

# Kangaroo Island Plan

A volume of the South Australian Planning Strategy



January 2011



Government of South Australia  
Department of Planning  
and Local Government



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A volume of the South Australian Planning Strategy

This document is the *Kangaroo Island 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

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**Government of South Australia**

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ISBN 978-0-7590-0132-9

FIS 23122





## MINISTER FOR URBAN DEVELOPMENT AND PLANNING

### A message from Paul Holloway

Kangaroo Island's international reputation far exceeds its relatively small size—just 4400 square kilometres—and modest population.

Renowned for its pristine environment, abundant wildlife and unique food products, the island attracts thousands of visitors from Australia and overseas each year.

As we begin 2011, Kangaroo Island is ready for economic and population growth.

Much of this growth is already occurring in the primary production sector, with great potential to further expand high-value crops and niche agricultural products and to build on the island's 'clean, green' attributes.

Tourism, too, is growing with new investment in accommodation, services and infrastructure. The challenge is to balance this growth with protection of the natural and cultural features that make Kangaroo Island so special.

Now, for the first time in its history, Kangaroo Island has a dedicated volume of the South Australian Planning Strategy to guide land use and development. The *Kangaroo Island Plan*, together with seven other regional volumes in the Strategy, provides a dynamic spatial expression of South Australia's Strategic Plan (SASP).

In line with the SASP objective of maintaining the regions' share of the state's population, the *Kangaroo Island Plan* adopts a target that will help sustain steady economic growth through to 2036.

To ensure the greatest benefit for current and future residents, the Plan indicates where new housing, industry and commercial activity should be best located (and not located), outlines the different roles and functions of towns and settlements, and addresses issues such as the interface between industrial, commercial and residential areas.

The Plan also identifies the potential effects of growth and climate change on the island's environmental assets, including unique ecosystems and biodiversity, and sets out land-use principles and policies to guide development that will support the protection and management of those critical assets.

The *Kangaroo Island Plan* is the result of close collaboration among representatives from state government, the Kangaroo Island council, regional development and natural resources management bodies, communities and industries.

Realising the objectives of the Plan during the next three decades will require a continuing community-wide approach and commitment to maximising the island's liveability, competitiveness, sustainability and resilience in the face of a carbon-constrained future.

**Paul Holloway**

Minister for Urban Development  
and Planning



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# OVERVIEW

## Chapter A



# OVERVIEW

## Chapter A

### Background

The *Kangaroo Island Plan* (the Plan) guides future land use and development on Kangaroo Island.

It has been prepared by the State Government, through the Department of Planning and Local Government (DPLG), in collaboration with the Kangaroo Island Development Board<sup>1</sup>, the Kangaroo Island Natural Resources Management Board and the Kangaroo Island Council.

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

### The role of the South Australian Planning Strategy

The *Kangaroo Island 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: Kangaroo Island, Eyre and Western, Far North, Limestone Coast, Murray and Mallee, Yorke and Mid North<sup>2</sup> (see Map A1).

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

In the regional volumes the State Government gives direction on land use and development for the period 2010–2036. The regional volumes set out how the government proposes to balance population and economic growth with the need to preserve the environment and protect the heritage, history and character

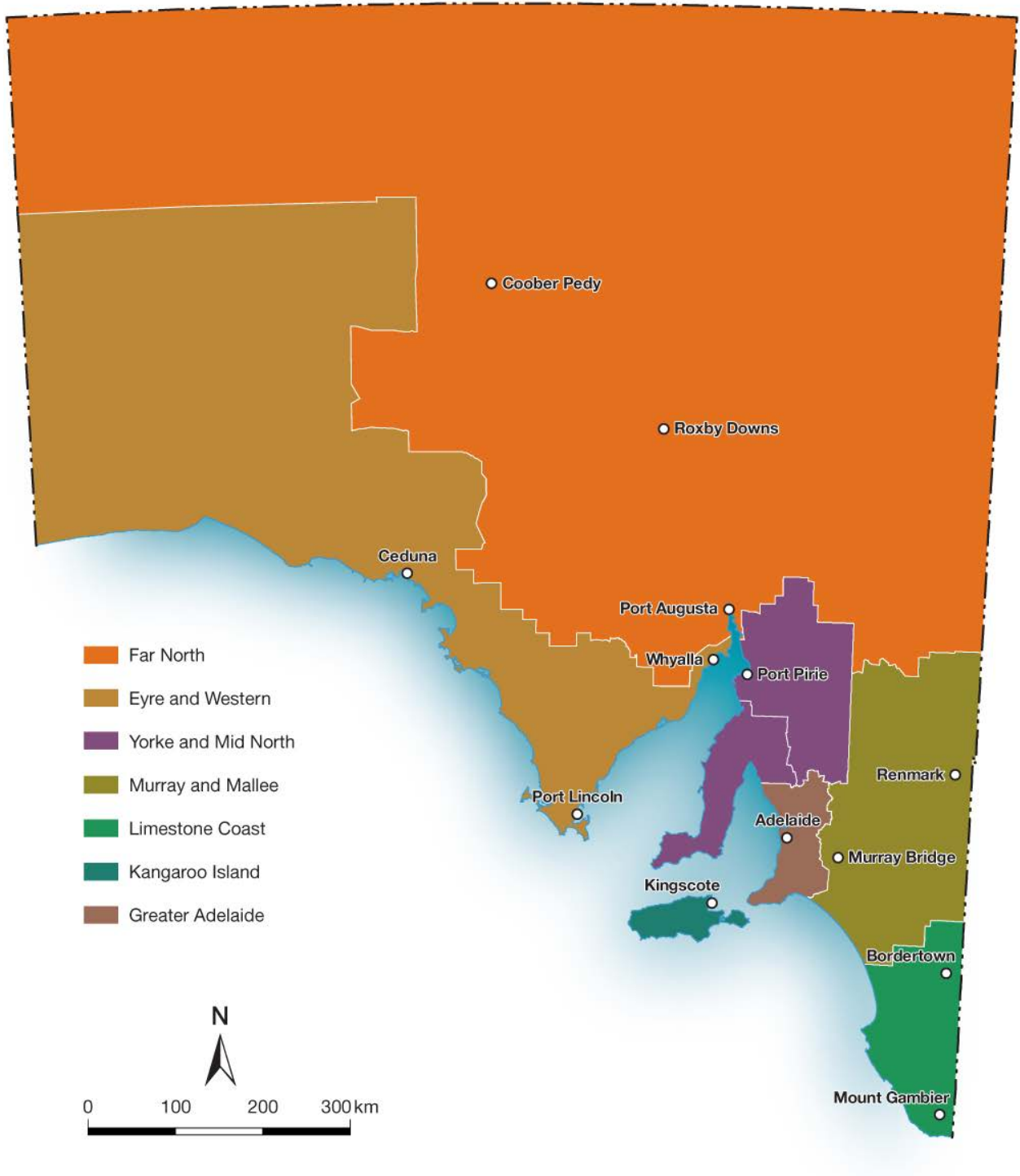
of regional communities. They also outline where people are likely to live and the projected make-up of the population so that state and local government agencies can plan for the provision of services and infrastructure, such as transport, health, schools, and aged care and community facilities.

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 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, Port Augusta, Port Lincoln, Port Pirie and Whyalla, flow from the regional volumes.

<sup>1</sup> The Kangaroo Island Development Board became part of Regional Development Australia Adelaide Hills, Fleurieu and Kangaroo Island in 2009–10.

<sup>2</sup> The Yorke and Mid North regions are currently covered in the South Australian Planning Strategy as separate volumes. They will eventually be combined into one volume.





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 the strategy's 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.

### 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.

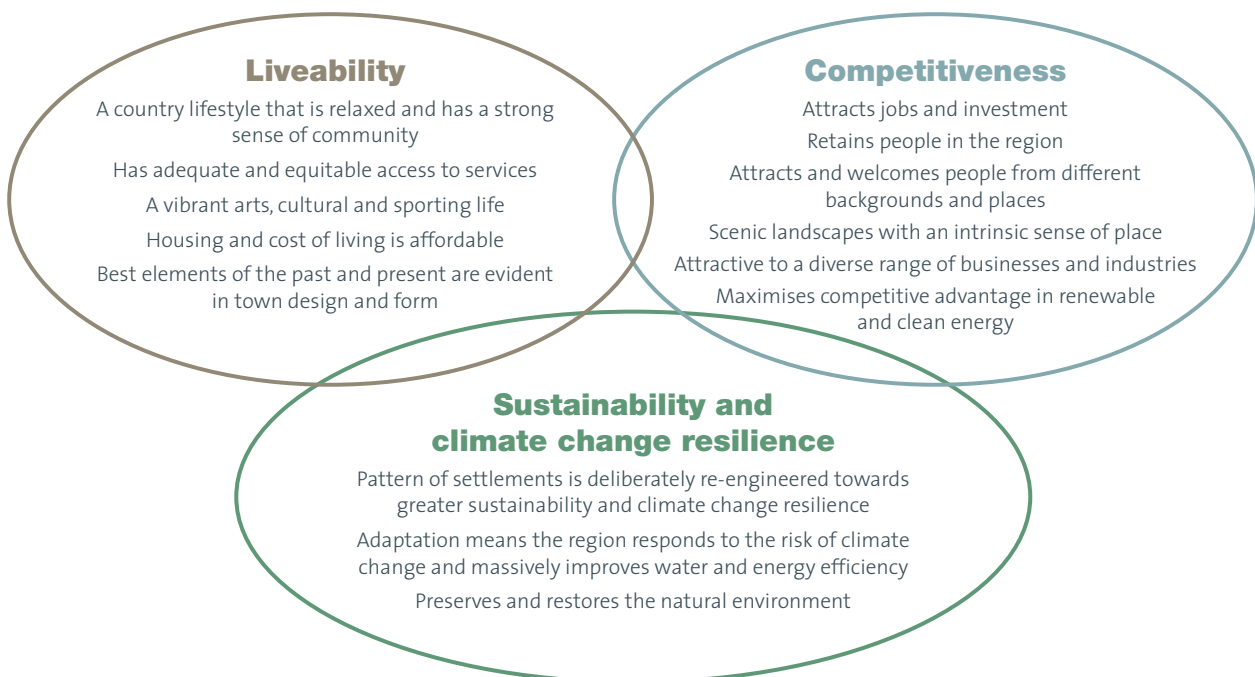
Figure A1 shows how these three objectives interrelate.

### 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 regional volumes support the achievement of a range of social, economic and environmental targets in *South Australia's Strategic Plan*. Second,

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







they feed into the *Strategic Infrastructure Plan for South Australia* (2005) 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 Plan* (2006), the regional natural resources management plans (2009) and *South Australia's Waste Strategy* (2005).

### **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 Kangaroo Island 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.

### **Planning for change in regional South Australia**

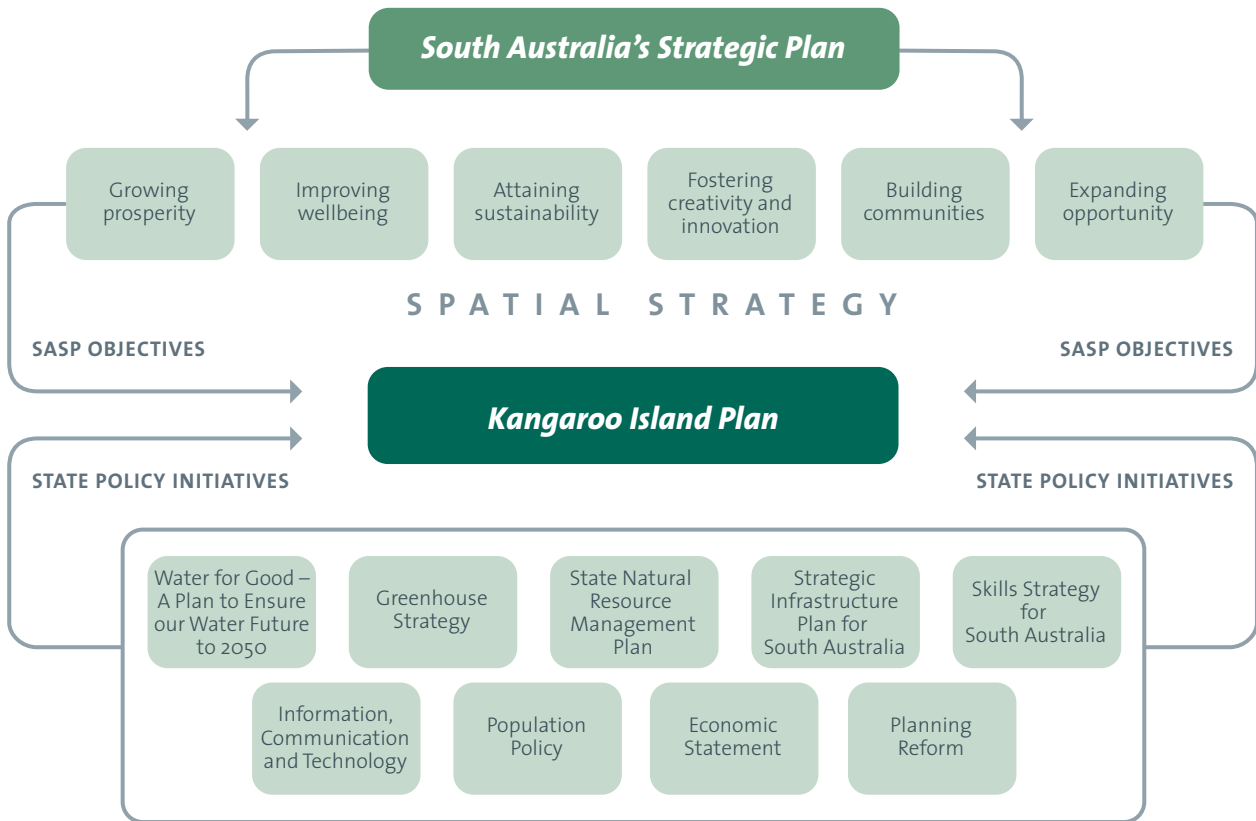
The regional volumes of the South Australian Planning Strategy set out land-use policies to manage the changes that are forecast to occur across the regions. Of particular concern are changes in population and climate, which are having, and will continue to have, significant impact on the demand for 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 also targeted to grow.

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.

Figure A2 – The Kangaroo Island Plan’s relationship with key state government policies





*South Australia's Strategic Plan* (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 (that is, an increase of 1.03 per cent per year).

Assuming the average annual growth rate required to achieve Target T5.9 applies to Kangaroo Island, the population would increase by 1510, or 56 people per year, by 2036. This would result in a target population of 6040.

While overall population numbers in regional areas of the state 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 fewer than 1000 people (with the exception of coastal communities). Changes to population distribution are being driven by the restructuring of farming enterprises into larger holdings, 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.

To achieve the SASP workforce targets, the South Australian Government, through the Department of Further Education, Employment, Science and Technology, is working with industry to develop workforce action plans in the mining, defence, construction, health, and advanced manufacturing sectors. As well, industry skills boards are developing workforce development plans to address the demand for labour and skills in industries that have lost workers to mining.

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



## Climate change

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

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 governments 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*, and 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 are able to 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 regions (for example, individual towns and council areas) that will lead to a sustainable future for the regions.

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

### Kangaroo Island at a glance

Kangaroo Island covers an area of 4400 square kilometres and has a circumference of about 480 kilometres. It is 155 kilometres long and up to 55 kilometres wide and, at its highest point, is about 300 metres above sea level.

Of the 4500 residents on the island, almost 40 per cent live in Kingscote. The remainder predominantly live in or around the towns of Parndana, Penneshaw and American River, and the settlements of Baudin Beach, Brownlow, Cygnet River, Emu Bay, Nepean Bay, Island Beach and Vivonne Bay.

The island's economy is dominated by a diverse range of primary production activities (including cropping, grazing, horticulture, forestry, fishing and aquaculture) and value-added products such as wine, cheese, marron, olive oil, free-range chickens and Ligurian honey. The island's clean, green reputation underpins these industries.

Kangaroo Island is also a popular destination for local, national and international visitors. Only 15 kilometres from the South Australian mainland, the island offers opportunities to see wildlife (including rare species) in natural habitats, spectacular coastlines and bush landscapes, and to enjoy a rural experience shaped by the island's isolation, small population and heritage.

During 1996–2008 the island had a slightly higher annual growth rate than regional South Australia overall—about 0.59 per cent a year compared to 0.17 per cent—which resulted in an estimated resident population (ERP) of 4536 by 2008. At this rate the island would have a population of 5348 by 2036; however, at 1.03 per cent a year (the rate required to meet the SASP regional population target), the population would reach 6043 by 2036.

See Appendix 2 for detailed information about Kangaroo Island, including its population distribution, economy and infrastructure.



## Key issues for Kangaroo Island

The following issues were identified as critical to the island's future by local government, industry groups and communities during consultations in 2008–09. The issues, which are key drivers for the *Kangaroo Island Plan*, are grouped under four themes:

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

### Environment and culture

- Protecting and preserving the island's environmental assets, including National and Conservation Parks, native vegetation, coastal and marine environments, and water resources
- Planning for the impacts of climate change on agricultural production and development in low-lying coastal areas vulnerable to rising sea levels and storm surges
- Minimising risks to property and people, especially in low-lying coastal areas subject to erosion and flooding
- Encouraging the sustainable use of groundwater resources by developing strategies to re-use stormwater and wastewater
- Appropriately locating development such that it does not adversely impact on scenic landscapes
- Supporting appropriate water-use planning to ensure there are equitable water supplies for environmental, industrial and urban needs.

### Economic development

- Supporting the development and diversification of primary industries, as well as their sustainable adaptation to climate change
- Encouraging value adding in the development of high-end tourist accommodation
- Encouraging new horticultural development and support the development of value-chain activities
- Attracting and retaining a highly skilled and flexible workforce to ensure a stronger economic base
- Attracting industry, particularly where there is infrastructure capacity for growth (for example, electricity, roads and shipping).



### Population and settlements

- Valuing the strong sense of community spirit and close affinity with the island
- Discouraging ad hoc residential development outside towns and maintain the towns' character and heritage
- Addressing the needs of an ageing population by developing a range of housing alternatives around existing health and community services in the main towns, especially Kingscote
- Ensuring an adequate supply of residential land is available for future development, including maximising the use of surplus farm houses resulting from farm amalgamations
- Managing coastal town growth to avoid inefficient linear development
- Encouraging the development of affordable housing in locations that support employment industries, particularly in the western part of the island.

### Infrastructure and service provision

- Considering the implications of seasonal population fluctuations and tourism for services and infrastructure provision
- Encouraging investment in infrastructure to support economic and population growth
- Improving public transport availability and access to health services, which are critical issues, particularly for the ageing population
- Increasing the capacity of water infrastructure and community wastewater management systems (CWMS) to support population and tourist growth and industry expansion
- Expanding the local generation of electricity through wind, solar and wave farms to enable greater capacity for economic activity
- Exploring opportunities to develop biofuels from locally sourced primary produce
- Retaining and making the best use of existing and planned infrastructure assets, including freight transport, hospital and aged care facilities, and coastal recreational facilities
- Ensuring development supports centres with existing infrastructure and services, such as Kingscote, Penneshaw, American River and Parndana, to better service the wider rural population
- Extending and upgrade access to broadband and mobile phone services across the island to support industry and expand distance education opportunities
- Supporting development and maintenance of social and community facilities, including sporting, education, health and other facilities to service the local population.





# THE VISION FOR KANGAROO ISLAND

## Chapter C



# THE VISION FOR KANGAROO ISLAND

## Chapter C

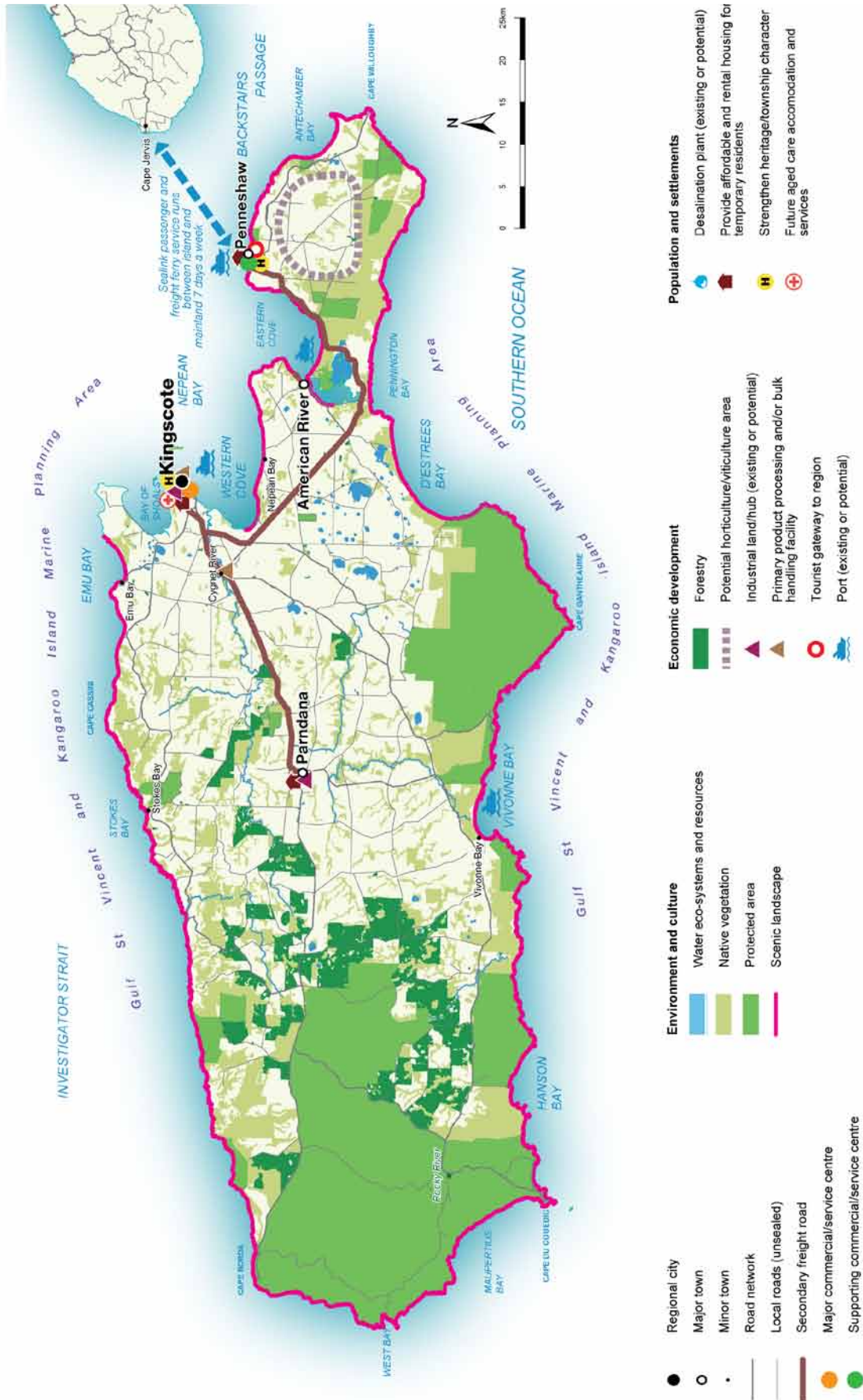
### An integrated approach

The *Kangaroo Island Plan* is a coordinated and integrated vision for land use and development across the island. It responds to the opportunities and challenges facing the island and identifies the planning priorities, principles and policies necessary to achieve the vision (refer to map C1).

The Plan allows for communities to develop and grow, and encourages initiatives that help retain the special qualities of Kangaroo Island 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 island. It recognises the island'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:

- strengthen the role of the main towns
- ensure sustainable coastal development
- protect natural and industry assets
- expand the role of active, nature-based tourism, particularly in coastal locations
- maintain and strengthen primary production in appropriate areas
- ensure an appropriate and well-located supply of residential, commercial and industrial land to support growth
- retain the built and natural heritage in and around towns and settlements.











# PRINCIPLES AND POLICIES

## Chapter D



# PRINCIPLES AND POLICIES

## Chapter D

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

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

Under each theme the Plan identifies:

- planning-related priorities<sup>3</sup> for the Kangaroo Island Council (and the Minister in out-of-council areas) to consider when developing the Strategic Management Plan and updating the Kangaroo Island Development Plan (the Development Plan)
- principles to guide land-use planning and development
- planning-related policies that give ongoing direction to the council (and which must be reflected in the Development Plan).

While the policies and priorities of the Kangaroo Island Plan may change over time, the principles will be a constant driving force for future generations to ensure the island is competitive, liveable, sustainable and resilient to climate change.

The contributions of these principles to South Australia's Strategic Plan targets are described in Appendix 3.

<sup>3</sup> These priorities were identified during consultation on the draft *Kangaroo Island Plan* during March to May 2009.



### The principles are:

- 1** Recognise, protect and restore Kangaroo Island's environmental assets
- 2** Protect people, property and the environment from exposure to hazards
- 3** Identify and protect places of heritage and cultural significance, and desired town character
- 4** Create the conditions for the island to adapt and become resilient to the impacts of climate change
- 5** Protect and build on the island's strategic infrastructure
- 6** Retain and strengthen the economic potential of the island's primary production land
- 7** Strengthen local commercial fishing and aquaculture industries
- 8** Reinforce the island as a preferred tourism destination
- 9** Provide and protect serviced and well-sited industrial land to meet projected demand
- 10** Ensure commercial development is well sited and designed to support the role and function of towns
- 11** Strategically plan and manage the growth of towns
- 12** Design towns to provide safe, healthy, accessible and appealing environments
- 13** Provide 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

Kangaroo Island's environmental and cultural assets—underpinned by a range of existing plans, strategies and agreements—play essential roles in guiding its future development. 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 design, siting and management of 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 and bushfires.

Sustainable levels of demand for water and energy are also essential, particularly considering the effects of climate change.

Several organisations have policies to guide the management of the environment, particularly the *Kangaroo Island Natural Resources Management Plan* (2009); Environment Protection Authority (EPA) policies, codes of practice and guidelines; the *Living Coast Strategy for South Australia* (2004); *Coast Protection Board Policy Document* (2004); *No Species Loss: A Nature Strategy*

*for South Australia 2007–2017; Tackling Climate Change: South Australia's Greenhouse Strategy 2007–2020*; the *Wetlands Strategy for South Australia* (2003); *Water for Good—A Plan to Ensure our Water Future to 2050*; the *Marine Planning Framework for South Australia*; and the Marine Protected Areas program.

The *Kangaroo Island Plan* seeks to ensure that future land-use directions complement these documents. It therefore contains land-use principles and policies to guide development in a manner that:

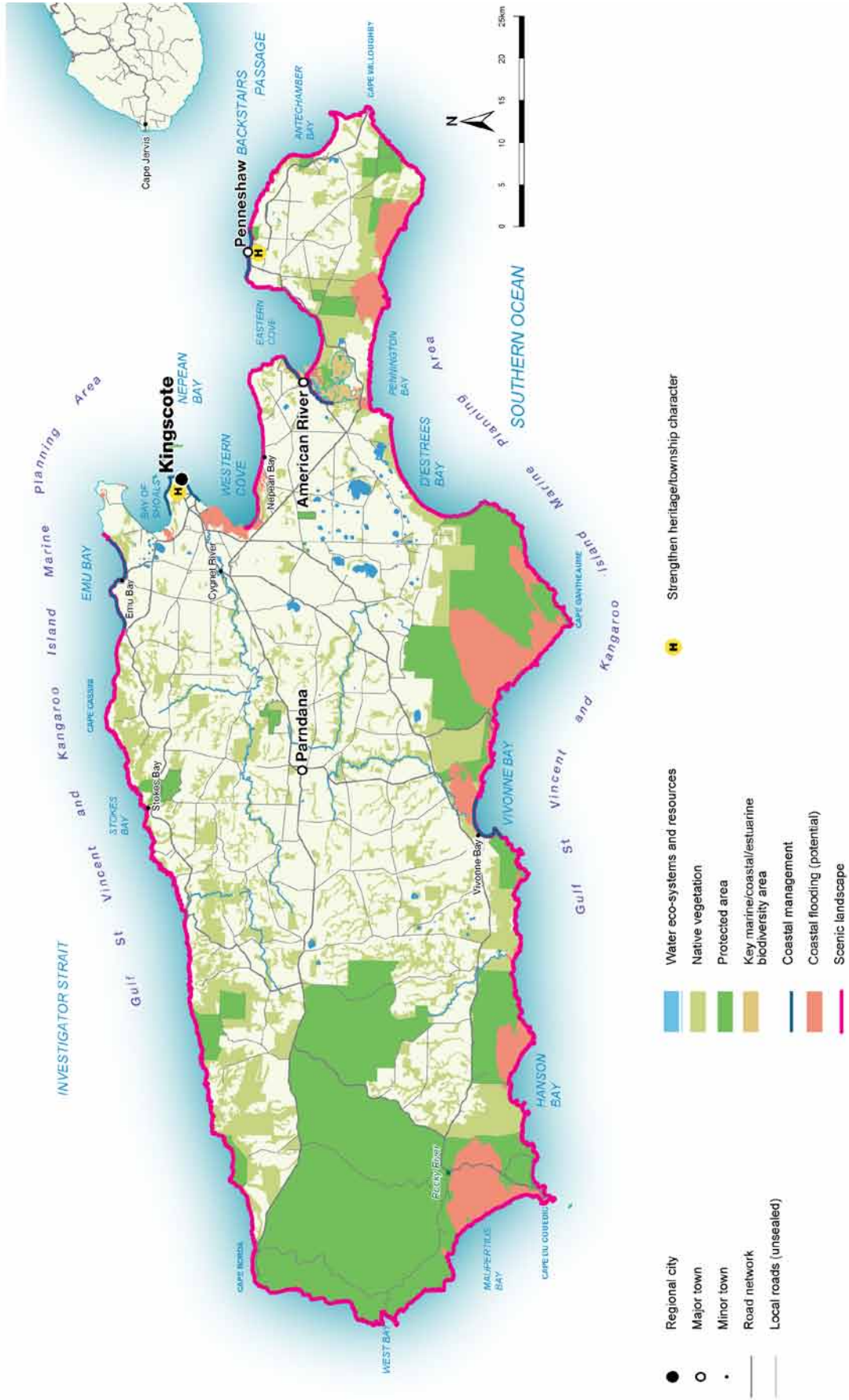
- protects biodiversity and areas of environmental sensitivity, including coastal areas
- supports the management of the island's natural resources
- prepares the island for the impacts of climate change
- ensures that development appropriately responds to hazards and risks
- helps preserve the island's heritage (both Aboriginal and non-Aboriginal).

## Priorities for councils

- Establish and/or review coastal zones in the Development Plan in conjunction with planning the growth of coastal towns and settlements

- Incorporate information from environmental studies (for example, on biodiversity, the effects of climate change and dry-land salinity) to inform the review and updating of the Development Plan, including identifying areas of high biodiversity value
- Further understanding of the impacts of climate change on natural resources and habitats on the island to inform strategic planning for development and land use
- Maintain local heritage registers and identify heritage listed sites in the Development Plan
- Prevent an over-commitment of water resources by undertaking investigations to determine sustainable limits of water use (particularly on expanding industries such as commercial forestry), and use this information to inform the Development Plan
- Protect native ecosystems and current industries from incursions of pests and diseases not already present on the island
- Undertake hydrological investigations and management actions for Kangaroo Island catchments to assess the environmental impacts of current and future farm dams and forestry development.







## Principle 1

### Recognise, protect and restore Kangaroo Island's environmental assets

#### Water

The island has many water-dependent ecosystems, ranging from watercourses to wetlands and tidal estuaries on the coastline.

In most of Kangaroo Island's rivers, surface water is plentiful in winter but confined to semi-permanent creeks and waterholes in summer until flushed out by autumn and winter rains.

Reduced rainfall in recent seasons, however, has increased the demand from landowners to install new dams or enlarge existing dams, thereby placing pressure on existing water supplies.

Dry-land salinity is also a major issue, particularly as most catchments have been cleared of vegetation to some extent. Currently about 10,000 hectares of land are affected by salinity.

The combination of diminished rainfall predicted as a result of climate change (and its associated impact on aquifer recharge rates) and SASP

population growth targets<sup>4</sup> will increase competition for available water. More efficient water use, recycling of stormwater and wastewater and other such measures are required in planning. The State Government is working with regional communities to develop regional water supply and demand plans, as outlined in *Water for Good*, and to incorporate water-sensitive urban design (WSUD) principles in the development process (see Box 1).

#### Policies

- 1.1 Protect the quality and function of water ecosystems by preventing adverse impacts of land use and development (such as overuse of resources, erosion, impeded surface and subsurface water flows, increases in acid sulfate soils, land degradation and clearing, and pollution).
- 1.2 Encourage water harvesting initiatives where ecologically appropriate.
- 1.3 Make the most efficient use of water in the built form at both house and town level, drawing on WSUD techniques.

- 1.4 Ensure development retains natural watercourses and drainage patterns through the creation of appropriate buffers and the application of WSUD principles.

#### Coastal, estuarine and marine environments

Kangaroo Island's appeal relies largely on its natural heritage, of which its coastal landscapes are identified as the most important landscape element. The island's coastal areas vary significantly, reflecting differences in geology and wind and wave patterns.

These assets are highly valued by local residents and the more than 152,000 people who visit each year. The land and water also have significance for Aboriginal people, who have historical associations with the island. Aboriginal sites and objects located near the coast, in dunes and in the waters, are protected by legislation.

Increased visitor numbers are likely to place pressure on the island's infrastructure and increase demand for accommodation and recreational facilities in coastal areas. The conservation of coastal areas will be critical to ensure fragile coastal environments, their rich biodiversity, and highly valued scenic qualities are maintained

<sup>4</sup> Target 5.9 of *South Australia's Strategic Plan (SASP)* calls for regional South Australia to maintain an 18 per cent share of the state's total population.

and preserved. Development and public access in sensitive areas should be avoided or designed to minimise their environmental impact.

The coast has great economic value, both from natural resources industries and through activities that prosper in a coastal environment. Good management of the coastal environment is essential for survival of a range of species, including some unique to the island. The protection and preservation of native flora and fauna will be vital to regenerate fish stocks for future generations of commercial and recreational anglers.

It is crucial that the natural beauty and environmental and cultural importance of water environments are protected for future generations to enjoy.

Marine plans are being progressively developed to ensure that future development and use of the marine environment is sustainable. Marine parks and aquatic reserve areas have recently been released and specific zoning plans will soon be put into operation to encompass multiple uses and activities. These marine plans and parks will complement planning strategies and need to be taken into account in the review and updating of the Development Plan.

#### 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. The 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](http://www.planning.sa.gov.au/go/wsud)>. Although the manual focuses on Greater Adelaide, many WSUD techniques can be applied on Kangaroo Island.



### Policies

- 1.5** Protect natural coastal, marine and estuarine areas of high conservation, landscape or environmental significance by limiting development in these areas. Development may require such a location in limited circumstances—for example, a tourism development of state significance—in which case the development's social and economic benefits must be shown to outweigh the environmental and amenity impacts.
- 1.6** Protect coastal features and biodiversity by establishing coastal zones (see Box 2) that incorporate:
- ▶ 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.

### Box 2—What is a coastal zone?

Coastal zones in Development Plans incorporate:

- coastal features and habitats that are highly sensitive to the direct impacts of development, including coastal dunes, coastal wetlands, samphire (tidal marsh), mangrove areas and estuaries
- important coastal geological features and other natural features of scientific, education, heritage or cultural importance
- buffers separating development from sensitive coastal habitats or important marine fauna sites
- areas where exposure to coastal hazards (such as seawater flooding or erosion) has not been addressed (for example, by a seawall or a strategy to protect development)
- coast protection measures such as erosion buffer areas, seawalls and levee banks
- high-quality coastal landscapes and land of rural character that provides a backdrop to the coast.

Areas not required to be in a coastal zone include: conservation areas that do not include coastal sensitive features and habitats; landscapes that provide a backdrop to the coast but do not include coastal features; areas where exposure to coastal hazards has been addressed; and farming or primary production land.

Source: Eyre Peninsula Local Government Association, *Eyre Peninsula Coastal Development Strategy*, 2007.



- 1.7** Integrate coastal management requirements into the Development Plan, 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 *Natural Resources Management Act 2004*.

## Biodiversity

Kangaroo Island contains some of the most intact ecosystems in the state and provides habitats for the largest number of endemic species in South Australia. The island supports a large number of unique biodiversity assets, including state and nationally threatened plants and animals.

Much of the eastern part of the island has been cleared for agriculture and many unique plant communities in this area are under threat. Of the remaining native vegetation, 64 per cent is conserved in government reserves or under vegetation heritage agreements. Nearly 30 per cent of the island is reserved under the *National Parks and Wildlife Act 1972* and the *Wilderness Protection Act 1992*.

Kangaroo Island also contains some of the least disturbed inland freshwater wetlands, primarily located on the western end. At the eastern end, dry-land salinity is posing a threat to wetlands.

The *Biodiversity Plan for Kangaroo Island South Australia* (2001) identifies two key biodiversity areas that contain 76 per cent of the island's remaining native vegetation and therefore carry significant potential for the long-term retention of biodiversity. These are the Gosse Plateau (at the western end), where 90 per cent is managed for conservation, and the South Coast, where 72 per cent is located in the protected areas system.

The ongoing management of the environment is required to ensure the protection of the island's unique natural qualities.

To protect the island's biodiversity, ecological investigations and impact assessments should be undertaken in areas that are proposed for rezoning or development. Some developments may also require assessment by the Commonwealth (see Box 3).

### Box 3 – Environment Protection and Biodiversity Conservation Act

Applicants for and proponents of developments may be responsible for forwarding development proposals to the Commonwealth Environment Minister. The Minister is responsible for determining if the action is a controlled action, under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth), and subject to assessment and approval processes under that Act.



### Policies

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

- ▶ **areas of high environmental significance**, including protected public lands (such as National Parks and Conservation Parks), private/public lands under a Heritage Agreement, and land containing high-value native vegetation. 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, but also support biodiversity because the uses 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 the Development Plan and existing legislation.

**1.9** Recognise areas of high biodiversity value, and locate and design development to prevent the loss, degradation and/or fragmentation of native vegetation and any loss of species and/or ecological communities.

**1.10** Provide for environmental connections to link areas of high biodiversity value and create buffers as a means of managing the interface with conservation areas.

**1.11** Avoid any impact on biodiversity, where possible; if impact is unavoidable, it 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. The offsets could be made across regions or by funding designated rehabilitation programs. The scheme will also encourage carbon offsets.

**1.12** Identify and ensure the protection of new areas of conservation significance.

## Scenic landscapes

Attention should be given to the planning and design of development to ensure that significant landscapes and associated views—both from the land and the sea—are retained. The incremental approval of individual developments, including minor additions and maintenance activities, has resulted in the degradation of scenic resources in the past. It is important that Development Plan updates reassess landscapes and associated views and devise measures to ensure their protection.

The Coastal Viewscapes of South Australia study undertaken for the Department for Environment and Heritage (DEH)<sup>5</sup> identifies coastal areas on the island that have a 'high coastal scenic quality'. Similar work could be undertaken to determine important non-coastal landscapes and to incorporate these into the Development Plan.

## Policies

- 1.13** Acknowledge, protect and manage areas of significant landscape and amenity value (particularly coastal—see 'Scenic landscape' areas on Maps C1 and D1) and areas that form attractive backgrounds and entrances to towns and tourist developments.
- 1.14** Avoid development in areas with significant landscapes that can be viewed from tourist routes, walking trails, the beach or the sea, unless the development requires such a location (such as a development of state significance), in which case the scale, height, design and siting of buildings must:
- ▶ protect views to, from and along the ocean and scenic coastal areas
  - ▶ minimise the alteration of natural landforms
  - ▶ be visually compatible with the character of surrounding areas
  - ▶ restore and enhance visual quality in visually degraded areas, where feasible.
- 1.15** Avoid adverse impacts of development on landscapes through site selection and design alternatives. Note that landscape screening to mitigate the visual impacts of development is not a substitute for re-siting or re-design.

<sup>5</sup> DEH became the Department of Environment and Natural Resources (DENR) in June 2010.



## Principle 2

### Protect people, property and the environment from exposure to hazards

Hazards include flooding, erosion, disturbance of acid sulfate soils, bushfires, salinity, landslides, and water, air and noise pollution and site contamination. They can occur naturally or as a result of development activity. Inappropriately located or designed development and land uses can increase the exposure to, and impact of, hazards. The potential impacts of climate change, such as sea level rise, storm surges and extreme weather events, are likely to increase the risk of hazards in affected locations.

Better development planning and control measures can help to reduce risks and hazards but cannot eliminate them.

#### *Policies*

- 2.1** Design and plan development to prevent the creation of hazards and to avoid naturally occurring hazards.
- 2.2** Decrease the risk of loss of life and property from extreme bushfires through the creation of buffers around new growth areas that are adjacent to native bushland.
- 2.3** Develop other policies to minimise the impact of extreme bushfires in line with the findings of the 2009 Victorian Bushfires Royal Commission.
- 2.4** Develop partnerships and agreements between state and local government (particularly with emergency services agencies) to address identified risks and hazards and protect the health and wellbeing of the community.
- 2.5** Integrate adaptation to climate change and disaster risk reduction and hazard avoidance policies, standards and actions into strategic plans, the Development Plan and development assessment processes using best practice models to:
  - ▶ reduce the social, environmental and economic impacts arising from extreme events
  - ▶ 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
  - ▶ reduce risks and protect natural areas and biodiversity
  - ▶ protect human health and the environment where contamination is identified to have 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.



**2.6** 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:

- ▶ Protection—establish works to protect existing development or facilitate major development (including stormwater discharge management to accommodate higher tide levels)
- ▶ Adaptation—design buildings and infrastructure to minimise risk in the long term
- ▶ Avoidance—avoid permanent development in and adjacent to areas at unacceptable risk from hazards.

**2.7** Identify and rehabilitate areas and sites where land is contaminated as part of development processes.

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

## Principle 3

### Identify and protect places of heritage and cultural significance, and desired town character

Kangaroo Island's heritage, character and cultural places and buildings link communities with the attitudes and values that have shaped the island and its role in South Australian history. Identification and careful management of these sites can enliven history, engender a sense of identity and provide a glimpse of the past that can help guide us in the future.

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*. The latter prohibits any damage, disturbance or interference with Aboriginal sites, objects and remains without authorisation from 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 development process to help identify and protect sites of cultural significance.

## Policies

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

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

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



## Principle 4

### Create the conditions for Kangaroo Island to adapt and become resilient to the impacts of climate change

Reduced rainfall in recent years is affecting the island's agricultural and horticultural activities and reducing recharge of the island's aquifers. Climate change predictions indicate that diminished rainfall will continue to affect the island, which could have an impact on the tourism industry and economic activities, including primary production.

It will be important that the Development Plan supports the natural resources management regime, including water allocation under the *Natural Resources Management Act 2004*.

There are opportunities to make positive and long-lasting changes to the island's water management. Economically and technologically feasible measures are readily available to provide the water needed for the future. A well-managed water supply includes water efficient technologies and approaches to reduce water consumption. While not yet mandated for country areas, WSUD principles should be incorporated into all new development. It is envisaged that by 2013 South Australia will have developed and implemented the best regulatory approach in Australia to mandate WSUD, as well as specific targets.

Energy supply is limited in many parts of the island. Building design and innovative local energy supplies, including solar, wind and co-generation, can help make the best use of available and planned energy supplies (see Box 4).

Increasing industry, residential and tourism related development will place further pressures on energy and water supplies. Permanent resident population figures do not reflect the demand on local facilities made by visitors. Managing demand for water and energy use by raising awareness among residents and holiday makers, including infrequent visitors, is essential to achieving South Australia's sustainable water and energy efficiency targets.

## Policies

- 4.1** Promote carbon sequestration and greenhouse gas mitigation through land-use/management practices (for example, reintroducing vegetation and restoring habitat), taking into account climate and soil suitability and species characteristics.
- 4.2** Provide buffer areas of sufficient width to separate development from the foreshore and coastal features and to accommodate long-term physical coastal processes.
- 4.3** Provide the opportunity for town/settlement-level energy efficiency through the promotion of alternative energy supplies (such as embedded generation).
- 4.4** Provide for the development of alternative and innovative energy generation (for example, marine, biomass and geothermal technologies) and water supply facilities, as well as guidance on environmental assessment requirements.

- 4.5** Support the incorporation of sustainable energy and water supply, conservation and efficiencies (for example, stormwater re-use, wind and solar technologies, green buffers, WSUD, building orientation to maximise solar access and shaded areas) in the design of residential, commercial and industrial developments and subdivisions.
- 4.6** Increase energy efficiency of buildings through the implementation of a six-star rating for new buildings and new efficiency standards for air-conditioning in line with the COAG National Strategy for Energy Efficiency.
- 4.7** Set building standards and design guidelines to create more thermal- and energy-efficient buildings.
- 4.8** Plan for effective wastewater disposal through mains sewer and community wastewater management systems (CWMS) and maximise re-use opportunities.

#### **Box 4—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 or 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](http://www.sustainable.energy.sa.gov.au)>. The Energy Smart Toolbox, <[www.energysmart.com.au/sedatoolbox](http://www.energysmart.com.au/sedatoolbox)>, provides tools to help industry reduce energy costs.

# ECONOMIC DEVELOPMENT

## Overview

The South Australian Government is planning for an additional 1510 residents on Kangaroo Island over the next 30 years. Economic development will play a key role in facilitating this growth through providing employment opportunities. Creation of employment opportunities depends on a good supply of land for development that is not constrained by a lack of infrastructure, as well as supporting opportunities in the primary production sector.

The island's economy is based on primary production, including horticulture and viticulture, sheep meat and wool products, forestry and associated processing, fishing and aquaculture. Increasing the amount of value-adding may have potential for employment growth. Economic growth is likely to occur in existing primary production sectors; opportunities in emerging industries should also be supported.

Tourism is one of Kangaroo Island's most important industries: in 2008, about 158,000 people visited the island. Its diverse scenic landscapes—provided by primary production activities, coastal environments and geological features—have strong appeal to visitors. *The Kangaroo Island Strategic Tourism Plan*

(2006) was developed to build on the island's share of the tourism market and provide clear direction for the development of sustainable tourism.

Primary production, retail trade and tourism-related industries (retail, accommodation and food) are the largest employment sectors. In recent years there has been sustained employment growth on the island, primarily in accommodation and food service, transport and warehousing, and the services sector (public administration, education, health care and social assistance). The island already has a lower unemployment rate than the state average and is well positioned to increase jobs, particularly as the population ages.

The Kangaroo Island Development Board (now part of Regional Development Australia Adelaide Hills, Fleurieu and Kangaroo Island) and government agencies working closely with industry (including the Department for Transport, Energy and Infrastructure; the Department of Primary Industries and Resources SA; the Kangaroo Island Natural Resources Management Board; the South Australian Tourism Commission; and the Department of Trade and Economic Development) have contributed significantly to this Plan. A range of strategic plans for primary industry sectors (for

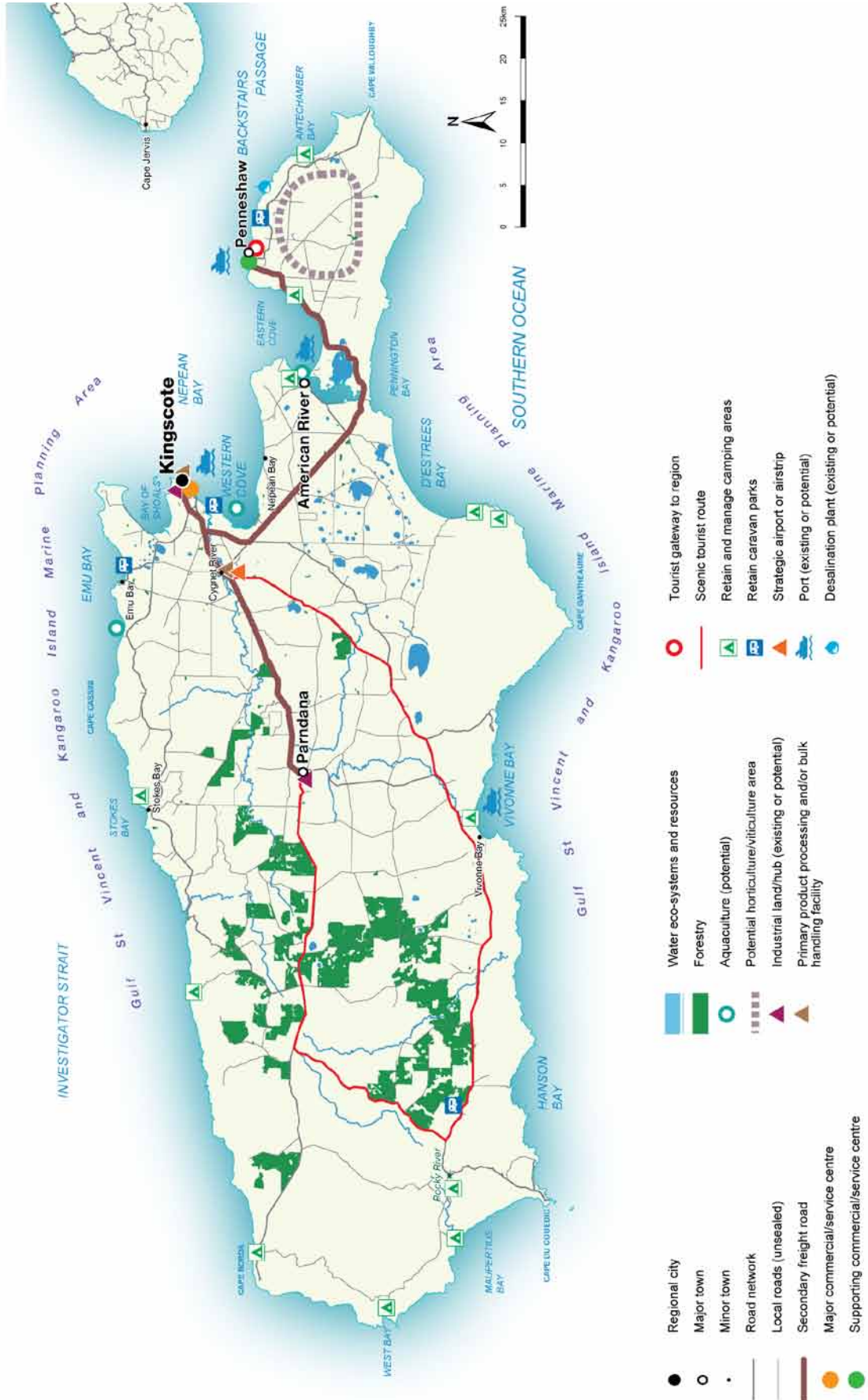
example, grains, livestock and forestry), the *Kangaroo Island Strategic Tourism Plan* and the *South Australian Food Plan 2007–2010* have also informed this Plan. The detailed Development Plan policies will also be informed by industry and relevant regional development and government bodies.

Supportive Development Plan policies, investment in infrastructure, expansion of local training opportunities and attraction of skilled labour will all be critical to realising regional economic development opportunities.

## Priorities for the council

- Reflect in local strategic planning and the Development Plan the directions of the *Kangaroo Island Strategic Tourism Plan*, which addresses positioning and branding, tourism infrastructure priorities, target markets, partnerships, and development opportunities
- Expand industrial activities in the towns of Kingscote and Parndana
- Strengthen the economic potential of primary production land and foster sustainable practices
- Identify high value agricultural lands.







## Principle 5

### Protect and build on the island’s strategic infrastructure

Maintaining and further developing competitive freight transport, storage and processing infrastructure and facilities are critically important to Kangaroo Island’s industries, particularly given the costs associated with transporting goods to markets off the island.

The island’s key infrastructure and facilities are:

- the SeaLink passenger and freight ferry service operating from Penneshaw
- the secondary freight and motor vehicle road corridor from Kingscote to Penneshaw and Penneshaw to Parndana
- the airport (services predominantly operate between Kangaroo Island and Adelaide)

#### Box 5—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.

- jetties, boat ramps and processing facilities supporting the fishing and aquaculture industries
- the sea port and associated bulk handling facilities at Kingscote
- grain silos at Kingscote and grain storage facilities close to the airport at Cygnet River
- critical sea links between primary production and processing facilities (for example, between Kingscote and Port Adelaide).

Protecting and enhancing these assets and providing for the expansion of export-related and value-adding industry near these hubs will enable capitalisation on investment in these assets, provide opportunities for more industry to move to the island, and provide support and certainty for existing industries (see Box 5).

#### **Policies**

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

- 5.2** Establish appropriate buffers to protect existing strategic infrastructure and sites and corridors identified as potential locations for future infrastructure from encroachment by land uses that may compromise their operation or expansion.
- 5.3** Reinforce the role of the Kingscote Airport to support economic and social development and to provide emergency access for the Royal Flying Doctor Service (RFDS), and protect it from incompatible development in the surrounding area.
- 5.4** Ensure land uses surrounding the airport near Cygnet River are compatible with airport operations and do not detract from its intended function.
- 5.5** 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).

## **Principle 6**

### **Retain and strengthen the economic potential of the island's primary production land**

Retaining productive primary production land across Kangaroo Island is a priority. Sheep (wool and meat), field crops and wine grapes will continue to be core industries underpinning the island's economy. Forestry is also an important and growing industry in the western and northern parts of the island and horticulture (vineyards in particular) has expanded considerably on the eastern side of the island in recent years.

Protection of the fertile viticulture lands on the eastern side of the island close to Penneshaw is a priority to support the ongoing viability of this growing sector. There is also the potential to expand high-value horticulture industries towards the western side of the island.

Grain is produced throughout the island. The industry has expanded significantly in the past five years, with total annual production of close to 60,000 tonnes. The grain industry continues to diversify in response to climate fluctuations and to capture emerging opportunities in export and domestic markets.

The island is renowned for its high-value niche agricultural products including honey, marron, sheep milk and eggs. In addition, it is gazetted as a genetically modified organism (GMO) free zone and its isolation gives it a low disease status. It is important the island capitalises on these attributes and exploits opportunities to expand its niche food products in the Australian and export markets.

Sheep and wool production continues to contribute considerable income for island farmers. These export industries depend on the continued availability of broadacre agricultural land.

Conversion of productive land to residential and other sensitive uses through inappropriate town expansion or subdivision into rural living areas is strongly discouraged in areas not contiguous with town boundaries as it can create conflicts at interfaces and compromise farm operations. Water resources also need to be carefully managed, given their importance to the agricultural sector.



## Agriculture and horticulture

### Policies

- 6.1** Prevent loss of productive agricultural land and potential conflict with incompatible uses by:
- ▶ ensuring that proposed town and urban expansion does not affect areas of primary production significance
  - ▶ preventing fragmentation of agricultural land
  - ▶ managing interfaces with residential areas and other sensitive activities through the use of buffers
  - ▶ ensuring tourist-based developments are sited away from agricultural land where practical
  - ▶ designating areas of primary production significance (in particular high value agricultural land) in the Development Plan and introducing a standard set of planning controls to protect their use.
- 6.2** Support new horticultural development south of Penneshaw (as identified on Map D2), and generally towards the western end of the island, where good quality water is available. These areas should be preserved for future horticultural activities, and avoid any incompatible land uses.
- 6.3** 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.
- 6.4** Encourage the development of small-scale value-adding activity that complements primary production in the local area. Value-adding clusters and medium- to large-scale value-adding activities should be located in industrial or commercial estates where possible.
- 6.5** Maximise opportunities for processing plant waste and the establishment of other value-adding activities (for example, biofuel plant co-location with livestock enterprises).
- 6.6** Rehabilitate unproductive and degraded primary production land affected by salinity through revegetation using native species, increasing the vitality and integrity of existing remnant stands of native vegetation, and introducing perennial pastures.
- 6.7** Co-locate intensive primary industries and compatible processing activities to reduce land-use conflict and achieve efficiencies in production, processing, distribution, energy efficiency and waste recycling, taking into account environmental, infrastructure and rural amenity issues.



## Commercial forestry

### **Policies**

- 6.8** Encourage forestry plantations in locations that are sustainable and maximise use of existing transport infrastructure. (See *Guidelines for Plantation Forestry in South Australia 2009*, Managing the Water Resources Impacts of Plantation Forests and the Better Development Plan Forestry Module for guidance on locations for forestry activities.)
- 6.9** Effectively manage plantation impacts on the environment, transport networks and surrounding land uses and landscapes.
- 6.10** Establish and maintain buffers around forestry plantations to protect them from incompatible uses.
- 6.11** Expand associated processing and manufacturing activities.

## Mineral resources

### **Policy**

- 6.12** Establish and maintain buffers around mines and mineral resources to prevent encroachment by housing and other development that may affect the viability of resource extraction.

## Principle 7

### **Strengthen local commercial fishing and aquaculture industries**

The Development Plan needs to recognise that the aquaculture and fishing industries have differing requirements in terms of site, infrastructure and environmental conditions. For example, hatcheries and grow-out facilities need to be located close to the coast, where pipe access to seawater is available and the costs of energy associated with pumping can be minimised. Marine aquaculture and commercial fishing need to be supported by a range of on-land industries, such as storage, waste management and processing. Efficiencies can be gained by reducing the distance between marine-based sites and processing facilities.



### Policies

- 7.1** Provide for land-based processing facilities at key sites in accordance with environmental requirements, including provisions for land-based waste disposal facilities.
- 7.2** Locate commercial boat launching facilities in areas adjoining towns or in locations that support marine aquaculture licences.
- 7.3** Protect potential aquaculture areas (see Box 6 and Map D2), including from conflicting land-based development.

### Box 6—About aquaculture policies and zones

Aquaculture policies:

- identify where specific classes of aquaculture can and cannot occur in state waters
- are developed in accordance with the process set out in the *Aquaculture Act 2001* and involve consultation and consideration of environmental, social, equity and economic impacts
- provide clear direction to aquaculture operators, including specific criteria or conditions to ensure that activities are ecologically sustainable.

There are three classes of zones relevant to aquaculture:

- **aquaculture zones** are areas of state waters in which specified classes of aquaculture can be permitted
- **prospective aquaculture zones** are areas of state waters subject to investigation (for no more than three years) to determine if they are suitable to become aquaculture zones
- **aquaculture exclusion zones** are areas of state waters in which no aquaculture is permitted.

For more information, see <[www.pir.sa.gov.au/aquaculture](http://www.pir.sa.gov.au/aquaculture)>.

## Principle 8

### Reinforce the island as a preferred tourism destination

Kangaroo Island is one of South Australia's premier tourism assets, attracting an estimated 158,000 visitors in 2008.<sup>6</sup> The appeal of the island is in its natural and built heritage; National and Conservation Parks; coastal landscapes and secluded beaches; and opportunities for water-based activities such as recreational fishing.

The island's clean and green image and strong connection with locally produced high quality food and fine wines add to its appeal as a tourist destination and are key drivers of the local economy. Appropriate planning controls are required to ensure that the qualities that attract tourists are retained.

In 2006 the South Australian Tourism Commission, in conjunction with the Kangaroo Island Development Board, the Kangaroo Island Natural Resources Management Board, Tourism Kangaroo Island, the Department for Environment and Heritage (now the Department of Environment and Natural Resources) and the Kangaroo Island Council, produced the *Kangaroo Island Strategic Tourism Plan*. The plan's primary aims are to increase the island's share of the tourist market, build on its reputation as an authentic and diverse nature-based destination, and provide direction for investors in sustainable tourism (see Box 7).

Relevant statewide plans include the *Responsible Nature-based Tourism Strategy 2004–2009*, which was developed to provide detailed guidance in the development of nature-based tourism, including design guidelines and case studies, and the *South Australian Tourism Plan 2009–2014*, which provides broader direction for the marketing and management of the industry.

## Policies

**8.1** Protect, enhance and promote those assets of the island that attract tourists and are of value to the community, including:

- ▶ coastal landscapes, the marine environment, the foreshore, jetties and boat ramps
- ▶ open space, trails networks and scenic tourist drives
- ▶ National and Conservation Parks and scenic views
- ▶ the heritage, cultural and/or built character of towns, including town approaches
- ▶ seafront campsites, including large campsites, with effluent disposal facilities for motor homes
- ▶ the unique archaeological and geological features.

<sup>6</sup> South Australian Tourism Commission, 'Kangaroo Island Regional Tourism Profile 2008', SATC, Government of South Australia, 2009, <[http://www.tourism.sa.gov.au/WebFiles/publications/ResearchReports-RegionalProfiles/PDFDocument/Kangaroo%20Island\\_Profile08.pdf](http://www.tourism.sa.gov.au/WebFiles/publications/ResearchReports-RegionalProfiles/PDFDocument/Kangaroo%20Island_Profile08.pdf)>.



- 8.2** Reinforce the desired roles of various towns and locations in the Kangaroo Island tourist experience, including:
- ▶ Penneshaw as the main visitor gateway to the island
  - ▶ the coastline, particularly in National and Conservation Parks, for ecotourism and adventure- and nature-based tourism (see Box 7), as well as food and wine experiences
  - ▶ Penneshaw and Kingscote as service towns for tourists
  - ▶ Vivonne Bay, Emu Bay and American River as key hubs for coastal tourism
  - ▶ Cape Borda, Cape Willoughby and Cape du Couedic for historical lighthouses and lighthouse keepers' cottages, as well as the seal colonies below the elevated boardwalk at Cape du Couedic
  - ▶ the high-value niche food companies that focus on products sourced from honey and sheep milk, as well as numerous wineries scattered across the island.

**Box 7—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.

- 8.3** Facilitate sustainably designed tourist accommodation in suitable locations throughout the island, in accordance with Policy 1.5 and as identified as 'Coastal management' and 'Scenic landscape' areas on Map D1.
- 8.4** Facilitate tourism-related developments such as restaurants, specialist retail and accommodation that add value to existing enterprises.
- 8.5** Promote Kangaroo Island as a culinary, coastal and nature-based destination by:
- ▶ preserving the character and appeal of the coastal towns
  - ▶ ensuring high quality design to protect scenic landscapes
  - ▶ supporting ecotourism and adventure- and nature-based tourism experiences (particularly in National and Conservation Parks)
  - ▶ developing links with the fishing, aquaculture and wine industries.



## Principle 9

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

Industries supporting primary production and processing play a critical role in Kangaroo Island's economy, providing local employment and strengthening the island's comparative advantage. Identification of suitable sites for these activities and appropriate zoning to meet demand will provide greater certainty to potential investors and inform the planning and provision of infrastructure.

In addition to industry clusters around strategic transport hubs (refer to Principle 5), nodes best suited for industrial activity include Kingscote, Penneshaw and Parndana. In addition, a port facility at Ballast Head for industrial and bulk handling may need to be considered in the future, subject to environmental impact assessment.

#### *Policies*

- 9.1** Provide a supply of well-sited and serviced industrial land in Kingscote, Penneshaw and Parndana.
- 9.2** Ensure an adequate supply of appropriately located industrial land to provide opportunities for small-scale and local industries in towns across the island.
- 9.3** Site and locate industrial land and development to ensure:
  - ▶ management of interfaces with residential areas and other sensitive uses, and protection from encroachment
  - ▶ provision for future expansion
  - ▶ accordance with Environmental Protection Authority policies, codes of practice and guidelines
  - ▶ an efficient road freight network that minimises the impacts of freight movements on neighbouring areas
  - ▶ access to required energy and water.
- 9.4** Provide for the development of well-sited and appropriately scaled value-adding activities (for example, processing and storage) that complement local agriculture, horticulture, fishing and aquaculture, livestock and mining activities. Value-adding clusters and medium- to large-scale value-adding activities should be located in industrial or commercial estates where possible.
- 9.5** Retain and support ongoing industrial and commercial operations (for example, appropriate buffers to minimise conflicts) and manage the impacts of external influences (for example, noise, vibrations and native vegetation disturbance).
- 9.6** 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.
- 9.7** Provide for the establishment of facilities in appropriate locations to support new markets/products for recycled materials and animal waste products.



## Principle 10

### Ensure commercial development is well sited and designed to support the role and function of towns

Commercial activities include shops, offices, banks, retail showrooms, personal services, and government services.

Focusing major commercial activities in selected towns supports the ongoing viability of these activities and enables people to undertake several activities in one location. This approach also supports the future provision of public transport services. The greatest concentrations of commercial sector jobs are in Kingscote and, to a lesser extent, Penneshaw. Local small-scale commercial facilities will continue to be located in American River and Parndana.

#### *Policies*

- 10.1** Reinforce the primary commercial and service role of Kingscote as the focus of major retail, commercial, administrative, education, health, justice and recreational developments on the island.
- 10.2** Reinforce the supporting commercial and service role of Penneshaw.
- 10.3** Cluster local and/or tourism-focused commercial facilities in main streets and/or local/town centres.
- 10.4** Locate commercial uses in town centres or existing commercial zones, which should be expanded where necessary to support activity commensurate with the town's role.
- 10.5** Commercial areas proposed outside town centres must demonstrate that they:
  - ▶ will avoid adverse incremental or cumulative impacts on existing town centres
- ▶ are clustered rather than linear development and do not have an adverse impact on the efficiency and safety of arterial roads
- ▶ are convenient and equitable to access, including by walking
- ▶ are supportive of the desired future character of the town
- ▶ are not using land of strategic importance to industry.
- 10.6** Proposals for major commercial areas in towns other than Kingscote, Penneshaw, American River and Parndana must demonstrate that they are supportive of and complement the commercial functions of these towns, including incrementally or cumulatively in the long term.
- 10.7** Support an efficient road network and prevent linear/ribbon development along major roads.





# POPULATION AND SETTLEMENTS

## Overview

The State Government is planning for an additional 1510 people on Kangaroo Island by 2036, based on the SASP population target described in Chapter A. The role of the *Kangaroo Island Plan* is to ensure that future land use can support the target population.

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

With an ageing population, it is expected that the occupancy rates are likely to decrease as ageing people move into smaller homes over the 30 year period. This potentially could increase the number of new homes required to accommodate the target population.

There is also likely to be additional demand for new homes in towns, as retirees living in rural areas on the island move close to health and community services and aged care facilities.

Table D1 – Kangaroo Island: Land area required based on density and occupancy rate (people per dwelling).

Required new homes (for 1510 people)	Land area required (hectares)		
	at 8.5 dph*	at 10 dph*	at 13 dph*
638 @ 2.4 people per home	75	64	49
729 @ 2.1 people per home	86	73	56
850 @ 1.8 people per home	100	85	65

\* Dwellings per hectare.

Further investigations to provide more accurate detail will be necessary to inform the Plan through the future review process.

The island currently has a significant amount of undeveloped, zoned land suitable for residential development. This includes about 166 hectares (ha) zoned residential and 1236 ha zoned rural living. In addition, 155 ha of deferred urban land could in part be used for residential development, as shown in Table D2. The residential zoned land capacity in all the main towns should be enough to support the growth necessary to achieve the target in the Plan.

While the *Kangaroo Island Plan* seeks to plan for an ageing population, policies are also needed to attract and retain the young and working-age

population to balance the growth in the proportion of older people. Increasing employment in primary production and processing, construction, engineering, and health and other services is a priority to maintain a vibrant working-age population.

Social infrastructure demands include increased housing in the major regional centres, as well as in more remote locations where attracting and retaining staff, especially professionals, is vital for development. Social infrastructure includes education and childcare facilities to service young families, as well as access to good health services. Broadband access outside major centres is essential to deliver distance learning and for business development and growth.



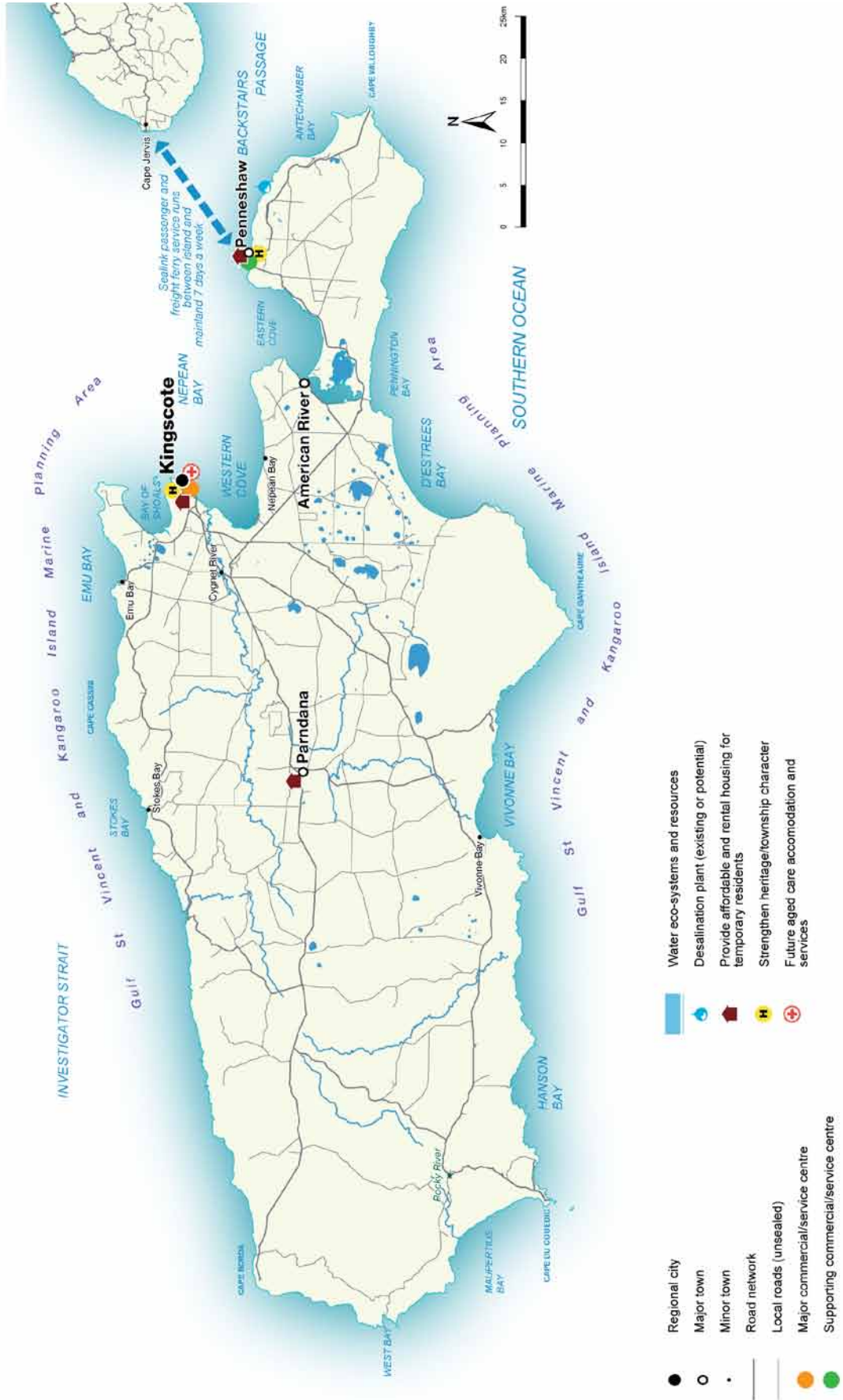




Table D2 – Kangaroo Island: residential land supply in key towns

Town	Residential zones		Deferred urban zones		Rural living zones	
	Area (ha)	Dwell est.*	Area (ha)	Dwell est.*	Area (ha)	Dwell est.*
Kingscote	43	430	63	504	1077	537
Penneshaw	40	400	21	168	80	40
American River	83	830	43	344	42	21
Parndana	–	–	28	224	37	18
<b>Total</b>	<b>166</b>	<b>1660</b>	<b>155</b>	<b>1240</b>	<b>1236</b>	<b>616</b>

\* Dwelling estimates are based on: residential zones = 10 dwellings per hectare; deferred urban zones = 10 dwellings per hectare less 15 per cent (to factor in land used for non-residential purposes); rural living zones = the average rural living allotment for each council.

To guide land use in response to growth pressures, the Plan's principles and policies aim to ensure 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, community and aged care services and facilities
- there is a diversity of housing (including affordable housing)
- town growth is managed to preserve important primary production land and environmentally sensitive areas.

### Priorities for the council

- Improve workforce stability by investigating the housing needs of permanent and seasonal workers, particularly on the island's western side
- Implement the key recommendations contained in the Urban Design Frameworks for Kingscote, Penneshaw, American River and Parndana to improve the function and appeal of these towns
- Undertake an audit of the housing needs of older people and the current supply to identify gaps in this segment of the housing market
- Explore mechanisms to support retiring farm families to age in place or relocate to towns
- Assess the opportunities and constraints for compact expansion of coastal settlements (especially Emu Bay and Vivonne Bay) in conjunction with the establishment and/or review of coastal zones, taking into account factors listed in Principle 11.

## Principle 11

### Strategically plan and manage the growth of towns

*The Kangaroo Island Plan* supports the consolidation of population growth within existing settlements to:

- limit development in places difficult to adequately service (for example, household waste collection, water supplies/treatment and energy transmission)
- enable the treatment and reuse of wastewater and stormwater
- preserve councils' financial viability
- build on existing and planned business, service and infrastructure investment
- protect scenic and natural landscapes of importance to tourism and environmental function.
- protect areas of primary production significance.

Growth on the island has chiefly occurred in the towns—mainly in Kingscote and, to a lesser extent, in Penneshaw, American River and Parndana.

Kingscote is the island's major commercial and service centre. Accordingly, it should be a focus for major facilities and services, and accommodating population growth. Penneshaw, American River and Parndana are the island's supporting commercial/service centres. These towns should be a focus for local services and infrastructure, and accommodating population growth.

Future development should continue to be focused in towns and settlements, to build on existing and planned business, service and infrastructure investment.

A planned approach to development seeks to balance the range of competing interests. Towns on Kangaroo Island must be well designed to enable growth while retaining their character, productive agriculture and viticulture land, and the scenic landscapes that are valued by residents and visitors alike.

## Policies

- 11.1** Focus development in existing towns and settlements based on their roles and functions as described in Principle 10 and shown on Map D3.
- 11.2** The expansion of towns should:
  - ▶ ensure new areas are contiguous with, and form compact extensions of, existing built-up areas and prevent linear development along the coast and arterial roads
  - ▶ not encroach on areas of importance to economic development
  - ▶ not encroach on environmentally sensitive areas
  - ▶ support cost-effective provision of infrastructure and services (for example, health and education), avoiding unnecessary expansion or duplication of existing regional infrastructure and services



- ▶ promote strong 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, renewed existing developed areas (where it does not compromise town character or heritage) or infill sites in preference to greenfield sites
- ▶ locate land for rural living (large residential allotments) in such a way that it retains opportunities for future town expansion and does not impact on areas of primary production significance
- ▶ retain a functional and visual separation between towns.

- 11.3** Development in areas remote from infrastructure should be self-sufficient in energy, water supplies, and wastewater management.
- 11.4** Retain the coastal living, fishing and holiday appeal of American River.
- 11.5** Build on the cultural/heritage tourist focus of Penneshaw and Kingscote by strengthening heritage and town character.
- 11.6** 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.
- 11.7** Manage the interface between primary production activities and urban areas and townships through appropriate separation buffers, screening vegetation and appropriate alignment of allotment boundaries.

## Principle 12

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

The way in which towns across Kangaroo Island are designed influences how they look and 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 the way a town is designed.

Towns and parts of towns can develop a strong identity and sense of place which can be built on local history, unique natural features (for example, coastline and hills), and future aspirations. This identity should be determined, in part, by those who live there.

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



## **Policies**

- 12.1** 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.
- 12.2** Establish and retain distinct and attractive entrances to towns.
- 12.3** Retain town centres as the focus of retail, commercial, recreation, entertainment, community and civic activities in accordance with the role and function of the town.
- 12.4** Provide health, community and education facilities and services in suitable locations to provide equitable access to the community.
- 12.5** Provide strong linkages between coastal town centres and the coast and between other town centres and key sites of tourism interest.
- 12.6** Manage interfaces between residential and industrial areas and town centres to avoid potential conflicts.
- 12.7** Encourage active lifestyles by providing:
  - ▶ a range of open space, sport and recreation facilities in towns and across the island
  - ▶ walking and cycling facilities in towns, giving consideration to the different needs of people in the community.
- 12.8** Develop safer towns by incorporating the principles set out in *Designing Out Crime: Design Solutions for Safer Neighbourhoods*, using Crime Prevention Through Environmental Design (CPTED) principles and consulting with South Australia Police.
- 12.9** Design all developments, including housing, holiday homes, commercial, industrial and tourist accommodation, to minimise their visual and physical intrusiveness and ensure they are sympathetic to cultural and landscape features.
- 12.10** Apply WSUD principles in all new development and public open spaces and encourage their application in existing development.



## Principle 13

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

Considered planning is required to ensure that housing supply will meet the needs of people who live and work on the island, taking into account demographic changes. Anticipated changes in demographics include increasing numbers of older people, although population growth will be driven primarily by local and regional employment opportunities. Retirees and holiday home owners could potentially add to overall housing demand.

There is a shortage of housing for permanent and seasonal workers on the island's western side. It is critical that opportunities for housing are provided close to employment. Towns such as Parndana, in the centre of the island, could potentially provide residential land to meet some of this demand.

People's housing needs and preferences differ according to factors such as age, health, income and cultural background. A range of housing types should be provided in identified areas of towns. These areas must be compatible with town character and landscapes, meet environmental and industry needs, and be close to infrastructure and services.

#### Policies

- 13.1** Ensure a 15-year zoned supply of land for residential development in towns/centres identified for growth (refer Principle 11 and Map D3).
- 13.2** Ensure 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 island's changing demographics.
- 13.3** Provide opportunities for higher density housing near the town centres of larger service towns, in particular Kingscote.
- 13.4** Provide a range of accommodation for older people and people with a disability, and focus high-level care accommodation in towns with health services.
- 13.5** Ensure that land is made available for public and social housing in towns with a service role.
- 13.6** Encourage provision of rental housing and accommodation for temporary workers in areas of demand.
- 13.7** Provide for 15 per cent affordable housing, including a 5 per cent component for high needs housing, in all new housing developments (in accordance with the *Housing Plan for South Australia* [2005]).
- 13.8** Retain caravan parks and support the use of some parks to provide 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 *Kangaroo Island Plan* for the provision and coordination of infrastructure and services in the region.

Government agencies are required to use the *Kangaroo Island Plan* to identify infrastructure priorities, such as health and education centres, and are encouraged to identify clear trigger points, such as population growth in a particular town, to indicate when new infrastructure is needed.

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) is the first step in developing a coordinated long-term approach to infrastructure and service provision throughout the state. It provides a framework for planning and delivery of infrastructure and services by all government and private sector providers, and identifies priorities for each region.

The priorities identified for Kangaroo Island in the *Strategic Infrastructure Plan* are listed on the following pages. The *Kangaroo Island Plan* confirms these priorities; provides further clarification as to where specifically in the island these infrastructure and services are most required; and identifies other potential pressures on infrastructure and services.

Infrastructure, with the exception of major works, 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 larger 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 *Kangaroo Island 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.





**Priorities for Kangaroo Island identified in the *Strategic Infrastructure Plan for South Australia, Regional Overview, 2005-06–2014-15***

**Land (economic development)**

- Support a range of accommodation throughout the island, based around the key tourist drawcards of nature and viticulture
- Establish industrial zones on Kangaroo Island to support the development of woodchip export facilities.

**Energy**

- Construct backup generation and improve reliability of distribution network.

**Water and wastewater**

- Provide reticulated water to American River
- Provide additional local storage capacity at Kingscote
- Explore opportunities to work with local enterprises to fund the development of local community wastewater management systems (CWMS)
- Explore the viability of building connections between waste management schemes in adjacent towns to maximise utilisation
- Upgrade CWMS in small communities
- Consider utilisation of combined industry/town waste projects to improve resource recovery and value adding.

**Transport**

- Upgrade the ferry terminal at Kingscote
- Redesign the Cape Jervis marshalling yards to improve safety and efficiency
- Redevelop the Cape Jervis Harbour to cater for larger vessels
- Develop fit-for-purpose road and port facilities to support the export of woodchips and grain
- Upgrade tourism roads on Kangaroo Island
- Designate Penneshaw as the primary freight and passenger ferry harbour
- Maintain Kingscote wharf for recreation and commercial operations
- Update the master plan for Kingscote Harbour, including the viability of the marina
- Extend the Kingscote airport runway and upgrade the terminal to cater for increased freight and tourist flights, if demand and a viable carrier are identified
- Investigate options to upgrade public transport.



### Information and communication technologies (ICT)

- Develop a business case that identifies and aggregates sufficient broadband demand to support expanded services in larger towns.

### Health

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

### Education and training

- Undertake capital works at schools in Kingscote.

### Waste management

- Upgrade the sewerage infrastructure as development proceeds
- Develop regional cooperative schemes to manage solid waste recycling and disposal.

Further issues related to infrastructure and services provision on the island, identified through the process of developing the *Kangaroo Island Plan*, are:

- the high cost of roadside maintenance and clearing
- the lack of reliable energy access and supply, which is currently an impediment to industry growth
- the lack of waste management (including recycling) facilities and the prohibitive cost of providing them
- the need to increase the water storage capacity of the Middle River Reservoir
- poor telecommunications coverage, which limits development opportunities
- increasing tourist numbers, leading to more pressure to upgrade the airport terminal building.



# APPENDICES

# APPENDIX 1

## HOW THE PLAN WAS DEVELOPED

Figure 3 – The *Kangaroo Island Plan* process







# APPENDIX 2

## INFORMATION ABOUT KANGAROO ISLAND

### INFRASTRUCTURE AND SERVICES

Kangaroo Island's community and economy is supported by the following infrastructure and services.

#### Transport

##### *State and local roads*

The State Government manages and maintains the Kingscote to Penneshaw road, the American River access, and the Playford Highway from Parndana to Kingscote. The Kangaroo Island Council is responsible for about 1360 kilometres of local roads, of which 237 kilometres are sealed.

The main items transported to and from the island are agricultural products, including sheep, wool and grains, and forestry products. The freight transport movement peaks in summer during harvest, which also coincides with the high season for tourists. With increasing numbers of tourists and more and larger freight using the road network, there is potential for conflict between road users (residents, tourists, buses and freight vehicles). A combination of engineering, education and enforcement measures will be essential for managing the ongoing safety and efficiency of the road network.

#### *Seaports*

Seaports are located at Kingscote, used seasonally to haul grain to Port Adelaide and for periodic barge operations, and at Penneshaw, used for ferry services to Cape Jervis on the mainland and the shipment of bulky freight, fuel and stock. American River and Vivonne Bay handle small fishing fleets and recreational visits but not any freight operations. It is important that development adjacent to the seaports does not compromise ongoing operations or detract from the long-term viability of sea freight to and from the island.

New bulk-loading facilities are being considered at Ballast Head, near American River, to service the blue gum industry.

### *Air services*

Air services are operated daily by two main carriers through Kingscote Airport, which is owned by the council. It is important that development close to the airport does not compromise ongoing airport operations or detract from the long-term viability of air access to the island.

### *Passenger transport*

Passenger transport is a critical issue in rural areas, particularly for older people and people without access to a car, including tourists. Currently passenger transport services are limited on the island, with no taxi service and bus services operating only between Kingscote and Penneshaw (in association with the sea ferry) and between Kingscote and the airport.

Demand for passenger transport services will increase as the number of older people living on the island rises and people move to the island from metropolitan areas.

### **Health**

Health services are located at community health centres in Kingscote, American River, Penneshaw and Parndana. The island's only hospital, located in Kingscote, provides general, accident and emergency services. Two other facilities in the town provide high- and low-level patient care. Many specialist services require travel to Adelaide.

Growth in the health and community services sector is anticipated as the population ages. Attracting qualified nursing staff and other workers to the island will be a challenge.

### **Education**

Education facilities include the Kangaroo Island Community Education multi-campus school (with facilities at Parndana, Kingscote and Penneshaw) and the TAFE campus in Kingscote. Many island students are forced to pursue vocational and post-educational training on the mainland due to limits in the scope of vocational streams on offer and the size of the facilities.

### **Waste management**

Waste management is handled at a council-operated major waste transfer station at Kingscote. All putrescible waste and recyclables are transported to the mainland. Green waste is received at Kingscote and composted. A biosolids receiving facility has also been established.

The council also operates bulky waste compounds at Penneshaw, American River, Parndana and Vivonne Bay. Materials are transported to the waste transfer station at Kingscote and then to the mainland.



### ***Community wastewater management systems***

Community wastewater management systems (CWMS) are operated and maintained by the council at Kingscote, Parndana, Parndana East (Research Centre) and American River. At the time of this plan's publication a CWMS was planned for Penneshaw. Built development in other areas of the island relies on on-site wastewater disposal.

There is a need for these systems to be upgraded to minimise pollution and to ensure their capacity matches the scale of developments in the town wastewater drainage catchments.

The upgrade of the Parndana CWMS will enable the collection of stormwater for re-use in irrigating public spaces. The Kingscote CWMS will also be upgraded.

Future development in areas not serviced by a CWMS needs to be carefully considered and designed to ensure that wastewater disposal does not have any adverse impacts on the environment.

### **Mains water**

Mains water for Kingscote and Parndana is sourced from the Middle River Dam. The dam operates at capacity during summer, and during significant droughts it must be supplemented with water from other sources. A desalination plant at Penneshaw supplies fresh water to the town. Other areas of the island rely on rainwater.

SA Water is currently undertaking a long-term plan for the water supply that includes identifying options for future water supply and systems augmentation.

### **Electricity**

Electricity is sourced from the mainland grid network via a submarine cable. The island grid network has more than 1100 circuit kilometres of distribution and four substations, located at Penneshaw, American River, Macgillivray and Kingscote. ETSA Utilities maintains two generators near Kingscote to back up the grid supply for the Kingscote area. Remote control switching equipment is installed at the American River substation to reduce the number and length of power outages.

### **Information and communications technology (ICT)**

ICT access varies across the island. Since the closure of the CDMA network, there has been significant migration to the 3G network; however, this does not extend to all areas of the island. Mobile phone towers have been installed at Kingscote, Penneshaw, Parndana, Seal Bay, Rocky River and Vivonne Bay.

Broadband access is limited and three forms are available: satellite, ADSL and ISDN. The latter is available through nine of the island's 11 exchanges. Dial-up internet access is provided by two internet service providers.



## THE ENVIRONMENT

Kangaroo Island's spectacular scenery, unique history and prolific wildlife are valued by all South Australians, local communities and visitors. These features have made the island one of Australia's most popular international tourist destinations. The island's landscapes support a diverse range of bio-regions and environmental systems. A higher population and increased visitor numbers will place more strain on the island's environment.

Several strategies aim to maintain and enhance the environmental qualities of the island. They include the *State Natural Resources Management Plan* (2006), *Kangaroo Island Natural Resources Management Plan* (2009), *Biodiversity Plan for Kangaroo Island South Australia* (2001), *Marine Plans* and the *Living Coast Strategy for South Australia* (2004).

## Parks and protected areas

About 30 per cent of the island is part of the parks reserve system, which is managed by the Department for Environment and Heritage.

The island features 28 protected areas covering over 116,000 ha (or 25 per cent of the island's land area). Important protected areas include Flinders Chase National Park, Seal Bay Conservation Park, Kelly Hill Conservation Park, Cape Gantheaume Wilderness Protection Area and Ravine des Casoars Wilderness Protection Area.

This is by far the highest proportion of protected areas in the agricultural regions of South Australia.

Marine protected areas (MPAs) are located at Seal Bay, Bales Beach, Pelican Lagoon and The Pages. These areas are an important fisheries management tool and support the maintenance of fisheries and their critical habitats.

## Biodiversity conservation

Kangaroo Island contains some of the state's most intact ecosystems and provides habitat for the largest number of endemic species in any region of the state. The island supports a large number of biodiversity assets, including a number of state and nationally threatened plants and animals, many of which are found nowhere else in the world.

Much of the eastern part of the island has been cleared for agriculture and many of the unique plant communities in this area are under threat. Of the remaining native vegetation, 64 per cent is conserved either in government reserves or under vegetation heritage agreements. Almost 30 per cent of the island is reserved under the *National Parks and Wildlife Act 1972* and the *Wilderness Protection Act 1992*.

Roadside reserves are particularly important on Kangaroo Island. In some areas several vegetation species and plant communities of high conservation value are found primarily or solely in roadside reserves.

Kangaroo Island also contains some of the least disturbed inland freshwater wetlands in the state, located primarily at the western end of the island. At the eastern end of the island, dry-land salinity is posing a threat to wetlands.

Threats to biodiversity on the island include potential tensions with fire and water regimes, fragmentation, native vegetation clearance, pest plants and animals, overabundant native species, Phytophthora dieback, and grazing stock.

### **Coastal, estuarine and marine environments**

Kangaroo Island's appeal relies largely on its natural heritage, of which its coastal landscapes are identified as the most important element.

High priorities for coastal areas are to ensure the conservation of coastal features and scenic quality, enable appropriate public access, and ensure that development is not subject to coastal hazards. Development in coastal areas should protect and conserve this fragile environment and maintain its biodiversity. Increased visitor numbers will require an expansion of the island's infrastructure, particularly in accommodation and recreational facilities in coastal areas. Responsible nature-based tourism facilities and other infrastructure are also required.

Parts of the coast are at risk of coastal flooding and erosion, and this will increase in the event of future sea level rise due to climate change.

The topography of Kangaroo Island's coast varies from the low-lying samphire flats of the Cygnet River and wetlands such as Pelican and Murray lagoons to high cliff formations, such as those along the north coast from Cape Borda to North Cape, interspersed with small sandy coves. The island has a variety of vegetated and unvegetated dune systems: extensive sand dunes along the south coast, sand dunes that extend inland such as the sand drifts of Little Sahara, and cliff-top dunes along the south-east coastline. The variety of landforms reflects major geological differences and variation in the influence of wind and waves along the coast.

The coast is abundant in native wildlife, including the osprey, white-bellied sea-eagle, little penguin, hooded plover, glossy black cockatoo and Australian sea lion, all of which depend on the natural coastline for survival. Coastal areas, particularly along the north coast, also contain land used for grazing and cropping, which is expected to continue.

Marine Plans are being progressively developed to ensure that the future development and use of the marine environment is sustainable. These Marine Plans will complement the *Kangaroo Island Plan* and need to be taken into account when reviewing and updating the council's Development Plan.

### **Water resources**

There are many water ecosystems on the island, including watercourses, wetlands and tidal estuaries. The major water catchment areas include the Cygnet, Middle, Eleanor, Rocky, Stunsail Boom, South West, Harriet, Chapman and Wilson rivers. Timber Creek flows into Murray Lagoon, which is situated in a landlocked basin on the limestone coastal lowlands in the south. The Breakneck and Rocky rivers are the only rivers in South Australia that have intact and undeveloped catchments, which are located in National Parks and wildlife reserves.

Careful management of water resources is required to ensure sufficient and reliable flows to support the island's environmental systems as well as its economic growth. The main challenges facing the island are the development of reliable water supplies, contingency planning in the event of prolonged drought threatening the supply from Middle River dam, infrastructure failure, and competition between land uses.

The State Government and the local Natural Resources Management Board are currently considering the impact of competing land use on water supply in dry or drought years to inform the use and management of water resources on the island.

### **Managing climate change**

Climate change projections indicate reduced rainfall across the state, which would have significant impacts on natural resources and primary production. For example, the Australian Bureau of Agricultural and Resource Economics (ABARE) has estimated that South Australian wheat production could decline by 8–9 per cent by 2030 and 12–13 per cent by 2050, and sheep meat outputs could decline by 6–8 per cent by 2030 and 12–13 per cent by 2050.<sup>7</sup>

The State Government is continually monitoring these impacts and has developed responses in relation to issues such as transport, housing design, natural resources, and energy. These are detailed in *Tackling Climate Change: South Australia's Greenhouse Strategy 2007–2020*. A key objective of the plan is strengthening the resilience of primary industries to the potential impacts of climate change.

To this end, the Department of Primary Industries and Resources SA (PIRSA) has been working with the grain and wine industries on the island, and investing in research into the potential impacts of climate change on specific crops and options for alternative primary production and adaptation techniques (for example, environmental management systems). PIRSA is also conducting research on the island aimed at encouraging and improving farm forestry activities, including in low rainfall areas, which will aid climate change adaptation and the achievement of the state's carbon sequestration targets.

For this reason, it is critical that areas identified as being of primary production significance be shown in the Development Plan and that planning policies for these areas restrict development not directly related to primary production and related value-adding activities.

<sup>7</sup> A Wright, 'Climate change impacts on agriculture', in *Australian Commodities*, December quarter 07.4, ABARE, Commonwealth Government, Canberra, 2007, <abareeconomics.com>.

## The economy and economic development opportunities

### Primary production and processing

Agricultural, food and beverage industries contributed a significant amount—\$72 million—to the island's economy in 2005–06.<sup>8</sup>

Agriculture, fisheries and forestry are the island's largest employers, accounting for 23.4 per cent of jobs. Wool, sheep, and cattle production is one of the greatest contributors to the agricultural economy, with increasing numbers of producers growing fine wool and prime lambs. Wool production contributed more than \$14 million to the economy in 2005–06.<sup>9</sup>

The island is renowned for its high quality value-added food products, including wine, cheese, marron, olive oil, free-range chickens and Ligurian honey. Viticulture is an emerging industry: the island has about 30 grape growers and several processing facilities are being developed.

The cropping industry (including canola, wheat, barley and oats) has also expanded significantly during the past five years, with total production of about 60,000 tonnes.

Kangaroo Island is a GMO-free zone. Due to the nature and location of the island, it is well positioned to benefit from this zoning.

The island is home to the last pure strain of Ligurian bees in the world, with eight commercial growers operating thriving honey and honey products businesses.

Some honey, poultry and egg producers meet strict biodynamic certification requirements. Retention of the GMO-free status is vital to these industries.

The island also has strong potential for the production of high value cool-climate horticulture crops. The cost of transport favours value-added products, such as seed potato and saffron production, rather than bulk commodity products.

Commercial fishing contributes about \$12.6 million in gross revenue to the island's economy. Aquaculture also makes a significant contribution and the island has several aquaculture licence holders, most of which are land based.

Plantation and farm forestry has nearly tripled during the past 15 years, generally on the western end of the island, with a mixture of softwoods and hardwoods covering 19,673 hectares (including 904 hectares planted for carbon offsetting) in 2008. A major sawmill and timber processing facility located at Timber Creek near Parndana employs more than 30 people. Transporting the timber to the mainland and markets beyond will create significant infrastructure challenges and, as a result, new bulk loading facilities are being considered at Ballast Head (near American River).

8 South Australian Food Centre, *Kangaroo Island Regional Food Scorecard 2005–06*, SAFC, Government of South Australia, c.2007, <[http://www.safoodcentre.com.au/site-wide\\_pages/top\\_menu/sa\\_food\\_plan/scorecard/regional\\_scorecards/kangaroo\\_island](http://www.safoodcentre.com.au/site-wide_pages/top_menu/sa_food_plan/scorecard/regional_scorecards/kangaroo_island)

9 *ibid.*



### **Tourism and recreation**

Kangaroo Island is one of South Australia's premier tourism assets. The appeal of the island lies in its natural heritage, coastal landscapes, secluded beaches and water-based activities such as recreational fishing.

With 21 National and Conservation Parks covering more than 30 per cent of its land, the island is promoted as a world-class nature-based tourist destination and is regarded as a critical asset in the continued development of the state's and the nation's tourism industry.

Nature-based tourism is a major industry on Kangaroo Island and provides the highest level of economic return of any industry sector. Responsible nature-based tourism facilities and associated infrastructure are required to support this industry. Food and wine are also growing tourism sectors, with further potential given the island's clean and green image.

Tourism generates about 15 per cent of direct employment on the island, providing about 300 full-time equivalent jobs—a much higher percentage than in other South Australian regions. Employment in the hospitality service sector (accommodation, cafes and restaurants) is more than twice the state average.

Most visitors are from mainland South Australia or interstate, and the island is a popular place to own a holiday home. It is also South Australia's most popular international tourist destination: one-third of its visitors are from overseas.

Tourism is already placing great stress on available facilities and services such as road maintenance, and this will worsen with tourism growth.

### **Mineral exploration and development**

Kangaroo Island is considered important for mineral exploration and development, and exploration licences are current for lead, zinc, copper and gold. Some mining leases are located in the central and eastern parts of the island for limited agricultural use and local construction material use.

There has been some petroleum exploration on the island and in adjacent waters, and potential exists for oil and gas and geothermal energy. The island's parks and wilderness areas are excluded from exploration and mining. Any planned extension of towns should be assessed for their potential impact on resource exploration or extraction activity.

## COMMUNITIES AND CHANGING SETTLEMENT PATTERNS

Kangaroo Island is home to about 4500 people; 0.3 per cent of the state's total population. This number has steadily increased over recent years at a higher rate than the state average. Population projections indicate growth to about 5300 people by 2016 and about 5400 by 2021.<sup>10</sup>

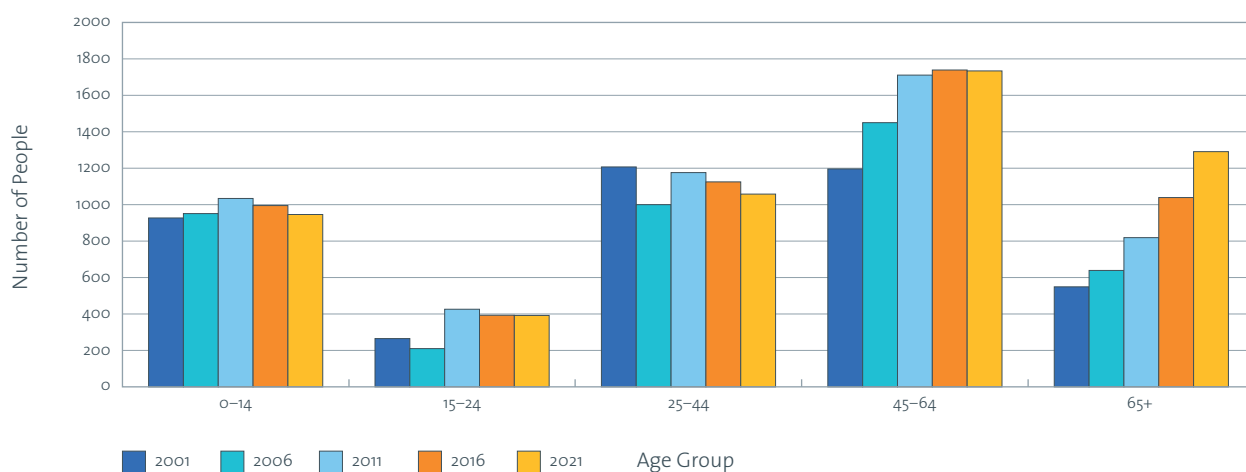
Kangaroo Island has a below average population aged from 15 to 24 (8.7 per cent) and an above average population aged from 45 to 64 (32.6 per cent) compared to the state averages of 13.3 per cent and 26.1 per cent respectively.

The number of people aged over 65 on the island is projected to increase significantly (see Figure 2.1), as it is for South Australia as a whole. Shifts in the demographic balance as the population ages will have implications for

community services and facilities, including health care, hospitals and public transport. Aged care accommodation, hostel living and nursing homes are provided in Kingscote; however, more facilities are likely to be required to meet future needs and provide opportunities for people to stay in their local area as they age.

The Aboriginal population in Kangaroo Island is very small and represents a below average proportion of the total population (0.7 per cent).

Figure 2.1 – Population change by age, 2001–21, Kangaroo Island



Source: ABS Census of Population and Housing, various years.

<sup>10</sup> Department of Further Education, Employment, Science and Technology, *Kangaroo Island Regional Profile*, DFEEST, Adelaide, 2008.

Supporting the people who live on the island will continue to be a priority. In addition, attracting skilled labour to support existing and emerging industries may see a rise in people from overseas settling on the island. These people may require support in skills training and overcoming language and cultural barriers. Provision of suitable and appropriately located housing to meet the needs of the islands population, including for aged accommodation, will need to be planned for.

### **Housing affordability and rental accommodation**

Outright ownership of homes on Kangaroo Island is significantly higher (38.6 per cent) than the state average (33.7 per cent), and homes with mortgages are correspondingly lower (27.3 per cent compared to the state average of 33.5 per cent). The proportion of rented dwellings (25.5 per cent) is very close to the state average, and the South Australian Housing Trust maintains a small share of the rental market on the island (3.3 per cent).

Almost one-third of private dwellings are unoccupied, some of which may be holiday houses.

Key determinants to be considered in planning for urban development include the ability to:

- provide adequate and reliable water and power supplies
- ensure equitable access to services to meet the future needs of communities
- protect strategically important primary production and industrial areas
- ensure development does not detract from the quintessential character of towns and landscapes
- reduce environmental impacts by including the use of low energy, water re-use and waste recycling systems.

# APPENDIX 3

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

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

<i>Kangaroo Island Plan principle</i>	<i>South Australia's Strategic Plan Target</i>
<b>ENVIRONMENTAL AND CULTURAL ASSETS</b>	
1. Recognise, protect and restore Kangaroo Island's environmental assets	T3.1 Lose no species; T3.2 Land biodiversity; T3.3 Soil protection; T3.4 Marine biodiversity; T3.7 Ecological footprint; T3.9 Sustainable water supply
2. Protect people, property and the environment from exposure to hazards	T2.4 Healthy South Australians; T2.7 Psychological wellbeing
3. 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
4. Create the conditions for the island to adapt and become resilient to the impacts of climate change	T3.5 Greenhouse gas emissions reduction; T3.7 Ecological footprint; T3.9 Sustainable water supply; T3.13 Energy efficiency— government buildings ; T3.14 Energy efficiency— dwellings
5. Identify and protect places of heritage, character and cultural significance	T6.1 Aboriginal wellbeing; T2.7 Psychological wellbeing; T4.5 Understanding Aboriginal culture; T5.9 Regional population levels



<i>Kangaroo Island Plan principle</i>	<i>South Australia's Strategic Plan Target</i>
<b>ECONOMIC DEVELOPMENT</b>	
5. Protect and build on the island's strategic infrastructure	T1.1 Economic growth; T1.2 Competitive business climate ; T1.14 Total exports T1.21 Strategic infrastructure
6. Retain and strengthen the economic potential of the island's primary production land	T1.1 Economic growth, T1.10 Jobs; T 1.14 Total exports; T5.9 Regional population levels
7. Strengthen local commercial fishing and aquaculture industries	T1.1 Economic growth, T1.10 Jobs; T1.14 Total exports
8. Reinforce the island as a preferred tourism destination	T1.10 Jobs, T1.15 Tourism industry; T1.21 Strategic infrastructure; T1.5 Business investment
9. Provide and protect serviced and well-sited industrial land to meet projected demand	T1.1 Economic growth; T1.2 Competitive business climate ; T1.5 Business investment; T1.10 Jobs; T 1.14 Total exports; T1.21 Strategic infrastructure
10. Ensure commercial development is well sited and designed to support the role and function of towns	T1.1 Economic Growth; T1.5 Business investment; T1.10 Jobs; T1.21 Strategic infrastructure
<b>POPULATION AND SETTLEMENTS</b>	
11. Strategically plan and manage the growth of towns	T1.21 Strategic infrastructure; T3.7 Ecological footprint; T5.9 Regional population levels; T3.7 Ecological footprint ; T3.8 Zero waste
12. Design towns to provide safe, healthy, accessible and appealing environments	T2.4 Healthy South Australians; T2.7 Psychological wellbeing; T2.8 Statewide crime rates
13. Provide land for a supply of diverse, affordable and sustainable housing to meet the needs of current and future residents and visitors	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 *Kangaroo Island Plan*. Many of these reports 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 (2007) *2006 Census of Population and Housing*, various data, ABS, Canberra

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

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Coast Protection Board (2004) *Coast Protection Board Policy Document, Endorsed 30 August 2002*, DEH, Government of South Australia

Department for Environment and Heritage (2004) *Blueprint for the South Australian Representative System of Marine Protected Areas*, Government of South Australia

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

DEH (2006) *Marine Planning Framework for South Australia*, Government of South Australia

DEH (2003) *Nature Links—Implementing the Wild Country Philosophy in South Australia*, Government of South Australia

DEH (2003) *Wetlands Strategy for South Australia*, Government of South Australia

Department for Water Resources (2000) *State Water Plan*, Government of South Australia

Department of Further Education, Employment, Science and Technology (2008) *Kangaroo Island Employment and Skills Network Region Regional Profile*, Government of South Australia

Department of Housing and Urban Development (1994) *Human Services Planning Kit*, 2nd edn, South Australian Urban Land Trust, Government of South Australia

Department of Human Services and Environment Protection Agency (1999) *South Australian Reclaimed Water Guidelines*, Government of South Australia

- Department of Justice (various) *Crime Prevention Through Environmental Design Program*, refer Crime Prevention Unit, Department of Justice, Government of South Australia, <[www.cpu.sa.gov.au/cpted.html](http://www.cpu.sa.gov.au/cpted.html)>
- Department of Transport and Urban Planning (2004) *Designing Out Crime: Design Solutions for Safer Neighbourhoods*, DTUP, Government of South Australia.
- Department of Water, Land and Biodiversity Conservation (2006) *State Natural Resources Management Plan*, Government of South Australia
- Economic Development Board (2003) *A Framework for Economic Development in South Australia*, Department for Trade and Economic Development, Government of South Australia
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- EPA (1999) *Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry*, Government of South Australia
- EPA (1997) *Stormwater Pollution Prevention Code of Practice for the Community*, Government of South Australia
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- Faulkner D, Tually S, Baker E and Beer A (2007) *Report on the Outcomes of Focus Groups for the South Australian Ageing Atlas: Ageing and its Implications for Social and Planning Policy*, prepared for Planning SA, Government of South Australia
- Government of South Australia (2005) *Housing Plan for South Australia*
- Government of SA (2009) *Managing the Water Resource Impacts of Plantation Forests: A Statewide Policy Framework*
- Government of SA (2004) *Plan for Accelerating Exploration 2004–2009: Unlocking South Australia's Mineral and Energy Potential*
- Government of SA (2004) *Prosperity Through People: A Population Policy for South Australia*
- Government of SA (2004) *South Australia's Broadband Strategy*
- Government of SA (2003) *South Australia's Draft Transport Plan*
- Government of SA (2001) *State Food Plan 2001–2004*
- Government of SA (2004) *South Australia's Strategic Plan, Creating Opportunity*
- Government of SA (2006) *Tackling Climate Change: South Australia's Greenhouse Strategy 2007–2020*
- Government of SA (2005) *Strategic Infrastructure Plan for South Australia: Regional Overview 2005–06–2014–15*
- Green Triangle Regional Plantation Committee (2001) *South East Forest Industry Development Strategy*

- Kangaroo Island Development Board (2008) *Strategic Plan 2008–2011*
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- Planning SA (2004) *Designing Out Crime: Design Solutions for Safer Neighbourhoods*, Government of South Australia
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- Seaman RL (2002) *Wetland Inventory for the Mount Lofty Ranges*, report prepared for DEH, Government of South Australia
- South Australian Tourism Commission (SATC) and DEH (2003) *Responsible Nature-based Tourism Strategy 2004–2009*, Government of South Australia
- SATC (2005) *Design Guidelines for Sustainable Tourism Development (draft for consultation)*, Government of South Australia
- SATC (Dec 2005) *Draft Policy Statement Marina Development*, Government of South Australia
- SATC (2002) *South Australian Tourism Plan 2003–2008: Inspiring Partnerships for Sustainable Tourism*, Government of South Australia
- Urban and Regional Planning Solutions, in association with Ecological Associates (2006) *Kangaroo Island Strategic Tourism Plan*, report prepared for Kangaroo Island Development Board and others
- Zero Waste SA (2005) *South Australia's Waste Strategy 2005–2010*, Government of South Australia





## GLOSSARY

# GLOSSARY

<b>Acid sulfate soils</b>	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.
<b>Affordable housing</b>	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 in the <i>Development Act 1993</i> and South Australian Housing Trust (General) Regulations 1995.
<b>Biodiversity</b>	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.
<b>Climate change</b>	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 ( <i>The Garnaut Climate Change Review, 2008</i> ).
<b>Community Wastewater Management System (CWMS)</b>	A system or scheme that is installed and operated by an individual council for the collection, treatment and disposal (including by recycling) of wastewater.
<b>Density</b>	Density is a measure of the population (persons) or the number of dwelling units in a given area.
<b>Development Plan</b>	The Kangaroo Island Development Plan should seek to promote the provisions of the South Australian 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.
<b>Distributed or embedded generation</b>	Where a generating unit is connected to a distribution network and not having direct access to the transmission network.

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.
Green industry	Green industries are primarily concerned with the supply of energy from renewable sources such as wind, solar and water (including waste), and those industries concerned with assisting other sectors of the economy to meet the climate change challenge by reducing their reliance on carbon-based energy supply.
Greenhouse gas emissions	Polluting carbon substances released into the atmosphere.
Gross state product (GSP)	Gross state product is the measurement of economic output of the state. It is the sum of all value added by industries in the state.
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.
Rural living	Large residential allotments outside towns that allow for minor primary production activity.
Strategic Management Plans	The <i>Local Government Act 1999</i> 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, that is, the <i>Kangaroo Island Plan</i> .
Sustainable development	Forms of development that meet the needs of the present without compromising the ability of future generations to meet their needs.
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.

<b>Water infrastructure</b>	<p>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.</p>
<b>Water security</b>	<p>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.</p>
<b>Water-sensitive urban design (WSUD)</b>	<p>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:</p> <ul style="list-style-type: none"> <li>■ the integrated management of groundwater, surface run-off (including stormwater), drinking water and wastewater to protect water-related environmental, recreational and cultural values</li> <li>■ the storage, treatment and beneficial use of run-off</li> <li>■ the treatment and re-use of wastewater</li> <li>■ using vegetation for treatment purposes, water-efficient landscaping and enhancing biodiversity</li> <li>■ using water-saving measures inside and outside domestic, commercial, industrial and institutional premises to minimise requirements for drinking and non-drinking water supplies.</li> </ul> <p>WSUD incorporates all water resources, including surface water, groundwater, urban and roof run-off, and wastewater.</p>