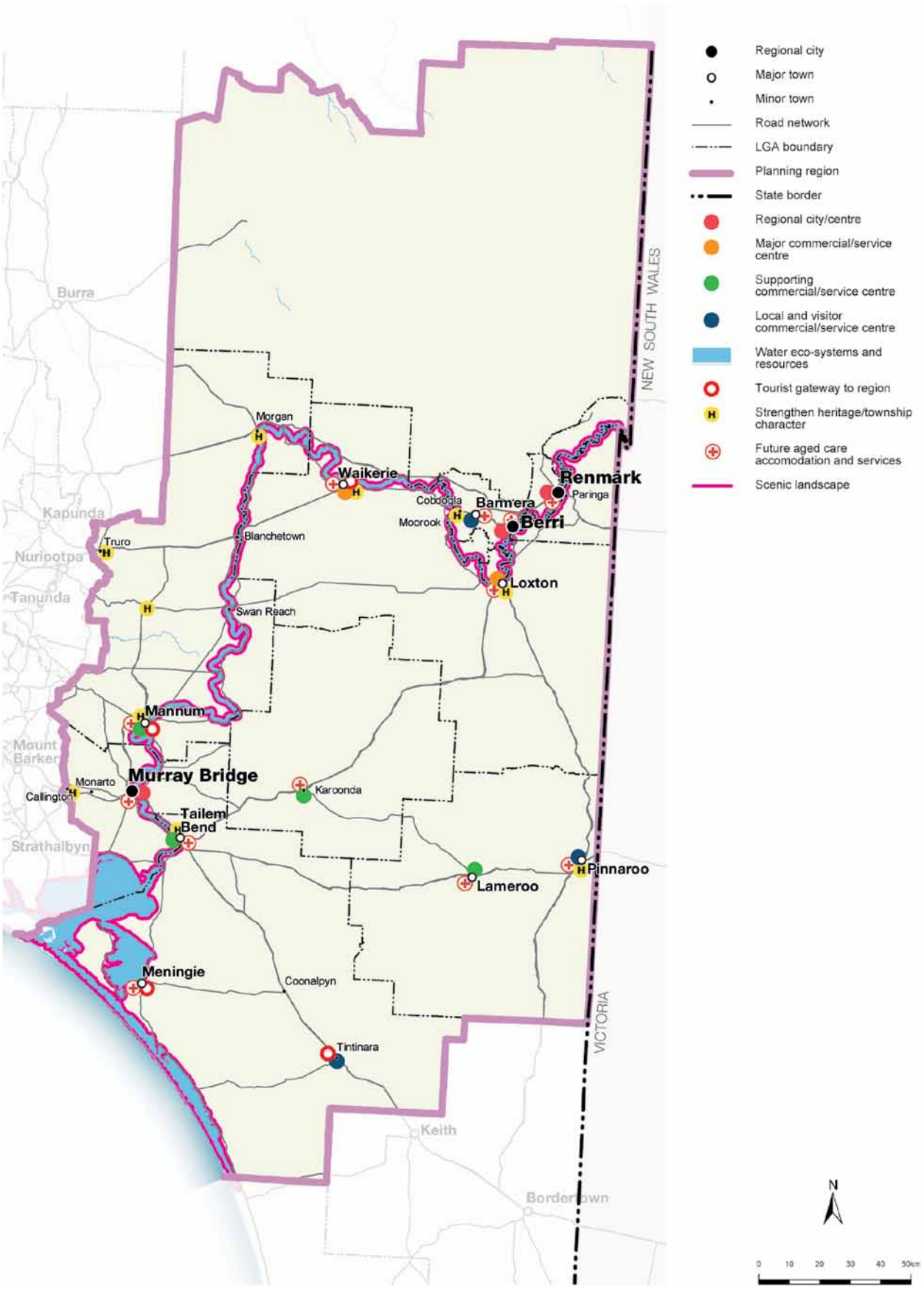
Required new homes (for 23,321 people)	Land area required (hectares)		
	at 8.5 dph*	at 10 dph*	at 13 dph*
9717 @ 2.4 people per home	1143	972	747
11,105 @ 2.1 people per home	1306	1111	854
12,956 @ 1.8 people per home	1524	1296	997

* Dwellings per hectare.

As an example, occupancy rates in Murray Bridge are about 2.4 people per home/dwelling unit. As the population ages, occupancy rates are expected to decrease, while dwelling density may increase as older people move into smaller homes.

Additional demand for new homes in towns is also expected, as retirees living in rural areas move close to health and community services and aged care facilities. Table D1 provides an estimated range of the number of dwellings and land area that will be required to accommodate growth targets. Further investigations will be necessary to inform the *Murray and Mallee Region Plan* during the ongoing review of the Plan.

The region currently has more than 590 hectares (ha) of land zoned residential, 650 ha of land zoned deferred urban and 1650 ha of land zoned for rural living, which could accommodate an estimated 7500 dwellings (see Table D2).


Regional city
Major town
Minor town
Road network
LGA boundary
Planning region
State border
Regional city/centre
Major commercial/service centre
Supporting commercial/service centre
Local and visitor commercial/service centre
Water eco-systems and resources
Tourist gateway to region
Strengthen heritage/township character
Future aged care accomodation and services
Scenic landscape
NEW SOUTH WALES
VICTORIA
Burra
Morgan
Waikerie
Renmark
Paringa
Cobdogla
Barmera
Berri
Mocrook
Kapunda
Truro
Blanchetown
Nuriootpa
Tanunda
Loxton
Swan Reach
Mannum
Mount Barker
Murray Bridge
Monarto
Callington
Karoonda
Tailem Bend
Strathalbyn
Pinnaroo
Lameroo
Meningie
Coonalpyn
Tintinara
Keith
Bordertown
N
0 10 20 30 40 50km

More recently, the South Australian Government's Riverland Futures Prospectus project (2008) has recommended a population growth target for the Riverland region of 7000 people over the next 30 years, which would require an additional 3180 new dwellings (assuming an occupancy rate of 2.2 people per dwelling). To accommodate this growth, the three Riverland Councils (Berri-Barmera Council, District Council of Loxton-Waikerie and District Council of Renmark-Paringa) have embarked on a program of Structure Plans and Development Plan Amendments to ensure that sufficient residential and employment land is suitably zoned and available to encourage investment in the region.

While the Plan seeks to prepare the region for an ageing population, policies are also needed to attract and retain young and working-age people to balance the increase in the proportion of older people during the next 30 years.

Among the social infrastructure required in the region, more housing in the main regional centres is a priority to support industrial development. In more remote locations, sufficient housing is the key to attracting and retaining staff, especially professionals. The region's social infrastructure needs include education, health, sport, libraries, community centres and childcare facilities while efficient broadband access is necessary to deliver distance learning and to support business development and growth.

The development of the Riverland Hub, a website designed to provide a 'one stop shop' of information about the region's health services, community services, events (what's on), local government, sporting events and so forth, is expected to be launched in early 2011.

The Plan provides principles and policies aimed at ensuring that:

- there is a supply of zoned land suitable for residential development
- growth occurs according to town role and function
- growth is directed towards towns with health, education, community, childcare and aged care services/facilities
- a diversity of housing (including affordable housing) is achieved
- town growth is managed to enable important primary production land and environmentally sensitive areas to be preserved.

Priorities for councils

- Develop Structure Plans of key towns to manage growth while retaining town and landscape amenity
- Undertake an audit of housing needs of older people and current supply to identify gaps in this segment of the housing market
- Identify the desired character of towns (and parts of towns) to guide the design of buildings and public places
- Reinforce the primary service and commercial roles of the major towns
- Undertake Structure Plans in Aboriginal communities to guide growth and development
- Develop a Structure Plan for Murray Bridge to guide growth and development.

Table D2 – Murray and Mallee region: residential land supply

Town	Residential zones		Deferred urban zones		Rural living zones	
	Area (ha)	Dwell est.[a]	Area (ha)	Dwell est.[a]	Area (ha)	Dwell est.[a]
Murray Bridge	224.76	2247.60	533.33	4533.30	664.70	332.00
Renmark	71.95	719.50	77.47	658.50	27.83	92.70
Berri	74.36	743.60	45.50	386.70	n/a	n/a
Loxton	127.26	1272.60	n/a	n/a	111.90	223.80
Waikerie	40.34	403.40	182.00	1547.00	56.60	113.20
Mannum	54.60	546.00	n/a	n/a	496.62	248.31
Tailem Bend	20.40	204.00	n/a	n/a	110.34	55.17
Karoonda	9.70	97.00	n/a	n/a	55.06	22.00
Lameroo	8.30	83.00	n/a	n/a	142.90	285.80

[a] Estimates based on: residential zones = 10 dwellings per hectare; deferred urban zones = 10 dwellings per hectare less 15 per cent (to account for land used for non-residential purposes); rural living zones = the average rural living allotment for each council.

Principle 10

Strategically plan and manage the growth of towns

The Plan supports the consolidation of population growth in existing settlements to:

- limit development in places that are difficult to service adequately with, for example, household waste collection, water supplies/treatment, energy transmission
- enable the treatment and re-use of wastewater and stormwater
- build on existing and planned business, service and infrastructure investment
- reduce the population's vulnerability to increased fuel and transport costs
- protect important scenic and natural landscapes and areas of environmental and primary production significance.

Population growth in the region has mainly occurred in the larger centres, in particular Murray Bridge. Given Murray Bridge's proximity to Adelaide, it has

been designated in *The 30-Year Plan for Greater Adelaide* as a focus of major urban growth, with some 13,400 additional people (representing a 40 per cent increase in population) anticipated in the centre and surrounds during the next 30 years.

Clarifying the current and desired roles of various towns in supporting businesses and communities was a driving force for the preparation of the Plan. How well the region functions in the future depends on having a considered mix of town roles and functions.

Key considerations are the location of existing social and economic infrastructure, travel distances, population and visitor numbers, and the surrounding natural environment and productive land.

Managing the growth of towns along the River Murray is a priority. Towns in this area must be well designed to facilitate growth while retaining town character, productive viticultural and agricultural land, and protecting the scenic riverine landscapes that are valued by residents and visitors alike.

A planned approach to development seeks to balance the range of competing interests. The Plan seeks to focus development in existing settlements and towns to:

- build on existing and planned business opportunities
- maximise service and infrastructure development
- protect scenic and environmentally significant landscapes
- protect rural land of importance to industry.

For future development, WSUD techniques can be applied during the design stage to achieve several environmental objectives, such as improving stormwater capture and reducing demand on the River Murray.

Identifying and effectively managing suitable sites for waste facilities to meet the needs of the expected increase in residents and tourists is essential to creating healthy communities and protecting the environment. EPA guidelines and building codes provide guidance on the management of waste, wastewater and stormwater to prevent risk to public and environmental health.

Policies

10.1 Focus growth and development in existing towns and settlements based on their roles and functions, as described in Principle 9 and shown on Map D3.

10.2 The expansion of towns should:

- ensure new areas are continuous with and form compact extensions of existing built-up areas, and prevent linear development along the river, coast and arterial roads
- not encroach on areas of importance to economic development
- not encroach on environmentally sensitive areas
- not encroach upon current or future potential arterial bypass roads
- support the cost-effective provision of infrastructure and services such as health and education,, avoiding unnecessary expansion or duplication of existing regional infrastructure and services

- promote strong physical linkages between all parts of the town, particularly between residential areas, town centres, sporting and recreational facilities, and open space
- promote development on vacant land, surplus government land and infill sites, and renew existing developed areas (where it does not compromise town character or heritage) in preference to broadacre or greenfield sites
- locate land for rural living in towns in such a way that opportunities for future town expansion are retained
- retain a functional and visual separation between towns
- allow for the incorporation of WSUD features to enable treatment and re-use of wastewater and stormwater.

10.3 Development in areas remote from infrastructure should be self-sufficient in energy, water supplies and wastewater management.

10.4 Build on the cultural/ heritage tourist focus of Morgan, Sedan and Truro by strengthening heritage and town character.

10.5 Build on the character and cultural heritage of the lakeside towns of Meningie and Barmera.

10.6 Provide a range of aged care accommodation (locating supported aged care accommodation in towns with health services).

10.7 Provide opportunities for lifestyle/retirement village type accommodation.

10.8 Manage the interface between primary production activities and urban areas through appropriate separation buffers, such as open spaces, parkland strips and screening vegetation, and appropriate alignment of allotment boundaries.

10.9 Manage waste in accordance with the Zero Waste SA hierarchy of waste management practices (from the most preferred to least preferred: avoid, reduce, re-use, recycle, recover, treat, dispose) by ensuring that settlements and developments have appropriate space, facilities, access and construction methods.

10.10 Restrict ad hoc construction of isolated rural dwellings and subdivision of rural lands through the planned expansion of towns, increasing density within town boundaries, appropriate intensification of existing rural living zones and strategic designation of new rural living zones outside areas of primary production significance.

10.11 Prevent the expansion and/or intensification of existing, or creation of new, rural living zones in areas of primary production significance.

Principle 11

Design towns to provide safe, healthy, accessible and appealing environments

The way in which towns across the Murray and Mallee region are designed influences not only how they look, but also how well they function. The ease and safety of getting around town, the accessibility of services and facilities, and a sense of community and civic pride, are all influenced by town design.

Towns, and parts of towns, can develop a strong identity and sense of place that can build on local history, unique natural features (that is, river, coast and mallee), and future aspirations. This identity should be determined, in part, by those who live there.

Features such as building height, rooflines, scale, materials and building setbacks can be used in new developments to contribute to, rather than detract from, town and landscape character.

Areas containing obsolete/aged housing stock should be progressively redeveloped through urban renewal programs.

Policies

11.1 Reinforce those elements (natural and built) that contribute to the unique character and identity of towns, including landscapes, building design, streetscape design and built heritage.

11.2 Establish and retain distinct and attractive entrances to towns.

11.3 Retain town centres as the focus of retail, commercial, recreational, entertainment, community and civic activities in accordance with the role and function of the town.

11.4 Locate health, community and education facilities and services where the community will have equitable access.

11.5 Provide strong linkages between the town centres and key sites of tourism interest, such as the river.

11.6 Manage interfaces between residential and industrial areas and town centres to avoid potential conflicts.

11.7 Encourage active lifestyles by providing:

- a range of open space, sport and recreation facilities in towns and throughout the region in accordance with the *Murraylands Recreation Sport and Open Space Strategy* (2002), *Riverland Regional Recreation, Sport and Open Space Strategy* (2004) and the *Sustainable Recreation Guide: How to Have Fun With Minimal Impact on the River Murray* (2007–08).
- walking and cycling facilities in towns, giving consideration to the needs of people of different ages and physical and intellectual abilities.

11.8 Develop safer towns by incorporating crime prevention through environmental design (CPTED) principles and consulting with the South Australia Police.

11.9 Design all developments to minimise their visual and physical intrusiveness and ensure they are sympathetic to cultural and landscape features and contribute to the desired character of the area.

11.10 Apply WSUD principles to all new development and public open spaces, and encourage their application to existing development.

Principle 12

Provide residential land for a supply of diverse, affordable and sustainable housing to meet the needs of current and future residents and visitors

Careful planning is required to ensure an adequate supply of housing to meet the needs of people who live and work in the region, taking into account demographic changes such as the ageing population. Population growth will be driven primarily by local and regional employment opportunities. Retirees and holiday home owners could potentially add to overall housing demand.

Housing for temporary, seasonal and lower income workers to support the livestock processing, viticulture, horticulture and mining industries will need to be considered, particularly in the Southern Mallee, Riverland and Murray Bridge areas.

Housing preferences and needs differ, depending on such things as age, health, income and cultural background. Areas in towns across the region need to be identified to provide a range of housing types, ensuring compatibility with town character, landscapes, environmental and industry needs, and availability of infrastructure and services.

Policies

12.1 Ensure there is a continuous supply of land for residential development (including an identified 15-year supply from both greenfield sites and land for urban renewal).

12.2 Ensure that appropriately serviced towns provide a range of housing types and densities to enable people to stay in their community as their housing needs change and to cater for the region's changing demographics.

12.3 Provide opportunities for higher density housing near town centres in towns identified for growth, in particular Murray Bridge.

12.4 Provide a range of accommodation for older people and people with a disability, and focus high-level care accommodation in towns with health services.

12.5 Ensure that land is made available for public and social housing in towns with a service role.

12.6 Encourage the provision of rental housing and accommodation in locations where there is high demand from people employed in local industries.

12.7 Provide for 15 per cent affordable housing, including a 5 per cent component for high needs housing, in all new significant housing developments, in accordance with the *Housing Plan for South Australia* (2005). Significant developments include housing provided through:

- surplus government land
- major developments
- re-zoning that increases dwelling potential.

12.8 Actively involve Aboriginal people and newly arrived overseas migrants in planning for housing supply to ensure their needs are met.

12.9 Retain caravan parks, and support the use of some parks for affordable rental housing, particularly for temporary accommodation.

INFRASTRUCTURE AND SERVICE PROVISION

Chapter E

INFRASTRUCTURE AND SERVICE PROVISION

Chapter E

This chapter discusses the implications of the *Murray and Mallee Region Plan* for the provision and coordination of infrastructure and services across the region.

The State Government recognises the importance of integrating land use and infrastructure planning. This approach aims to build strong and healthy communities and ensure industrial and commercial land supplies remain competitive by making the best use of existing infrastructure capacity and ensuring new infrastructure and services are strategically planned for and proceed in a timely manner.

The *Strategic Infrastructure Plan for South Australia* (2005–06) is the first step in developing a coordinated long-term approach to infrastructure and service provision throughout the state. It provides a framework for the planning and delivery of infrastructure and services by all government and private sector providers, and identifies priorities for each region.

The priorities identified for the Murray and Mallee region in the *Strategic Infrastructure Plan* are listed on the following pages. The *Murray and Mallee Region Plan* confirms these priorities, clarifies where they are most required and identifies other potential demands on infrastructure and services.

In general, minor infrastructure is the responsibility of the landowner. Given the long lead times associated with industrial development, the state government and other providers need to plan, coordinate and budget for infrastructure. This is particularly important with large parcels of land that have been identified as key future supply sites, but have significant constraints.

Further, the provision of infrastructure should be linked with the *Murray and Mallee Region Plan* to ensure industrial and commercial land is market-ready when it is needed, and appropriate services are provided to support the population and visitors. This is crucial to ensure, firstly, that funding is not prematurely invested in infrastructure and services and, second, to avoid underutilisation. This reinforces the need for ongoing information gathering and liaison with the private sector and local government on industry and community needs.

While on hold at the time of the Plan's publication, the proposed expansion of the Mobilong Prison has highlighted the need for critical infrastructure investment in Murray Bridge, including a metropolitan bus service, road and stormwater upgrades, as well as a range of social and community services that are required to properly service a growing regional population.

Priorities for the Murray and Mallee region identified in the *Strategic Infrastructure Plan for South Australia, Regional Overview, 2005-06–2014-15*

Land (economic development)

- Examine the feasibility of developing industrial land at Tailem Bend.
- Develop additional serviced industrial land in the Berri and Renmark areas.

Natural assets

- Rehabilitate the Lower Murray irrigation areas.

Water and wastewater

- Manage salinity impacts by:
  - promoting improved farming practices including more efficient use of land and irrigation water
  - installing salt interception schemes where applicable along the river
  - identifying and resolving infrastructure implications for the development of areas that have high productive potential and provide the lowest ecological impact on the river
- Continue the Murray–Darling Basin Authority infrastructure program, including sand pumping at the River Murray mouth, barrage/weir upgrades and salt interception schemes.
- Investigate opportunities for the re-use of wastewater from high-volume industrial sources for irrigation or industry in Murray Bridge and the Riverland.
- Develop and implement a master plan to manage stormwater flows resulting from severe rainfalls in Murray Bridge.
- Extend community wastewater management systems (CMWS) to the smaller towns to maximise wastewater re-use.

Transport

- Upgrade the Sturt Highway to support export-related freight movement, including:
  - constructing overtaking lanes and alignment improvements
  - undertaking safety improvements at key locations, including Renmark, Berri and Monash
  - assessing alternatives to the Paringa Bridge across the River Murray.
- Complete the River Murray ferry refurbishment program.
- Investigate the need to upgrade transport infrastructure to support mineral sands mining.[7]
- Consider the general aviation potential of Murray Bridge.

Energy

- Provide electricity infrastructure to support mineral sands mining[8] and irrigation industry expansion.
- Expand infrastructure, particularly three-phase power, to attract poultry industry investment.

7 This has changed with the closure of the Australian Zircon mineral sands mine at Mindarie.

8 As above.

Information and communication technology (ICT)

- Identify and map demand for broadband services.
- Develop a business case that identifies sufficient aggregated demand to justify installation of broadband.

Health

- Provide more aged care facilities and services (residential and community care) to meet the needs of an ageing population.
- Continue upgrading hospital facilities to support the co-located delivery of primary health care services, including general practice, allied health, mental health and Aboriginal health programs.

Justice and emergency services

- Redevelop the courthouse and extend the regional police facility at Berri.[9]
- Undertake extensions at Mobilong Prison, Murray Bridge.
- Replace the cell block at Cadell Training Centre, Cadell.

Arts, culture and heritage

- Upgrade the Chaffey Theatre at Renmark.[10]

Recreation and sport

- Review the use of existing facilities and determine the feasibility of establishing a multi-purpose sport and recreation facility in the Murray Bridge area.

Education and training

- Rejuvenate local schools to support the improved use and integration of services.
- Undertake planned capital works at Mannum schools and Riverland special schools.
- Ensure that future infrastructure requirements, including ICT, at TAFE support the expected growth in the primary and allied industries.
- Expand the capacity of childcare facilities.

Community services and housing

- Consider affordable housing options for seasonal workers in relevant areas.

Waste management

- Develop a short-term waste-management plan.
- Investigate and implement solutions for long-term waste disposal.

Science, technology and innovation

- Construct a demonstration aquaculture facility using salt interception schemes around Waikerie.
- Identify infrastructure requirements for a commercial aquaculture operation.

9 This work has been completed.

10 This work has been completed.

Infrastructure works currently underway

Infrastructure works currently underway in the region that are intended to improve safety and traffic efficiency include:

- $100 million over six years from 2008–09
- $20 million for the Southern Eastern Freeway/Princess Highway (state funding)
- $80 million for the Dukes Highway (Commonwealth funding) under the Nation Building Program
- upgrade of the Adelaide–Melbourne road corridor, including construction of overtaking lanes, alignment improvements, intersection upgrades, roadside hazard protection and new and upgraded rest areas.

Other infrastructure and service priorities and issues

The planning process leading to the development of the Plan identified several other priorities and issues related to infrastructure and service provision in the region. These include:

- improving north–south access between communities and for freight vehicles during harvest, and managing potential conflicts between cars and large freight vehicles
- explore the need and justification of upgrading the Bower Boundary Road should industry develop in the area
- support the development of an east-west rail freight bypass route to remove heavy rail freight from the Adelaide Hills
- support the development of a north-south road freight corridor linking the SE freeway at Monarto to the Sturt Highway and the Mid North
- investigate the feasibility of establishing an intermodal transport hub at Monarto
- investigate the concept of a new River Murray bridge crossing, from the Sturt Highway deviation (north of Berri) linking through to the Loxton/Mildura route
- improving traffic safety at Barmera
- increasing the capacity of gas supply to the Mallee and Riverland areas, including connections to Loxton, Renmark and Waikerie, as a result of growing industry demand.
- allow for future electricity transmission upgrades by provision and protection of corridors parallel to existing infrastructure or where identified by ElectraNet
- upgrading to three-phase power in some areas to support intensive animal production and industry
- improving broadband availability throughout the region
- upgrade the Murray Bridge Wastewater Treatment Plant to address the long-term sustainability of wastewater services and treated effluent disposal in Murray Bridge
- investigate opportunities for the re-use of wastewater from domestic sources for municipal purposes and crop production

- using community wastewater management systems (CWMS) to combat increased pressure on wastewater facilities associated with residential development and tourist facilities
- upgrading aerodromes and air services, especially at Renmark and Murray Bridge
- improving access to health services and education/training facilities locally, regionally and to Adelaide will potentially increase demand for public transport services
- encourage further investment into the recently established Monarto to Tailem Bend commercial corridor
- develop the Murraylands Education and Law Precinct in Murray Bridge to provide a centralised facility accommodating the regional headquarters of the SA Police, law courts and a range of education and legal services catering to industry and community needs
- growing resident and tourist numbers will potentially place pressure on recreation and sporting facilities
- creating master plans for stormwater disposal in towns such as Mannum and Renmark that have high development pressure
- reducing the impact and reliance on the River Murray, particularly as a result of climate change
- managing Lower Lakes water quality and quantity
- upgrading ferries and associated facilities to deal with low water levels
- identifying, protecting and conserving environmentally sensitive areas
- identifying the need for a government investigation into, and investment in, renewable energy
- consolidating and co-locating sporting, recreational, educational, rehabilitation and health-related facilities
- improve water and power infrastructure to service industrial expansion at Renmark.

APPENDICES

APPENDIX 1
HOW THE PLAN WAS DEVELOPED

Figure 3 – Planning process for the *Murray and Mallee Region Plan*

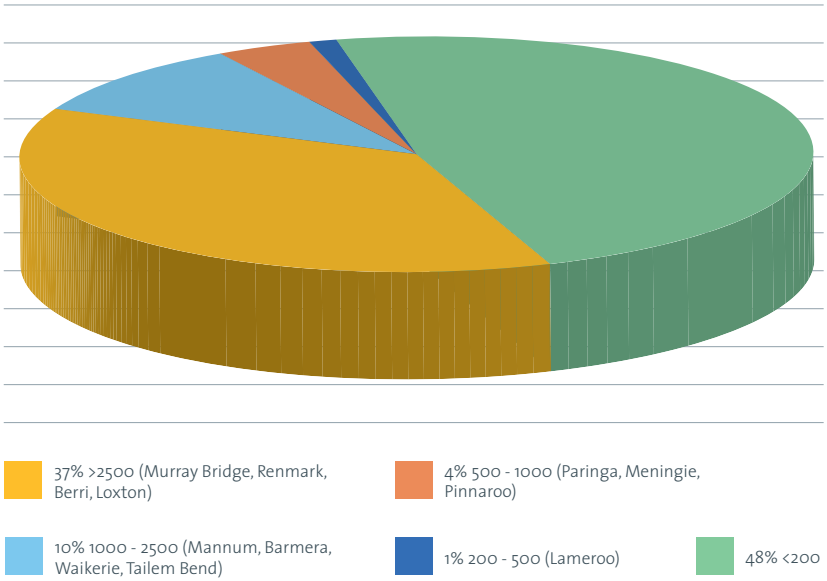
APPENDIX 2

INFORMATION ABOUT THE MURRAY AND MALLEE REGION

The Murray and Mallee region covers more than 53,938 square kilometres[11] and was home to 69,341 people at the 2006 Census.[12] Nearly half (47.3 per cent) of these people live in the larger towns (those with more than 1000 residents); and just under half live on farms or in towns of less than 200 people (see Figure 2.1). The River Murray dominates the western and northern sections of the region, where towns and settlements and older irrigation areas are located close to the river. In the region's eastern section the dominant landscape consists of sandy soils and mallee scrub and the dominant activities are broadacre irrigation using groundwater and dry-land farming.

Murray Bridge is the largest population centre in the region, and Loxton, Berri and Renmark are the main regional centres for the Riverland. Waikerie is an important centre in the Riverland West area as it services local communities from Blanchetown, Morgan and Cadell to Taylorville and Ramco. Tailem Bend and Karoonda are important towns for bulk grain handling and services. Lameroo, Pinnaroo and Meningie service the southern part of the region while Lameroo and Pinnaroo also have important interstate connections with the Mallee area of Victoria. Mannum, on the River Murray, is a popular town for tourism and recreation, and there are several smaller towns along the river that provide services for locals and visitors. Numerous shack settlements of various sizes are also spread along the river, resulting in a transient population that swells during school and public holidays and weekends.

Figure 2.1 – Population distribution by settlement size, Murray and Mallee region, 2006



11 This includes the unincorporated land in the region's north, as well as land under the control of local councils.

12 Australian Bureau of Statistics, 'Basic Community Profile', *2006 Census of Population and Housing*, ABS, Canberra, 2007.

South Australia's major road and rail routes to the eastern states interweave across the region, providing strategic links to Adelaide in the west; the Riverland, Murraylands, Mallee, New South Wales and Victoria in the east; and the Coorong, South-East and Great Ocean Road in the south.

The region's economy centres on primary production and processing. Murray Bridge, Berri and Renmark in particular play important manufacturing and primary product processing roles. Tourism and associated services are also significant economic contributors, particularly in many of the smaller towns. The region is a popular holiday destination for more than 711,000 overnight visitors a year. Most of these visitors are South Australian (77.4 per cent), many of whom own or rent holiday homes along the river and houseboats.

INFRASTRUCTURE AND SERVICES

A range of infrastructure and services supports the region's communities and economy.

Transport

Road

National Land Transport Network highways traverse the region, linking South Australia with New South Wales and Victoria. The Commonwealth and State governments have prepared draft road corridor strategies for the corridors' long-term (20–25 years) development. The main corridors in the Murray and Mallee region are the Melbourne–Adelaide corridor, the Sydney–Adelaide corridor and the Mallee Highway, which provides another route between Sydney and Adelaide.

- The Melbourne–Adelaide corridor is made up of the Dukes Highway and the South Eastern Freeway. The Dukes Highway is a single carriageway highway with overtaking lanes from the Victorian border to Tailem Bend (just west of the Princes Highway intersection). A dual carriageway road then continues from Tailem Bend to Swanport Bridge, four kilometres south-east of Murray Bridge.

The South Eastern Freeway is a standard, duplicated road from just west of Swanport Bridge to the end of the corridor at its intersection with Cross and Portrush roads in Adelaide. B-double trucks can operate the entire length of the Melbourne–Adelaide corridor.

The draft strategy for the Melbourne–Adelaide corridor identifies the following priorities:

- maintain and rehabilitate ageing road sections, including improvement to shoulder seals and seal widths
- identify long-term solutions to safety and amenity issues associated with the freight rail system through the Adelaide Hills and from Gheringhap to Melbourne
- continue program of rail upgrades and maintenance to allow more frequent 1,500 metre (and up to 1,800 metre) trains, higher average speeds and loads, including extended and additional passing loops and upgrading the signalling and communication systems

- manage mixed traffic conditions and general traffic growth at higher trafficked points along the corridor
- long-term planning for road system management for Melbourne – Ballarat and Mount Barker - Adelaide
- consider additional access capacity at Mount Barker
- manage fatigue related safety issues and roadside hazards
- manage road traffic issues (safety, amenity) at towns along the corridor including town bypasses where appropriate
- improve safety of at-grade road/rail crossings
- improve sections of road with poor geometry and alignment
- identify the infrastructure and operational implications associated with the potential introduction of higher productivity vehicles and take measures to maintain travel time and safety outcomes.

The north–south link from Langhorne Creek to the Barossa Valley through Monarto and Sedan (Ferris McDonald Road) has been significantly upgraded using Australian Government road grants. This may eventually link to an intermodal transport hub at Monarto.

- The Sydney–Adelaide corridor follows the Sturt Highway from the Victorian border to the Gawler Bypass, terminating at its connection to Main North Road, Adelaide. It is the main road freight route between Sydney and Adelaide and is also very important for tourism. The Sturt Highway is the main northern interstate connector, providing a freight route from the north to Outer Harbour and Adelaide Airport. B-double trucks can also use this entire corridor.

  The draft strategy for the Sydney–Adelaide corridor identifies the following priorities:

  - address corridor safety, particularly
    - management of fatigue-related safety issues, including evaluation and improvement of corridor rest areas and truck parking areas to ensure consistency with the national guidelines for rest areas
    - management of roadside hazard safety issues
    - management of local access intersections with the Sturt Highway on the South Australian sections of the corridor
  - develop an integrated corridor maintenance and reconstruction plan that manages the corridor in a consistent way along its length
  - upgrade the road corridor, including progressive geometric improvements, intersection upgrades, lane and bridge widening, shoulder sealing and improved overtaking opportunities
  - mitigate corridor amenity issues, particularly potential conflicts with residential and commercial land use along the corridor and in urban areas
  - improve efficiency and reliability related performance issues particularly on the Cootamundra – Parkes section of the rail route.

- The Mallee Highway provides the most direct route between Sydney and Adelaide, and is about 100 kilometres shorter than the Sturt Highway. The highway is particularly important for the Murraylands area.

Heavy vehicle movements in the region are expected to increase, placing significant demands on the state and local road network. It will be important to maintain efficient transport links, especially from local and lower-order arterial roads to major freight routes, if the region's economy is to grow.

In addition to the National Land Transport Network corridor priorities outlined above, other key road transport issues include:

- long-haul east–west freight movements between the Riverland and the Mid North along the Goyder Highway. The proposal for a multi-modal transport hub to the north of Adelaide could generate increased road freight movement from the Riverland and Victoria along this route
- the north–south freight link between wine-growing regions of the Barossa Valley and Langhorne Creek
- north-east to south-west grain movements (from the Murraylands and Mallee areas to Tailem Bend)
- a significant increase in potato freight from the Mallee region, which now produces more than 70 per cent of the state's potatoes for fresh vegetable and processing requirements
- the possible requirement of an improved transport link from Mindarie to Tailem Bend to service the development of a mineral sands deposit near Mindarie[13]
- an increase in over-dimensional freight from Port Augusta to Murray Bridge as a result of growth in the livestock industry in the Mid North region.

Rail

The passenger and freight rail link between Adelaide and Melbourne passes through Tailem Bend, where a junction connects to standard-gauge lines terminating at Loxton and Pinnaroo. These rail lines are used to transport grain to Port Adelaide for export. The Loxton line could also be used in the near future for transporting mineral sands from Mindarie[14] to Port Adelaide.

13 This will change if the Australian Zircon mineral sands mine is permanently closed after an operations review, which was announced in October 2009.

14 As above.

Air

The region has licensed airfields at Loxton, Waikerie, Renmark and Meningie. Renmark and Waikerie have sealed runways, enabling them to provide a higher level of service. The region also has several unlicensed airfields, many of which are used by the Royal Flying Doctor Service.

Public transport

Community Passenger Network (CPN) offices provide information and assistance to people who are disadvantaged because they lack transport. Assistance includes access to a wide variety of services, including medical and shopping, and community and social activities. The CPN is funded by the state government's Public Transport Division, the Commonwealth Home and Community Care Program, and local councils. Several private bus companies also operate in the region.

There is increasing demand for public transport services to address social and community needs, not only medical needs.

Electricity

The transmission and distribution networks are privately owned and operated. The region has five main connection systems—at Mannum, Mobilong, Tailem Bend, Berri and North West Bend. Distribution is from the 33 kilovolt sub-transmission network or via 12 distribution substations.

The region's main energy demands are for water pumping for domestic, commercial and industrial uses, including irrigation and processing. Several renewable energy exploration or development activities, involving hot rocks, wind and solar energy, are occurring across the region.

Information and communication technology (ICT)

The region has broadband services in the major urban centres but has had problems installing systems for the rural areas. At the time of writing, the Murraylands is the state's poorest served broadband region. However, in February 2010 a new project was announced that will provide improved broadband services to the Southern Mallee region around One Tree Hill, Lameroo and Pinnaroo. It will also provide improved broadband coverage south of Loxton. This project leverages off projects already established in the Riverland, Murraylands and Coorong and will result in around 50,000 rural premises having access to improved broadband services. Altogether, over $6 million in new broadband infrastructure will have been invested in the region during the past three years.

As part of the National Broadband Network, a new optical fibre backbone will be built between Renmark and Gawler, serving townships along the route, including Berri and Waikerie. The network will also provide new optical fibre connections into homes and businesses at data rates of 100 Mbps and new wireless and satellite connections at data rates of 12 Mbps.

Justice and emergency services

South Australian Police has received funding to build a new police station at Murray Bridge, the completion of which is due in mid 2012. It was not known at the time of publication if a new court will be built simultaneously; however, provision is being made to enable this to occur in the future.

Cycling

The relatively low traffic volumes, wide streets and compact size of the region's towns make cycling and walking attractive transport and recreation options. Many towns have a Local Area Bicycle Plan and most have extensive footpaths and are developing cycling networks. The region's scenery and natural features lend themselves to the development of cycling tourism.

Health services

The region has 12 main health facilities plus six outreach clinics. Berri, Barmera, Loxton, Renmark, Waikerie, Lameroo, Pinnaroo and Karoonda have public hospitals; while Murray Bridge, Mannum, Tailem Bend and Meningie have private hospitals. Many of these towns also have residential care services and offer differing levels of community health and aged care services.

Berri and Murray Bridge offer a wide range of specialist health services, and Berri has been designated as one of four general hospitals in country South Australia to have some services upgraded. The region has various medical transport and bus services to take people to health appointments in Adelaide or within the region.

The Strategy for Planning Country Health Services in SA (December 2008) clarifies each health facility's role and linkages, to provide a more integrated and sustainable service system. While maintaining the health workforce in rural areas is posing challenges, the Riverland and Murraylands have adequate numbers, with international medical graduates filling the shortfall in general practice.

Most of the region's communities are ageing and its health services need to respond to this. Other factors affecting health service delivery include:

- business developments creating new areas of demand, such as a large new retirement village in Renmark
- the proposed marina at Mannum
- the recruitment of migrant workers at Murray Bridge
- the role of health services in supporting individuals and communities affected by the overall downturn in some horticultural industries, which has been compounded by drought.

Education

The region has 29 childcare facilities (12 in the Riverland and 17 in the Murraylands), 93 government schools (39 in the Riverland and 54 in the Murraylands), and 10 non-government schools (seven in the Riverland and three in the Murraylands). TAFE has campuses at Murray Bridge, Berri, Waikerie and Renmark. An education precinct also has been established at Murray Bridge.

The Flinders University of South Australia is an important provider of tertiary education opportunities in the region and is looking to expand these services.

Water

Community wastewater management systems (CWMS) service the major towns. The Commonwealth Government is providing subsidy funding for wastewater re-use; as part of this it has earmarked funds for CWMS projects in the Coorong, Murray Bridge, Southern Mallee, Renmark Paringa, Berri Barmera and Loxton Waikerie council areas. The government will provide about one-quarter of the total construction cost of these schemes—estimated at more than $15 million. Together, the schemes have the potential to make available an estimated 1400 megalitres of treated water a year for re-use.

SA Water supplies wastewater services to Murray Bridge and Mannum. The Murray Bridge wastewater treatment plant (WWTP) and sewerage network is currently near capacity. Future anticipated growth requirements are being reviewed and include options for relocating the plant. The Mannum WWTP is proposed to be relocated as part of the Mannum Waters marina development.

The River Murray is South Australia's biggest multi-use water resource. The water taken from the river is mainly used for irrigation, drinking water and other urban and industrial needs. During drought, critical human needs take priority.

In June 2003 the South Australian Government introduced water restrictions across the state due to the impacts of drought throughout the Murray–Darling Basin and the prospect of South Australia receiving less than its entitlement flow. Water restrictions will continue to be necessary to ensure all River Murray water users, in and out of the region, have access for irrigation and other purposes. More information on these restrictions and the *South Australian River Murray Drought Water Allocation Policy* can be found at <www.dwlbc.sa.gov.au/murray/drought/index.html>.

Rising groundwater levels in some cleared areas have led to the development of dry-land salinity. Salinity impacts in the River Murray System are also a significant issue, with major implications for all water users, including critical human needs, irrigation and the environment itself. In South Australia highly saline groundwater flows naturally into the River Murray at a high rate; however, irrigation and, to a lesser extent, mallee clearance, have accelerated the rate at which saline groundwater is entering the river and floodplain. To reduce the flow into the river, several salt interception schemes - in which extracted water is pumped to an inland disposal basin - have been established in the Riverland; however, the basins have a limited life span.

In addition to salt interception schemes, significant effort has been directed to improving irrigation water delivery and application efficiencies to reduce saline groundwater discharge, thereby maximising the benefits from such schemes and the longevity of the disposal basins.

The Basin Salinity Management Strategy 2001–2015 was prepared by the Murray–Darling Basin Ministerial Council and its partner governments. It guides communities and governments to work together to control salinity and protect key natural resources in their catchments. The strategy establishes targets for the salinity of each tributary valley and for the Murray–Darling Basin itself. In addition, the forthcoming Murray-Darling Basin Plan will contain a Water Quality and Salinity Management Plan. While this Plan is not due for release until late 2011, it may include additional water quality and salinity objectives/targets for the lower River Murray to recognise the need for river salinity to be managed system-wide.

The South Australian Government has recently released a number of initiatives for water use and re-use: the *Water for Good Plan*, the *Water-Sensitive Urban Design Technical Manual for Greater Adelaide*, as well as *South Australia's Strategic Plan*. These initiatives contain many principles and guidelines that can be applied to all urban development and buildings, examples of which include:

- *Water for Good* Action 56: Maintain a positive balance on the Murray-Darling Basin Authority's Salinity Register, and continue to implement strategies and actions to ensure the real time management of salinity in the lower reaches of the River Murray remain at levels suitable for human consumption.
- *South Australia's Strategic Plan Target* (T3.11): River Murray Salinity – South Australia maintains a positive balance on the Murray-Darling Basin Authority's Salinity Register.

All developments along the River Murray need to ensure that they will not adversely affect salinity levels.

All significant water resources (including groundwater) in South Australia are either proclaimed or under a moratorium from further development

THE ENVIRONMENT

Biodiversity

The South Australian Murray–Darling Basin Natural Resources Management Board has divided the basin into five units: the river corridor, the Coorong and Lower Lakes, the Murray Mallee, the Eastern Mount Lofty Ranges and Murray Plains, and the South Olary Plains. The basin supports a wide variety of habitats and has an extremely diverse biota: the native vegetation cover changes significantly from north to south and in some areas it has become highly fragmented. Native fish species have also suffered serious decline in the past 50 years.

Before European settlement, the region supported a complex mosaic of temperate woodlands, large tracts of mallee, shrublands, saline and freshwater wetlands, herblands and grasslands that provided a wide variety of habitats for wildlife.

The region retains 59 per cent of native vegetation cover, although only 16 per cent occurs in the agricultural portion, while 43 per cent occurs in the rangeland areas.[15] The main threats to biodiversity include fragmentation and isolation, salinity, water regulation and pollution, changing land uses, tourism and recreation, inappropriate grazing, environmental weeds, introduced animals and over-abundant native species, mining and inappropriate fire regimes.

The largest intact stands of remnant habitat are found north of the River Murray and in the eastern part of the region. These areas support mallee vegetation communities and are largely protected in parks and reserves, such as the Chowilla Regional Reserve, Chowilla Game Reserve and the Ngarkat and Billiatt Conservation Parks.

The River Murray valley contains high levels of biodiversity, primarily due to the riverine, floodplain and wetland ecosystems that it supports. Multiple uses of the river resource have led to substantial loss and degradation of the river corridor habitat, particularly due to clearance, altered hydrology and salinity. Many of the remaining stands are formally protected, either in government or private reserves including Heritage Agreement sites, which are also part of the Riverland Biosphere Reserve program (an international nature conservation initiative). The reserve also contains substantial tracts of the mallee rangeland north of the river, including pastoral leases now 'retired' from grazing (such as Gluepot, Taylorville and Calperum stations) as well as the Cooltong Conservation Park and Danggali Wilderness Protection Area and Conservation Park.

Several wetland complexes in the Riverland (such as Katarapko) are included in the Murray River National Park. Wetland and riverine ecosystems between Renmark (above Lock 5) and the South Australian border and the Banrock Station complex are protected as Ramsar-listed wetlands of international importance. The river corridor also includes the Lower Lakes and part of the Coorong, which together form a Ramsar site. The intergovernmental Living Murray Initiative has listed the Chowilla floodplain, the River Murray Channel and the Lower Lakes, Coorong and Murray mouth as icon sites.

15 MJ Kahrimanis, S Carruthers, A Oppermann and R Inns, *Biodiversity Plan for the South Australian Murray–Darling Basin*, Department of Environment and Heritage, Government of South Australia, 2001.

Water resources

Surface water is extracted from the River Murray and groundwater from underground aquifers. Tributaries from the Eastern Mount Lofty Ranges, such as the Marne, Bremer and Angus rivers, are also important water resources. The ranges capture a significant amount of surface water run-off in farm dams. In the Mallee and northern rangelands, the topography is flat and there are no significant watercourses. In these areas, groundwater is the main water source, particularly in the south where the quality is suitable.

Water regulation (especially the establishment of locks and weir pools on the River Murray), over-allocation of river water and extraction of groundwater have led to environmental degradation, particularly salinity and water quality problems. Managing salinity levels within the River Murray requires sufficient water from upstream to dilute salinity and enable salt to be removed from the system via the Murray Mouth. High levels of salinity have adversely affected all regional biodiversity. Increased demand for water from primary production has also affected watercourses emanating from the Mount Lofty Ranges. Extraction of groundwater also affects surface water resources as the two systems are often linked.

The coast—along the Coorong and at the Murray mouth— forms only a small portion of the Murray and Mallee region. These areas are part of a National Park and their use is largely restricted to nature conservation, tourism and recreation. The ecological health of the Coorong, Lower Lakes and Murray Mouth is dictated by flows down the River Murray, especially to provide freshwater inputs and to keep the river mouth open to tidal exchange. The mouth has generally been kept open through continuous dredging operations, although these operations have been temporarily halted owing to the recent influx of floodwaters from upstream. Nonetheless, the ecotourism value of this area will always be compromised by the potential for droughts across the Murray–Darling system, and will continue to be compromised in the long term unless appropriate environmental flows can be restored. The extent of these environmental flows will be determined by the Murray-Darling Basin Authority through implementation of the Murray-Darling Basin Plan.[16]

Managing climate change

The latest projections for the impact of climate change on Australia as a result of the greenhouse effect were released by the CSIRO in 2007. The projections indicate reduced rainfall across the Murray and Mallee region, which—should this eventuate—will have significant impacts on natural resources and primary production. It is noted that various studies on the impacts of climate change on the Murray–Darling system (including the Murray and Mallee region) are being undertaken and should be considered when released.

PIRSA has been working with primary producers along the River Murray in South Australia and investing in research into the potential impacts of climate change on specific crops, as well as dairy farming and other primary industries. Options are being considered for alternative primary production and adaption techniques (for example, environmental management systems) in different climate zones to assist the state's primary producers effectively adapt to any changes.

16 The Murray-Darling Basin Plan is scheduled for release in 2011, after which the establishment of environmental flows for the river are expected to be 'transitioned' over a period of some years.

The South Australian Murray-Darling Basin Natural Resource Management Board has been working with councils across the region to strengthen the water security for communities under future climate change scenarios. The *Strengthening Basin Communities Program* is funded by the Commonwealth Department of Environment, Water, Heritage and the Arts and the planning component is due for completion in December 2011.

It is critical that areas of primary production significance are shown in Development Plans (and planning strategies) and planning policies for these areas in order to restrict development not directly related to primary production and associated value-adding activities.

It also is critical to ensure that the region's settlements are resilient to an uncertain climate future, particularly in the areas of water security, public health and maintaining high amenity public spaces.

THE ECONOMY AND ECONOMIC DEVELOPMENT OPPORTUNITIES

The region's economy is based on primary production and value adding for export—intrastate, interstate and overseas—and good access to national road and rail networks offers potential for growth in value adding. If irrigated development is to continue to support the economy, water will need to be used strategically and associated infrastructure provided. The region's natural resources, particularly the River Murray and its surrounds, will need to be better managed in ways that address environmental concerns.

The region's natural and heritage assets offer potential for growth in tourism. Given that the region is one of the state's main recreational areas, however, any overuse of the River Murray will also affect the tourism economy.

Employment

Based on 2006 Census data, the agriculture, forestry and fishing sector accounted for about 22 per cent (6419 people) of the region's employment, followed by retail trade (14 per cent or 4124 people), manufacturing (13 per cent or 3760 people), and health and community services (nearly 10 per cent or 2858 people).

The combined construction, accommodation, café and restaurant sectors accounted for just less than 10 per cent (2700 people). The Clifford report[17] predicts an increase of about 3500 full-time equivalent jobs across the Murraylands, primarily in retail, between 2009 and 2011.

Primary production

Wine grapes are the most significant agricultural commodity in the region, accounting for about one-third of the region's $1.1 billion total value of agricultural production in 2004–05. Fruit (mostly citrus) contributed nearly 20 per cent ($208 million) of the total; vegetable and grain crops each contributed 10 per cent (about $128 million each); and milk, livestock slaughtering and other livestock products together contributed 16 per cent.[18]

Intensive livestock production (including pigs, chicken hatcheries and egg farms), grazing, field crops and grains dominate primary production in the Murraylands.

17 B Clifford, *Murraylands Jobs and Investment Forecast 2009–2011*, report prepared for the Murraylands Regional Development Board and South Australia Works, October 2008.

18 *Australian Bureau of Agricultural and Resource Economics* (ABARE) various commodity and crop reports for 2006.

The region also grows 40 per cent of South Australia's onions, 70 per cent of its potatoes, and is the largest lettuce and olive producing region in the state.

Horticulture dominates primary production in the Riverland (primarily citrus, stone fruits, grapes and nuts) and Mallee (potatoes and onions), while livestock and field crops also play a significant role. In terms of contribution to the regional economy, horticulture crops generated nearly $226 million in 2005–06, the wine industry $225.7 million, field crops $34 million, and livestock $22 million.

Wine grapes

In 2005, the Riverland produced 51 per cent of South Australia's crushed wine grapes—one-quarter of Australia's total production. However, with a large percentage of Riverland producers reliant on irrigation from the Murray–Darling Basin, it is expected that yields will continue to decline as water allocations are reduced. The recent floods across the eastern seaboard of Australia have certainly improved conditions for the immediate future, but much will depend on the amount of water allocated to irrigators by the Murray-Darling Basin Authority.

Seafood and aquaculture

Although seafood and aquaculture industries play a minor role in the Riverland and Murraylands, they contribute consistently equivalent production rates (by weight) to the state's marine fisheries. Freshwater and saltwater fishing is centred mainly on the Lower Lakes and the Coorong.

SARDI (the South Australian Research and Development Institute) has successfully trialled inland saline aquaculture at Waikerie to grow mulloway using groundwater discharged from the Woolpunda salt interception schemes (SIS). SARDI has also developed a demonstration and training facility to evaluate the commercial potential of establishing a significant industry in the region.

The establishment of SIS in the region increases the potential for the development of inland aquaculture, by providing access to a reliable supply of good quality water. Land for aquaculture in the region should be close to SIS pipe networks.

Livestock industries

Beef and sheep—Beef cattle are produced throughout the region and all areas of the region are suited to sheep farming.

T & R Pastoral, on the northern edge of Murray Bridge, is the nation's fifth-largest sheep and beef abattoir and one of the Murraylands biggest employers. It is expected to continue to grow.

Dairy—Irrigated dairy farming occurs in the Lower Murray Reclaimed Irrigation Area (from south of Mannum to Wellington), around the Lower Lakes, and in the Coorong District Council area around Tintinara. There is also potential to develop an irrigated dairying area adjacent to the Prescribed Wells Area around Karoonda, Lameroo and Pinnaroo.

Since 2000, about 60 per cent of dairy farmers from the region have stopped dairying due to industry restructuring and ongoing drought and water accessibility issues.

The region has two major dairy processing factories in Murray Bridge and Jervois, both of which are owned by National Foods. These factories are increasingly sourcing milk from outside the region to meet production requirements.

Pork and chicken—Chicken meat production is common in the Murray Bridge region, mostly on the western side of the river, close to power, mains water and the main transport routes to Adelaide. The need for three-phase power is a limiting factor for chicken shed siting. Inghams has developed a large hatchery at Monarto South to service the South Australian and eastern states markets.

Pig farms are common in the Murray Bridge/Tailem Bend region, with pockets also located in the Riverland and Southern Mallee.

Big River Pork is a major pork abattoir and boning plant south of Murray Bridge that routinely processes about 13,500 pigs a week. Together, T&R Pastoral and Big River Pork employ more than 2000 people, many from overseas using working visas.

Stockfeed—Ridley AgriProducts' feed mill in Murray Bridge services the pork, chicken and dairy industries.

Grain production—Local demand for grain production, which is focused in the central and eastern parts of the region, is increasing. This is the result of a shift to livestock feedlotting, as well as processing industries expanding and relocating across the southern part of the region from the neighbouring Mid North region. The high quality freight and storage infrastructure that is co-located with grain production is a major drawcard for the expansion of the livestock industry.

Tourism

Tourism is an important and growing sector of the region's economy. Most visitors are South Australian and the next largest group is from interstate. The value of domestic tourism is estimated to be in the order of $107 million a year.[19]

River-based recreation (including riverbank camping in National Parks and recreational fishing along the river, lakes and Coorong) is the most important contributor to tourism in the region. The houseboat industry relies on the River Murray's character and health of its natural environment.

The South Australian Tourism Commission, in conjunction with the Regional Development Australia and local councils, has produced the *Riverland Integrated Strategic Tourism Strategy* (2005) and the *Murraylands Integrated Regional Strategic Tourism Plan* (2009) to provide direction for investors in sustainable tourism. These plans are a blueprint to position the region as an authentic and diverse nature-based destination.

Mining and mineral processing

Mining in the region is largely limited to low-value agricultural, industrial and construction materials, such as sand and road base materials (that is, crushed limestone); however, mining and minerals processing are becoming increasingly important.

The Australian Zircon mine at Mindarie, which mines mineral sand deposits in the area surrounding Karoonda, still has the greatest mining potential. An operations review in October 2009 resulted in the closure of the mine in 2010, although there remain significant opportunities for mining and associated operations to be reinvigorated at Mindarie in the future.

19 South Australian Tourism Commission, Regional profiles for the Murraylands and Riverland regions, SATC, Government of South Australia, 2004.

COMMUNITIES AND CHANGING SETTLEMENT PATTERNS

Population

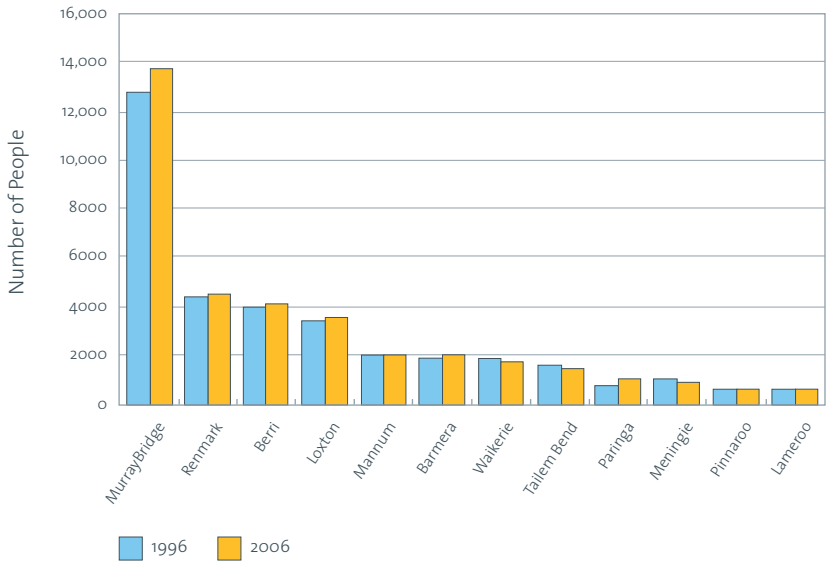
A changing region

The needs of the Murray and Mallee's residents and communities are driving the preparation of the Plan and associated strategic priorities.

The combined population of the eight council areas that make up the region was 69,341 at the 2006 Census.[20] The population increased by 1.4 per cent between the 1996 and 2001 Censuses, and this rate accelerated to 3.6 per cent between 2001 and 2006.

Murray Bridge has 19.8 per cent (13,761 people in 2006) of the region's population and has had the highest annual growth rate - just over one per cent - of all the region's towns in the 1996 to 2006 period. Seventeen per cent of the region's population live in the three main Riverland towns of Renmark, Berri and Loxton.

Figure 2.2 – Population of main towns, Murray and Mallee region, 1996 and 2006



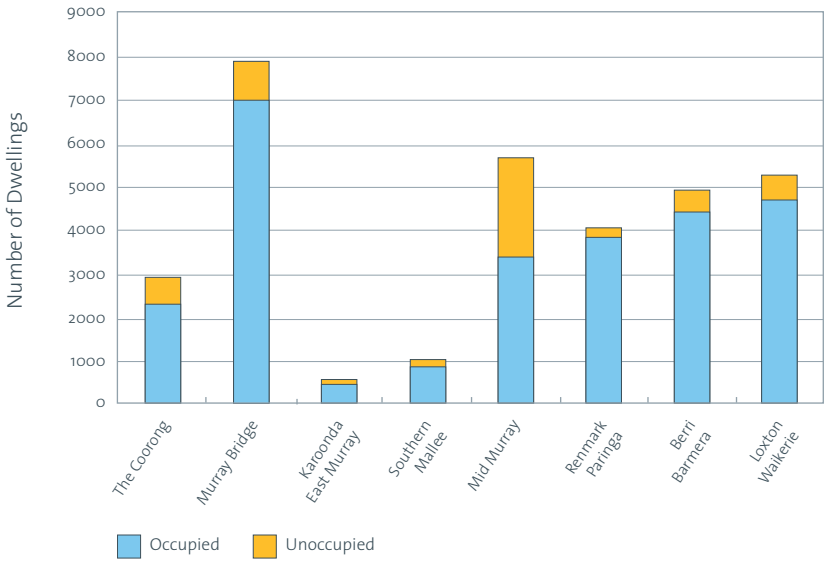
Source: ABS, Census of Population and Housing, *1996 and 2006.*

Only 15 per cent of the population live in towns of less than 1000 people and 48 per cent live on farms or settlements of fewer than 200 people.

While the larger towns grew between 1996 and 2006, there were small declines in many of the smaller towns, including Waikerie, Tailem Bend, Meningie, Pinnaroo and Lameroo (see Figure 2.2).

20 Australian Bureau of Statistics, 'Basic Community Profile', *2006 Census of Population and Housing*, ABS, Canberra, 2007.

Figure 2.3 – Occupied and unoccupied dwellings, Murray and Mallee region, 2006



Source: ABS, Census of Population and Housing, *2006.*

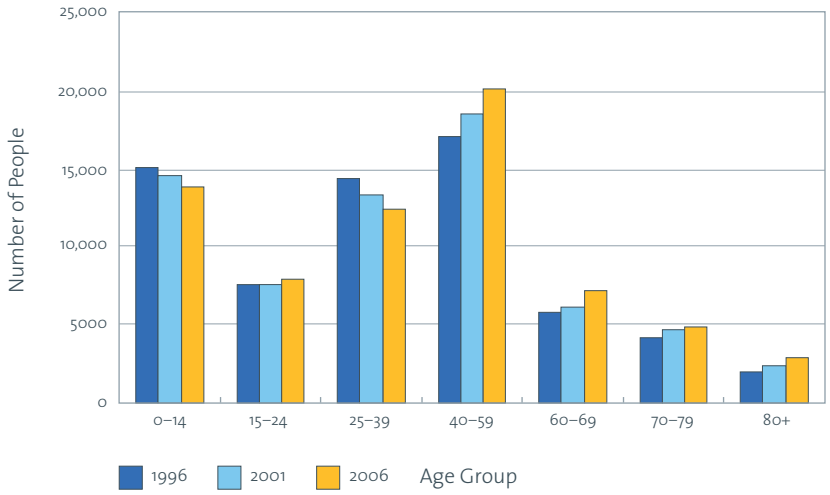
Permanent population figures may not reflect the demands on local and regional facilities made by visitors, particularly during peak tourist periods (see Figure 2.3).

An ageing region

Of the 69,341 people living in the Murray and Mallee region at the 2006 Census, 14,989 (21.6 per cent) were aged over 60. This percentage is projected to increase, as it is for South Australia as a whole.

The population is ageing: between 1996 and 2006 there was an increase of 26.3 per cent in the number of people aged 60 to 69; a 16.2 per cent increase in those aged 70 to 79; and a 49.3 per cent increase in those aged more than 80.

Figure 2.4 – Population by age, Murray and Mallee region, 1996, 2001 and 2006



Source: ABS, Census of Population and Housing, *1996, 2001 and 2006.*

Conversely, the major family-creating cohort of 25 to 39 years declined by 13.5 per cent during the same period, as did the number of children (0 to 14 years declined by 7.7 per cent). Figure 2.4 shows the region's population by age during the past three Censuses.

Compounding this problem, some towns in the region lack childcare, which is adversely affecting the ability to maintain and increase the population as well as service some industries.

Australian Bureau of Statistics (ABS) data on the population distribution in the region indicates that despite a slight decrease in population, the number of aged people as a percentage of the total population is likely to remain above the state average. Statewide, the number of people over the age of 70 years is expected to triple in the next few years, and the Murray and Mallee region is likely to be strongly affected.

Housing demand and affordability

The ageing population will need to be taken into account in planning for suitable and appropriately located housing.

Significant numbers of dwellings have been built in Murray Bridge in the past five years to meet high demand. Waikerie, Loxton, Mannum, Berri and Renmark have had a smaller, but stable rate of residential development over the same period.

In other parts of the region, a rise in land values is partly attributed to interest from retirees and people seeking a different pace of life. Attracting permanent residents can be problematic as it may be at the expense of housing for seasonal workers in the local agricultural industry.

It is reported that a shortage of affordable rental and social housing is affecting the region's ability to attract and retain people, particularly seasonal workers and workers in lower income occupations.

Higher building costs compared to the metropolitan area, coupled with difficulty obtaining finance in many cases due to the unpredictability of the rural economy, are major contributing factors to the shortage of housing in most parts of the region.

Role and function of towns

The region's communities are diverse and each town has a role and function in the region, for example:

- Murray Bridge and Berri—the key regional centres, providing a range of government and community services for the Riverland and Murraylands communities. They are also major employment hubs with a strong industry focus.
- Renmark—a strong retail focus, complementing the services economy based on the irrigation industry and other rural sectors. It also has a strong tourism focus based on settlements and water-based recreational activities. Renmark and nearby Paringa are gateways to the Riverland for interstate visitors.
- Loxton and Waikerie—service economies based on the irrigation industry and other rural sectors, with Loxton also expanding its service role to the nearby Australian Zircon mine at Mindarie. Both towns have a strong tourism focus.
- Mannum and other river towns such as Barmera, Waikerie and Morgan—strong tourism roles in the region and also attracting retirees wanting a 'river change' lifestyle.
- Tailem Bend—growing industrial and transport focus, servicing the agriculture and mining industries. It is also increasingly becoming a dormitory town for Murray Bridge commuters.
- Karoonda—increasing potential to become the service town for the Mindarie mine. It is suitably placed to provide more affordable housing for the mine workers and for retiring farmers from inland areas. It could also become a dormitory town for the growing Murray Bridge workforce.

- Meningie—provides community and health services to the surrounding local areas and is a stopover point for many travellers from Adelaide to the South-East. It is also increasingly popular for retirement.
- Tintinara—services the surrounding local area. There is potential to increase its importance to the region as a broader service centre as it is on the A8 route to Melbourne, is close to Conservation Parks and other tourist attractions, and has a varied business and agricultural base
- Lameroo and Pinnaroo—service the surrounding irrigated and dry-land farming areas of the Mallee with linkages to farming enterprises in western Victoria. The towns are positioning themselves to provide affordable housing for permanent and seasonal workers as a result of the increased employment opportunities from irrigated horticulture and processing of commodities farmed in the Mallee region.

Aboriginal communities and heritage

There are several Aboriginal communities along the River Murray, with the largest at Murray Bridge. In the five years to the 2006 Census, the Aboriginal population increased by 174 people, from 1883 to 2057, which is 3.1 per cent of the region's population.

There are three prominent Aboriginal communities in the region. The small Kalparrin community is located north-east of Murray Bridge; the Ngarrindjeri people have a major settlement at Raukkan on the shores of Lake Alexandrina (Mungkuli), about 30 km north-west of Meningie; and the First Peoples of the Murray River and Mallee have a settlement at Gerard, about 20 km south-west of Berri. Raukkan is on Aboriginal Lands Trust leasehold land and has a population of about 130. Gerard has a population of about 100.

The Raukkan and Gerard communities have been preparing Land Use Structure Plans, which will provide a framework to assist them in land-use planning that is tailored to local needs, within the bounds of the plans, over a five to 10 year time frame.

The Murray and Mallee Region has many important sites and attributes of Aboriginal (for example, canoe trees, middens, and the Raukkan and Gerard community settlements) and non-Aboriginal (such as Cobdogla pumping station, Poltalloch Station and Morgan wharf) heritage. It is equally important to preserve these important artefacts and sites and increase public understanding of their significance.

There are two native title claims over the region: one from the First Peoples of the Murray River and Mallee and the other from the Ngarrindjeri. The South Australian Government and the councils in the Murray and Mallee region have started Indigenous Land Use Agreement negotiations with the First Peoples. Should agreement be reached, a simplified process for dealing with native title matters and *Aboriginal Heritage Act 1988* (SA) obligations will be put in place. Until this happens, all councils, state government departments and other land users on land affected by this Act must comply with the Act and the *Commonwealth Native Title Act 1993*—both Acts apply equally over claimed and non-claimed areas in the region.

APPENDIX 3

CONTRIBUTION OF THE PLAN TO *SOUTH AUSTRALIA'S STRATEGIC PLAN* TARGETS

During 2006, *South Australia's Strategic Plan* (SASP) update team oversaw a community engagement program to improve understanding of the plan's contents, update the community about progress toward the SASP targets, foster partnerships around the targets and obtain considered input from interest groups, community organisations and individuals about what they would like to see reflected in this whole-of-state plan. The update team consisted of 26 community leaders drawn from key government advisory boards.

The engagement program, conducted under the banner of 'Have Your Say SA' from April to June 2006 at venues across South Australia, involved 14 regional consultations ('Talking Regions'); meetings structured around the six SASP objectives ('Talking Targets'); 10 public meetings ('Community Forums'); presentations to various groups and organisations; and written submissions, including emails and a website survey. Over 1600 South Australians attended the various meetings; further, 369 written submissions were received.

At least one regional planning day was held in each of the state's seven Local Government Association (LGA) regions. Local leaders representing a wide cross-section of the community were invited.

Each meeting included the following:

- a presentation by Jeff Tryens, Executive Director, SASP Community Connection, on regional data and background information
- presentations by local leaders who could speak with authority, knowledge and experience on that LGA region's perspective on the SASP objectives and targets
- a survey of participants to gauge their perceptions of their region's strengths
- break-out sessions to consider local concerns and actions
- identification of the priority issues for the region.

On 24 January 2007, the Premier launched the update of *South Australia's Strategic Plan*, which reflected many of the suggestions raised during the community engagement program. Copies are available online at <www.saplan.org.au>.

The following is a summary of the 'Talking Regions' session held by the SASP update team in Murray Bridge in May 2006 to identify priorities for the Murray and Mallee region relating to SASP and to gather ideas about how SASP could be improved.

The issues raised in this session were also considered in the preparation of the *Murray and Mallee Region Plan*. Table 3.1 shows the linkages between the Plan's principles and the SASP targets.

The process of applying SASP to the Murray and Mallee region was completed in 2008.

REGIONAL PRIORITIES FOR THE MURRAY AND MALLEE REGION

'Talking Regions' held at Murray Bridge on 18 May 2006

Attendees: 80

The participants expressed the view that the region is relatively strong in most aspects of SASP; is pro-growth; is export-focused with innovative businesses; has healthy residents; and has safe, civic-minded communities with a strong sustainability ethic.

The participants identified the following priority areas for the region:

- infrastructure
- education
- biodiversity
- business development
- regional public transport
- growth management
- housing to match employment growth
- health issues
- planning and decision-making that is appropriate to the region.

For the full transcript of the day-long consultation, see <www.saplan.org.au/images/talkingregions/murray%20bridge.doc>.

Table 3.1 – Linkages with *South Australia's Strategic Plan*

***Murray and Mallee Region Plan* Principles**	***South Australia's Strategic Plan* Target**
ENVIRONMENTAL AND CULTURAL ASSETS	
1. Recognise, protect and restore the region's environmental assets	T3.1 Lose no species; T3.2 Land biodiversity; T3.4 Marine biodiversity; T3.7 Ecological footprint; T3.9 Sustainable water supply; T3.10 and T3.11 River Murray
2. Create conditions for the region to become resilient to the impacts of climate change	T3.5 Greenhouse gas emissions reduction; T3.7 Ecological footprint; T3.9 Sustainable water supply; T3.12 Renewable energy; T3.13 and T3.14 Energy efficiency—dwellings and government buildings
3. Protect people, property and the environment from exposure to hazards	T2.4 Healthy South Australians; T2.7 Psychological wellbeing
4. Identify and protect places of heritage and cultural significance, and desired town character	T1.15 Tourism industry; T2.7 Psychological wellbeing; T6.1 Aboriginal wellbeing; T5.9 Regional population levels
ECONOMIC DEVELOPMENT	
5. Protect and build on the region's strategic infrastructure	T1.1 Economic growth;T1.21 Strategic infrastructure; T1.14 Total exports; T3.12 Renewable energy
6. Retain and strengthen the economic potential of primary production land	T1.10 Jobs; T 1.14 Total exports
7. Reinforce the region as a preferred tourism destination	T1.10 Jobs; T1.15 Tourism industry
8. Provide and protect serviced and well-sited industrial land to meet projected demand	T1.1 Economic growth; T1.5 Business investment; T1.21 Strategic infrastructure; T1.14 Total exports
9. Focus commercial development in key centres and ensure it is well sited and designed	T1.5 Business investment; T1.21 Strategic infrastructure; T3.9 Sustainable water supply

Murray and Mallee Region Plan Principles	*South Australia's Strategic Plan* Target
POPULATION AND SETTLEMENTS	
10. Strategically plan and manage town growth	T1.21 Strategic infrastructure; T3.7 Ecological footprint; T5.9 Regional population levels; T3.8 Zero waste
11. Design towns to provide safe, healthy accessible and appealing environments	T2.4 Healthy South Australians; T2.7 Psychological wellbeing; T2.8 Statewide crime rates
12. Provide land for a supply of diverse, affordable and sustainable housing to meet current and future needs	T5.9 Regional population levels; T6.7 Affordable housing; T6.8 Housing stress; T6.9 Aboriginal housing; T6.10 Housing for people with disabilities; T1.24 Overseas migration

APPENDIX 4
RELATED REPORTS, STRATEGIES AND PLANS

Various plans, strategies and research have been considered during the development of the *Murray and Mallee Region Plan*. Many of these documents were developed in consultation with industry and the local community. The detailed research and analysis contained in these documents underpin and complement the Plan.

Australian Bureau of Statistics (ABS) (2007) *2006 Census of Population and Housing* data

Australian Pork Limited (2004) *National Environmental Guidelines for Piggeries*

Coast Protection Board (2003) *Coastline: A Strategy for Implementing CPB Policies on Coastal Acid Sulphate Soils in South Australia*, Government of South Australia

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CSIRO (2006) *Lower Murray Landscape Futures Year Two Progress Report*.

Development Plans for the Rural City of Murray Bridge, district councils of Coorong, Karoonda East Murray, Southern Mallee and Loxton Waikerie; and councils of Mid Murray, Renmark Paringa and Berri Barmera

Department for Environment and Heritage (DEH) (2001) *Biodiversity Plan for the South Australian Murray–Darling Basin—Summary*, Government of South Australia

DEH (2004) *Blueprint for the South Australian Representative System of Marine Protected Areas*, Government of South Australia

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DEH (forthcoming) *Estuaries Policy and Action Plan for South Australia*, Government of South Australia

DEH (2003) *Heritage Directions—A Future for Built Heritage in South Australia*, Government of South Australia

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DEH (2004) *Personal Watercraft—Discussion paper*, Government of South Australia

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(DWLBC) (2006-7) *River Murray Water Resources Reports, Issues 1–5*, Government of South Australia

(DWLBC) (2004) *River Murray Wetlands Baseline Survey*, prepared by SKM for River Murray Catchment Water Management Board, Government of South Australia

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Dynamic Project Delivery (2009) *Murraylands Integrated Regional Strategic Tourism Plan 2009–2013*, Murraylands Regional Development Board

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Environment Protection Authority (EPA) (2007) *Code of Practice for Facilities and Vessels on Inland Waters*, Government of South Australia

EPA (2006) *Code of Practice for Vessels Management*, Government of South Australia

EPA (2007) *EPA Guidelines: Environmental Management of Landfill Facilities (Municipal Solid Waste and Commercial and General Waste)*, Government of South Australia

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GLOSSARY

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Acid sulfate soils	The common name given to naturally occurring soils containing iron sulfides (predominantly pyrite). When exposed to oxygen due to drainage, excavation or disturbance, they produce sulfuric acid and trigger the release of iron, aluminium and heavy metals. Once mobilised, the acid and minerals can kill vegetation, destroy building materials and seep into wetlands, killing fish and other aquatic organisms.
Affordable housing	Affordable housing is housing that is appropriate to the needs of households with low and moderate incomes (that is, up to 120 per cent of gross annual median income). The indicative affordable house purchase price for these groups—currently $225,000—is determined by the affordability indicators gazetted on 8 October 2009 (p. 4818) or as amended from time to time under the *Development Act 1993* and South Australian Housing Trust (General) Regulations 1995.
Biodiversity	The variety of life in all its forms and at all levels of organisation, as well as the ecological and evolutionary processes through which genes, species and ecosystems interact with one another and with their environment.
Climate change	A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer (*The Garnaut Climate Change Review*, 2008).
Community Structure Plan	Community Structure Plans provide a strategic framework for the consideration of land-use planning and development in Aboriginal communities, which are generally in unincorporated (out of council) areas in rural or remote parts of the state. They are non-statutory documents intended to guide decision-making by the landholding authority, the community and the development authority.
Community Wastewater Management System (CWMS)	A system or scheme that is installed and operated by an individual council for the collection, treatment and disposal (including by recycling) of wastewater.
Density	Density is a measure of the population (persons) or the number of dwelling units in a given area.
Development Plans	Development Plans should seek to promote the provisions of the Planning Strategy and may set out to include planning or development objectives or principles. They are the principal document in South Australia used to assess development.

Employment lands	Concentrated areas where people are employed on a full- or part-time basis in a wide range of employment industry categories including: agriculture; mining; electricity; construction; wholesaling; communication; finance; property; government; cultural and personal services; education, health and community services; manufacturing; retailing; accommodation; and cafes and restaurants.
Freight corridors	Road or rail corridors for the movement of freight.
Greenhouse gas emissions	Polluting carbon substances released into the atmosphere.
Growth areas	Areas identified for urban expansion that will be subject to further intensive investigations and public consultation.
Indigenous Land Use Agreement (ILUA)	An Indigenous Land Use Agreement is a voluntary agreement between a native title group and others for the use and management of the land and/or water covered by the agreement.
ICT	Information and communication technology.
Intermodal	The movement of goods in one and the same loading unit or road vehicle, which uses successively two or more modes of transport without handling the goods themselves in changing modes. By extension, the term 'intermodality' has been used to describe a system of transport whereby two or more modes of transport are used to transport the same loading unit or truck in an integrated manner, without loading or unloading, in a door-to-door transport chain.
Mixed uses	Mixed uses include a combination of major land-use types, such as residential, retail, office, commercial, civic and light industrial.
Murraylands Planning and Development Area	The area extending from the southern River Murray through the Mallee to the Victorian border and south to the Coorong. Major towns include Morgan, Blanchetown, Mannum, Murray Bridge, Tailem Bend and Meningie. The area will be superseded by the Murray and Mallee Region with the gazetting of this Plan.
Riverland Planning and Development Area	The area extending from Blanchetown in the west to the Victorian border in the east, and from the Riverland Biosphere Reserve in the north to the south dry-land farming areas. Major towns include Waikerie, Barmera, Berri, Loxton and Renmark. The area will be superseded by the Murray and Mallee Region with the gazetting of this Plan.

Rural living	The area extending from Blanchetown in the west to the Victorian border in the east, and from the Riverland Biosphere Reserve in the north to the south dry-land farming areas. Major towns include Waikerie, Barmera, Berri, Loxton and Renmark. The area will be superseded by the Murray and Mallee Region with the gazetting of this Plan.
Salt interception schemes (SIS)	Schemes intended to reduce the salinity level of water in the River Murray. In general they work by capturing saline groundwater using deep interception bores and pumping it into a disposal basin.
Site contamination	Site contamination exists if introduced chemical substances are present on or below the surface of a site in concentrations above background concentrations that result in actual or potential harm to human health, the environment or to water (surface or underground).
Strategic Management Plans	The *Local Government Act 1999* requires councils to apply a strategic approach in all actions they undertake through the preparation of Strategic Management Plans. These plans articulate council goals and objectives and the vision for the community and are intended to complement the regional volumes of the South Australian Planning Strategy.
Structure Plan	A Structure Plan describes the broad development outcomes that the State Government wants to achieve in a growth area.
Water demand	Water demand is taken to be the measurement of all water uses in the region from all water sources for the purposes of essential human needs, the economy and the environment.
Water infrastructure	Water infrastructure includes treatment systems (including wetlands), pumps, pipelines, storages (including aquifers) and other natural or constructed means of transferring water of appropriate quality from its source to the demand point.
Water security	Water security has been taken to mean the availability of an appropriate quantity of water at an appropriate quality to meet the needs of the community. This includes the provision of potable and fit-for-purpose water supplies, collection and treatment of wastewater and the management of stormwater and groundwater resources.

Water-sensitive urban design (WSUD)	Water-sensitive urban design (WSUD) is an approach to urban planning and design that integrates the management of the total water cycle into the urban development process. It includes: ■ the integrated management of groundwater, surface run-off (including stormwater), drinking water and wastewater to protect water-related environmental, recreational and cultural values ■ the storage, treatment and beneficial use of run-off ■ the treatment and re-use of wastewater ■ using vegetation for treatment purposes, water-efficient landscaping and enhancing biodiversity ■ using water-saving measures inside and outside domestic, commercial, industrial and institutional premises to minimise requirements for drinking and non-drinking water supplies. WSUD incorporates all water resources, including surface water, groundwater, urban and roof run-off, and wastewater.