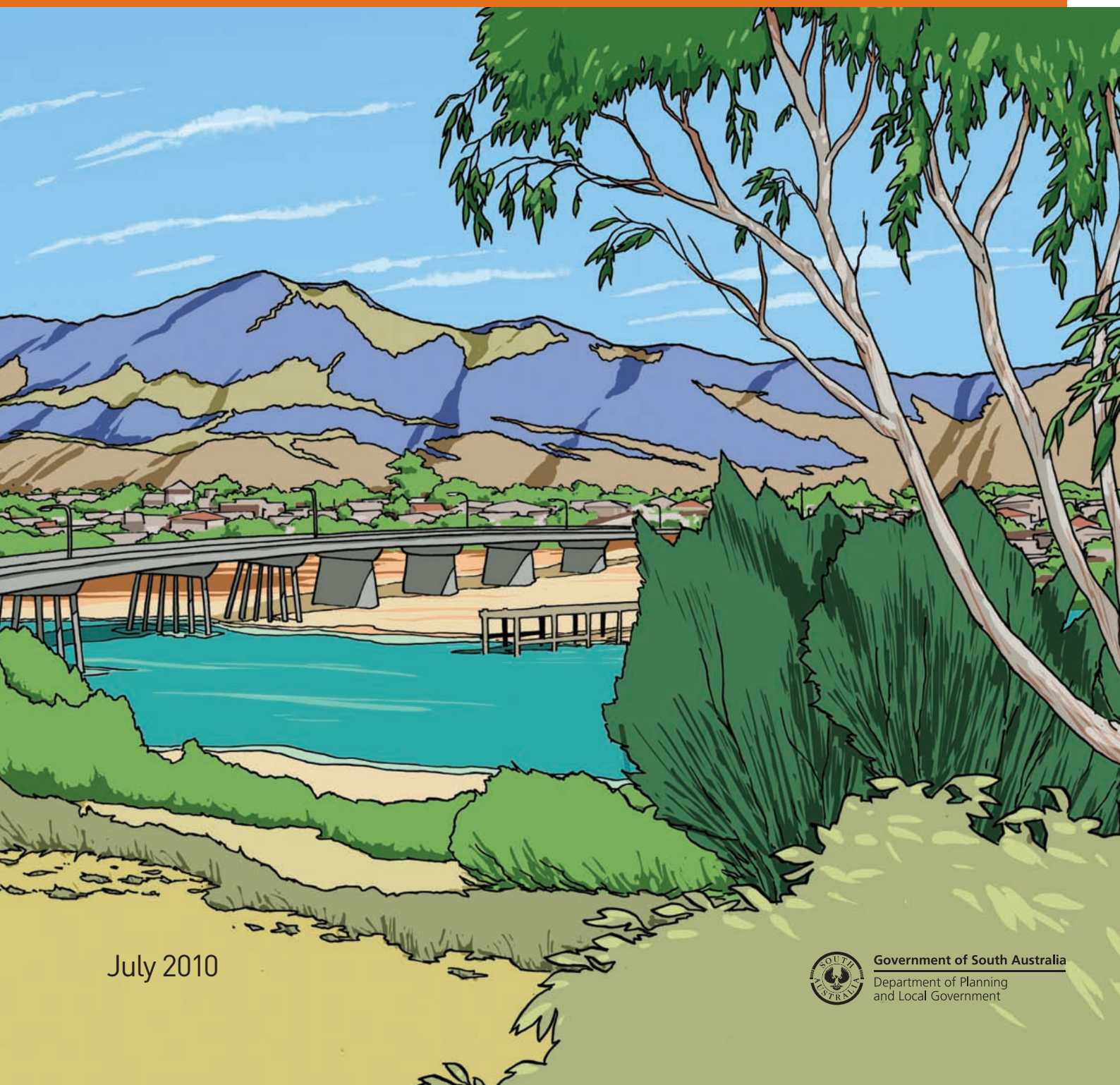


# Port Augusta Structure Plan

A section of the Far North Region Plan



July 2010



Government of South Australia  
Department of Planning  
and Local Government



# Port Augusta Structure Plan

A section of the Far North Region Plan

This document is the *Port Augusta Structure Plan: A section of the Far North Region Plan*.

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

#### For further information

Please visit [www.dplg.sa.gov.au](http://www.dplg.sa.gov.au) or telephone the Department of Planning and Local Government on 08 8303 0600.



**Government of South Australia**

Department of Planning  
and Local Government

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# INTRODUCTION

## Part 1

Port Augusta and the other cities of the Upper Spencer Gulf—Port Pirie and Whyalla—are poised for growth. Their location at the hub of South Australia's mineral-rich far north and western regions enables them to capitalise on the expansion of and increase in expenditure on mineral exploration and defence activities. They offer high-quality infrastructure, established industry clusters and growing retail and services sectors, as well as coastal living opportunities and proximity to the scenic Flinders Ranges.

A growing number of businesses, individuals and families are moving to this dynamic area, and private investment in the area is increasing.

In response to these trends, the State Government is working with the Port Augusta, Port Pirie and Whyalla councils to prepare Structure Plans that will guide the cities' growth and development.

The Structure Plans will ensure that Port Augusta, Port Pirie and Whyalla are sustainable and well-positioned to meet the needs of industry and communities during the next 15 to 30 years. The plans will also help the cities achieve key targets of *South Australia's Strategic Plan (2007)*.

### **The role of the *Port Augusta Structure Plan***

The *Port Augusta Structure Plan* (the Plan) has been developed by the South Australian Government (through the Department of Planning and Local Government, which provided project management) in collaboration with the Port Augusta City Council and the Northern Regional Development Board via consultation during 2007–2009.

The Plan aims to ensure that Port Augusta will have a supply of well-located, market-ready and affordable industrial, commercial and residential land available when needed, thereby providing the city with a competitive advantage as an investment destination.

The Plan outlines a blueprint for growth based on an assessment of existing infrastructure and environmental assets, future trends and principles of good urban planning. This growth will be achieved in accordance with the vision set out in Map 2, which shows the availability of vacant land and the locations for growth and future land uses.

While the Plan does not forecast the future population or growth rate of Port Augusta, it does provide a robust framework for a range of population growth scenarios and identifies suitable locations to accommodate substantial growth if it eventuates.

The *Port Augusta Structure Plan* is a volume of the South Australian Planning Strategy; it therefore provides statutory guidance to the Port Augusta City Council as the council undertakes its Strategic Management Plan and reviews and amends its Development Plan.

The *Development Act 1993* requires councils to ensure that their Development Plans are consistent with the land-use policies and directions of the relevant volume of the Planning Strategy. Development Plans contain the zones, maps and explicit rules that specify what can and cannot be done with land in the council area. All Development Plans must be amended through the Development Plan Amendment process, which involves mandatory public consultation.

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

## Alignment with state government policies

Structure Plans provide a 'bridge' between broad state-wide planning aims and council-specific planning needs, which ensures a consistent approach to land use and development across the state.

Structure Plans achieve this by working with key state policies. Firstly, they support the achievement of a range of social, economic and environmental targets in *South Australia's Strategic Plan* (SASP). Second, they feed into the state's *Strategic Infrastructure Plan* (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 Plan for Accelerating Exploration (PACE) Program (April 2004), and *South Australia's Waste Strategy* (2005).

## Relationship to South Australia's Strategic Plan

Figure 1 shows the relationship of the *Port Augusta Structure Plan* with *South Australia's Strategic Plan* (SASP) and its targets, as well as the links to several state policy initiatives.

## Planning for change in Port Augusta

The *Port Augusta Structure Plan* sets out land-use policies to manage the changes that are forecast to occur in the Upper Spencer Gulf and the Far North region of the state and which are likely to affect the city. Of particular concern are changes in population and climate, which are having and will continue to have significant effects on demands for services and infrastructure, the natural environment, and the character and economic prosperity of the city.

## Population Change

Between 2001 and 2006 Port Augusta's population grew an average of 0.8 per cent a year, reversing a sustained period of population decline and resulting in a population of 13,874 people by 2006.<sup>1</sup>

The demographic profile of Port Augusta is similar to the South Australian average: about 42 per cent of the population consists of people of working age (25–54 years) and 15 per cent consists of school-aged children; however, the city has a larger than average Aboriginal population (17 per cent, compared with the state average of 2 per cent). The number of people approaching or over the age of 65 is increasing as people retire from outback pastoral areas, with projections indicating that the number of people over 65 could double within just 15 years.

<sup>1</sup> Australian Bureau of Statistics (ABS), *Census of Population and Housing*, various years.



Figure 1 – SA Planning Context



An ageing strategy<sup>2</sup> commissioned by the Port Augusta City Council anticipates an increase in the working age population due to two trends: more people are migrating to the city to take advantage of new employment opportunities; and young people are choosing to remain in the city—also to take advantage of employment opportunities—reversing a previous trend.

In addition, Port Augusta has a large and growing number of temporary residents and visitors, which include contractors servicing the mining sector, defence personnel based at Cultana, tourists, service sector employees on short-term contracts, transitory Aboriginal people, and visitors from throughout the region coming to access services.

Continual monitoring of population growth rates and demographics over time will be critical to inform planning for additional housing and services in the city.

<sup>2</sup> Urban and Regional Planning Solutions (2007) *Port Augusta City Council Ageing Strategy 2007-2012: Making Port Augusta a better place to grow older.*

## Climate Change

The potential impacts of climate change on Port Augusta range from threats to water supply, increased risk of seawater inundation and fragmentation of native habitats to health issues among older, more vulnerable people and the subsequent pressure on health care services.

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

In recent years, state and local government and regional communities have been acting to improve water security through augmentation of supply, the introduction of permanent water conservation, and measures such as wastewater reuse and stormwater harvesting. Increased housing density, improved water efficiency of buildings and the incorporation of water-sensitive urban design principles in the development process will lead to more efficient water consumption for town populations. State and local governments are also developing regional demand and supply plans, as outlined in *Water for Good—A Plan to Ensure our Water Future to 2050*, for the eight natural resources management regions across the state by 2014, as well as investigating how regional communities can diversify their water supply sources.

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

These water and energy initiatives will extend the life and reliability of our 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 are 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.



# THE CONTEXT FOR THE PORT AUGUSTA STRUCTURE PLAN

## Part 2

### Port Augusta at a glance

The city:

- had a population of 13,874 at the 2006 census, which represented an increase since the 2001 census, ending a long period of population decline
- has a strong economy, extensive infrastructure and a wide range of educational, retail and commercial facilities and services, which enables the city to accommodate further population growth
- has a growing tourism industry and several popular tourist and holiday coastal attractions
- is adjacent to rich environmental assets, including coastal environments, national parks and conservation areas.

### Key issues for Port Augusta

The following issues were identified as critical to the city's future by local government, industry groups and communities during the 2007–2009 consultation. The issues are grouped under four themes, which are explored in greater detail in the following pages.

#### Sustainability and climate change resilience

- ensuring a high quality water supply and reducing per-household demand by developing strategies to re-use stormwater and wastewater
- supporting carbon trading
- ensuring development is appropriately located and not in environmentally significant areas or scenic landscapes that may be adversely affected.

#### Economic development and employment growth

- attracting and retaining a skilled and flexible workforce to strengthen the city's economic base
- attracting new industries that can be located in areas with infrastructure capacity for growth
- positioning the city to capitalise on the expansion of mining activities in the region
- providing greater employment, recreation and other opportunities to retain young people
- valuing the strong sense of community spirit and identity.

#### Housing and residential land supply

- discouraging residential development outside the city
- maintaining the city's character and heritage
- ensuring a development-ready supply of residential land.

#### Infrastructure and services provision

- expanding the capacity of water and wastewater infrastructure to support the growth of population, tourism and industry, including the re-use of stormwater and wastewater
- investing in infrastructure to support economic and population growth
- making the best use of existing and planned road and rail infrastructure.





# A VISION FOR THE GROWTH AND DEVELOPMENT OF PORT AUGUSTA

## Part 3

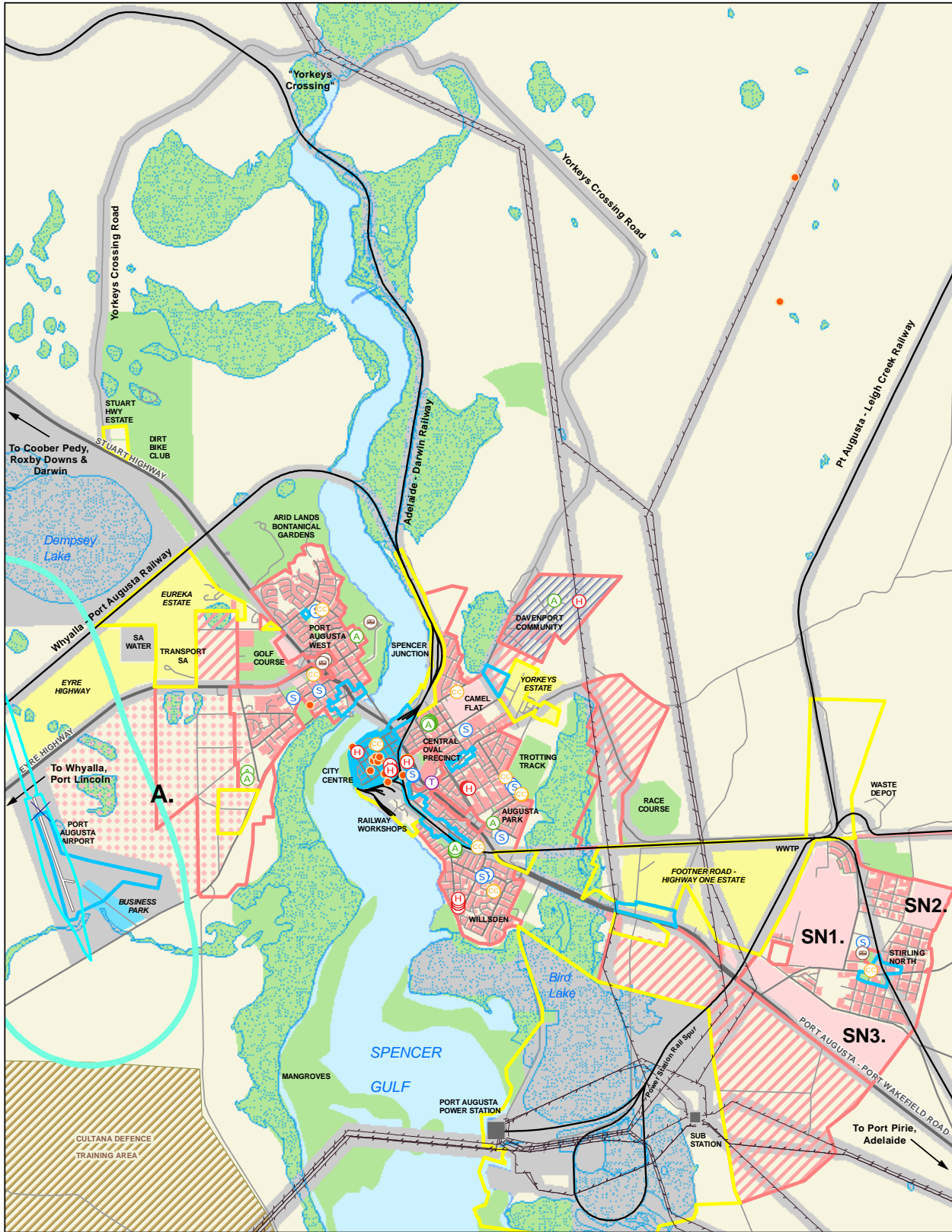
### An integrated approach

The *Port Augusta Structure Plan* provides a coordinated and integrated vision for land use and development and identifies the planning priorities necessary to achieve that vision.

The Plan allows Port Augusta to develop and grow by enabling the city to sustainably meet short- and long-term demand for industrial, commercial and residential land. It also seeks to retain the city's special qualities while balancing the needs of people today with the needs of future generations.

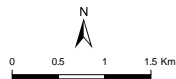
The aims of the vision are to:

- promote industrial, commercial and residential growth in designated areas
- manage growth to protect natural and industry assets
- assist industry to adapt to increasing variations in climate and water availability and so become more sustainable
- strengthen the role of Port Augusta as the major regional city servicing the Far North region
- support emerging industries, including the renewable energy sector
- attract and retain a skilled and flexible workforce to ensure a stronger economic base
- ensure an adequate supply of residential land for development
- encourage greater employment, recreation and other opportunities to retain young people.



Facilities	Residential	Industry	Infrastructure
(A) Aged Care	Potential Residential	Potential Industrial	National Road Network
(H) Health service	Residential Zone	Industrial Zone	Main Road
(CC) Child Care	Existing Residential	Airport	Local Road
(S) School	Maintain Very Low Density	Inner Noise Contour	Railway
(T) Tertiary	Investigation Area	Indicative Airport	High KV Powerline
(P) Caravan Park	Davenport Community	Investigation Area	
(H) Heritage Site	Commercial	Other	
	Potential Commercial	Strategic Assets Buffer	
	Commercial Zone	Environmental Assets	
		Subject to Inundation	

**NOTE:** Native vegetation remains largely uncleared on undeveloped land within and surrounding the city of Port Augusta. For more information regarding native vegetation mapping, please refer to: <http://maps.deh.sa.gov.au>





# PRINCIPLES AND POLICIES

## Part 4

This section of the Plan outlines the principles and policies that are required to realise the vision for Port Augusta, which are set under four themes:

- Sustainability and climate change resilience
- Economic development and employment growth
- Housing and residential land supply
- Infrastructure and services provision.

Under each theme the Plan identifies:

- principles to guide land-use planning and development
- planning-related policies that provide ongoing directions to the council and which must be reflected in the council's Development Plan.

While the policies and priorities of the *Port Augusta Structure Plan* may change over time, the principles will be a constant driving force for future generations to ensure the city is competitive, livable, sustainable and resilient to climate change.

### The principles are:

- 1 Recognise, protect and restore the city'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 Port Augusta to become resilient to the impacts of climate change
- 5 Provide and protect serviced and well-sited industrial land to meet projected demand
- 6 Ensure commercial development is well sited and designed to support the city's role and function
- 7 Strategically plan and manage growth of the city
- 8 Provide residential land for a diverse, affordable and sustainable housing to meet the needs of current and future residents and visitors



## Sustainability and climate change resilience

### Overview

The natural environment and cultural assets of the Port Augusta area play essential roles in guiding the city's future development. Settlements and industry are inextricably dependent upon climate and water resources, as well as land- and water-dependent eco-systems. As well, heritage sites and structures of significance provide a 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, property and the environment to danger from natural hazards such as floods and bushfires.

Achieving sustainable levels of demand for water and energy is also essential, particularly considering the effects of climate change.

Several state government policies, plans and programs provide guidance on the management of the environment, including state and regional natural resource management (NRM) plans; Environment Protection Authority policies, codes of practice and guidelines; Coast Protection Board policies; the *Living Coast Strategy*; the *Marine Planning Framework for South Australia*; Native Vegetation Council legislation; *No Species Loss—A Biodiversity Strategy for South Australia 2006–2016*; and *Tackling Climate Change: South Australia's Greenhouse Strategy 2007–2020*.

Several more specific studies further guide management of environmental resources in the Port Augusta area, including heritage surveys, the *Conservation Assessment of the Northern and Yorke Coast (2007)*, and the *Biodiversity Plan for the Northern Agriculture Districts of South Australia (2001)*.

The Port Augusta City Council should take these various plans and studies into account when they review and update the city's Development Plan.

The *Port Augusta Structure Plan* contains land-use principles and policies that aim to complement these documents and guide development in a manner that:

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



### **Planning-related priorities for the Port Augusta City Council**

- Incorporate information from environmental studies (for example, on biodiversity and climate change) to help identify areas of high biodiversity value to be protected and buffered, and to inform the review and updating of the Development Plan.
- Develop and maintain a local heritage register and identify heritage-listed sites in the Development Plan.
- Further understanding of the impact of climate change on natural resources and habitats in order to inform strategic planning for development and land use.
- Identify coastal areas of high scenic value and other landscapes with amenity significance in order that they can be protected.
- Identify and map areas that will be subject to risks and hazards.

Areas in Port Augusta that are unsuitable for development due to their environmental and/or cultural significance, or require measures to minimise the impacts of development, include:

- the coastal and estuarine areas of the Spencer Gulf, which are valued by residents and visitors, have high environmental significance, and are culturally important
- the Australian Arid Lands Botanic Gardens
- areas subject to hazards (both naturally occurring and human-induced), including: floods; disturbance of acid sulfate soils; bushfires; erosion; salinity; water, air and noise pollution; site contamination; and the potential impacts of climate change
- areas of Indigenous and non-Indigenous heritage importance
- areas with scenic views of the Flinders Ranges and the Gulf (including from tourist routes)
- areas with potential for development as appealing entrances to the city
- areas that support native vegetation deemed to be in good condition and species/plant communities listed as rare, threatened, or significant remnants.



## Principle 1

### Recognise, protect and restore the city's environmental assets

#### Water

Water ecosystems play a critical role in the Port Augusta area, providing flood mitigation and scenic amenity, and supporting biodiversity. Land-use and development decisions must support the ongoing health of these ecosystems by preventing any adverse effects, retaining natural drainage patterns, and—where ecologically appropriate—enabling the recharge of water resources with treated stormwater.

The combination of diminished rainfall due to climate change and population growth will increase competition for available water. More efficient water use and recycling of stormwater and wastewater are required in future 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 the adverse impacts of land use and development (such as the overuse of resources, impeded surface and subsurface water flows, increases in acid sulfate soils, erosion, land degradation and clearing, and pollution).
- 1.2 Ensure development retains natural watercourses and drainage patterns through appropriate buffers and WSUD.
- 1.3 Encourage water harvesting initiatives where ecologically appropriate.

#### 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, 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 in Port Augusta.

- 1.4 Pursue best practice water use efficiency in the built form at both house and town level, drawing upon WSUD techniques to reduce reliance on the River Murray.

## Coastal estuarine and marine environment

The Upper Spencer Gulf wetland system, which is included in the *Directory of Important Wetlands in Australia*<sup>3</sup>, acts as a fish nursery and provides physical protection from coastal waters. The extensive saltmarshes at the head of the gulf have been identified as having the highest priority for conservation among all the coastal areas of the Northern and Yorke Coast.<sup>4</sup> As saltmarsh complexes are particularly vulnerable to sea level rise, adequate land is required to support important fish nursery habitats, which will be endangered as the tide levels rise.

The South Australian Government is establishing the Gulf as a marine park to conserve representative examples of marine ecosystems while minimising impacts on fishing, aquaculture and other local activities. It is part of a network of 19 marine parks being developed in the state.

While the Gulf's scenic views and access to the coast make it attractive for development, it is important that important marine environments and habitats are retained. Poorly located and designed coastal developments in areas prone to natural processes, such as erosion, floods, acid sulfate soils and sand drift, can put people, property, infrastructure and the environment at risk.

Environmental capability guidelines are being developed to provide direction and ensure the

sustainability of future development and use of the marine environment. These guidelines will complement The *Port Augusta Structure Plan* and must be taken into account in the review and updating of the Development Plan.

Developments such as marinas, port facilities and desalination plants should be considered major projects that require detailed study, including environmental impact assessments.

## Policies

- 1.5 Avoid or minimise the adverse impacts of development on the ecological health of coastal, estuarine and marine environments.
- 1.6 Limit development in coastal areas of high conservation, landscape and environmental value, unless the proposal has a neutral or beneficial effect (refer *Eyre Peninsula Coastal Development Strategy*<sup>5</sup>).
- 1.7 Protect coastal, marine and estuarine areas of high conservation, landscape and environmental significance by avoiding development in these areas. In limited circumstances the development may require such a location—such as a tourist development of state significance—in which case the social and economic benefits must be demonstrated to outweigh the environmental and amenity impacts.
- 1.8 Provide buffer areas of sufficient width to separate new development from the foreshore and sensitive coastal features, and to accommodate long-term physical processes that may result in the movement of the coastline.

3 Environment Australia. *A Directory of Important Wetlands in Australia*, Third Edition, Environment Australia, Canberra, 2001. <[www.environment.gov.au/water/publications/environmental/wetlands/directory.html](http://www.environment.gov.au/water/publications/environmental/wetlands/directory.html)>.

4 *Conservation Assessment of the Northern and Yorke Coast* (January 2007)

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



## Biodiversity

Native vegetation remains on several sites surrounding Port Augusta and on vacant land in the city. These environments provide important habitats for a range of species, including nationally threatened species listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)<sup>6</sup>.

Retention and management of native vegetation/habitats on both private and public land helps reverse the long-term decline in the extent and quality of the state's native vegetation cover; it also contributes to the achievement of the 'no species loss' SASP target. Maintaining remnant native vegetation is part of the State Government's commitment to environmental sustainability and it is among a suite of initiatives to tackle climate change.

Native vegetation is protected by law. Clearances can occur only where permitted under the Native Vegetation Regulations, and/or after formal assessment of the quality and significance of the vegetation and approval from the Native Vegetation Council. South Australia's native vegetation legislation<sup>7</sup> sets out the assessment framework for vegetation clearances (see <[www.nvc.sa.gov.au](http://www.nvc.sa.gov.au)>).

To protect the city's biodiversity, development should be located and designed to minimise further loss, degradation and fragmentation of native vegetation, and to provide buffers and linkages between areas of biological significance. As well, ecological investigations and impact assessments should be conducted in areas that are proposed for rezoning or development.

## Policies

- 1.9** Recognise areas of high biodiversity value, and locate and design development to prevent the further 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 new areas of conservation significance and ensure their protection.

<sup>6</sup> <[www.environment.gov.au/epbc/about/index.html](http://www.environment.gov.au/epbc/about/index.html)>

<sup>7</sup> *Native Vegetation Act 1991, Native Vegetation Regulations 2003.*

## Scenic landscapes

Attention should be given to the planning and design of development to ensure 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 the Development Plan reassesses landscapes and associated views and devises measures to ensure their protection.

### Policies

- 1.13** Acknowledge, protect and manage areas of significant landscape and amenity value, including landscapes that form attractive backgrounds or entrances to the city 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 and design of buildings must:
- ▶ protect views to, from and along the ocean and scenic coastal areas
  - ▶ minimise the alteration of natural land forms
  - ▶ 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 that reduce the height or bulk of structures. Note that landscape screening to mitigate the visual impacts of development is not a substitute for re-siting or re-design.

## Principle 2

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

Hazards can occur naturally or result from development activity. Inappropriately located or designed development and land uses can increase the exposure to and impact of hazards, including floods, erosion, disturbance of acid sulfate soils, bushfires, erosion, salinity, land slides, as well as water, air and noise pollution and site contamination.

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. While better development planning and control measures cannot eliminate risks and hazards, they can contribute to reducing them.

Contamination can adversely affect human health and the environment both at the site and at adjoining and nearby sites. The planning authority has a responsibility to consider site contamination during rezoning and development of land to ensure that the site is suitable for the intended purpose and will not result in adverse impacts. Failure to do so may result in significant liabilities.

The review of site contamination and remediation must be incorporated into all structure planning and Development Plan Amendments, in accordance with the requirements set out in Planning SA's Advisory Note 20 *Site Contamination* (December 2001) and National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999.



**Policies**

- 2.1** Design and plan development to prevent the creation of hazards and to avoid naturally occurring hazards.
- 2.2** Locate and design development and infrastructure to minimise the threat and impact of bushfires on life and property, including creation of buffers around city areas adjacent to native bushland.
- 2.3** Develop other policies to minimise the impact of extreme bushfires in line with the findings of the 2009 Bushfires Royal Commission.
- 2.4** Develop partnerships and agreements between state and local government (particularly with regard to emergency service 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 the council's Strategic Plan and Development Plan policies and development assessment processes, using best practice models to:
  - ▶ reduce the social, environmental and economic effects of 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 for the future
  - ▶ reduce risks and protect natural areas and biodiversity

- ▶ protect human health and the environment where contamination has occurred
- ▶ adopt appropriate processes and methods to remediate contaminated land and ensure its suitability for any 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 a part of development processes.
- 2.8** Ensure new development is appropriately sited in relation to existing landfills to minimise the risk to people and property from 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

Port Augusta's heritage and cultural buildings and places provide the city with a distinct character linked to the attitudes and values that have shaped South Australian history. Identification and careful management of these sites help engender a sense of identity and provide a useful link with the past.

It is essential that heritage places be protected and preserved in a way that retains their value. Acts that identify and protect places of heritage and cultural significance include the *Heritage Places Act 1993* and the *Shipwrecks Act 1981*. In addition, the *Aboriginal Heritage Act 1988* prohibits any damage, disturbance or interference with Aboriginal sites, objects and remains without an authorisation by the Minister for Aboriginal Affairs and Reconciliation. Aboriginal people and the South Australian Government's Aboriginal Affairs and Reconciliation Division should be involved early in the planning or development process to help identify and protect sites of cultural significance.

#### Policies

- 3.1** Identify and protect places of heritage and cultural significance.
- 3.2** Identify the desired character for the city 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 provide a guidance role in relation to native title and Indigenous Land Use Agreements.

### Principle 4

#### Create the conditions for Port Augusta to become resilient to the impacts of climate change

Reducing carbon emissions and adapting to climate change are two of the most significant challenges facing South Australian cities and regions.

Urban form and building design must assist Port Augusta to become a climate-resilient and sustainable city, as well as support South Australia in achieving the SASP target of a 60 per cent reduction in greenhouse gas emissions (based on 1990 levels) by 2050. All developments and land divisions must incorporate efficient energy use into their planning and design, and maximise on-site water capture, treatment, storage and re-use practices.

The potential impacts of climate change, such as increased extreme weather events, storm surges and sea level rise, are likely to increase the risk of hazards in affected locations. In particular, the very low gradients on coastal areas at the head of the Spencer Gulf mean that even very small sea level changes may significantly increase the exposure of developments to floods.

It is therefore critical that infrastructure and development are sited to reduce the risk of flooding associated with sea level rise, and to provide for the retreat of marine and estuarine habitats, particularly among mangrove and saltmarsh communities.

The *Port Augusta Structure Plan* gives priority to ensuring South Australia's water resources are managed within sustainable limits and that greenhouse gas emissions are reduced. The city must support walking, cycling and the use of public transport.



### **Policies**

- 4.1** Promote carbon sequestration and greenhouse gas mitigation through appropriate land-use and 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 for town- and settlement-level energy efficiency by promoting alternative energy supplies (such as embedded generation).
- 4.4** Provide for development of alternative and innovative energy generation (such as marine, biomass and geothermal technologies) and water supply facilities, including guidance on environmental assessment requirements.
- 4.5** Provide for the incorporation of sustainable energy and water supply, conservation and efficiencies into the design of residential, commercial and industrial developments and subdivisions (for example, stormwater re-use, wind and solar technologies, green buffers, WSUD, building orientation to maximise solar access, and shaded areas).
- 4.6** Increase the energy efficiency of buildings through building standards and design guidelines intended to create more carbon-efficient structures.

## **Economic development and employment growth**

### **Overview**

Economic development plays a key role in facilitating population growth through the provision of employment opportunities. Creation of employment depends on an adequate supply of land for development and adequate infrastructure.

Port Augusta's potential for significant industrial growth stems from its location at the crossroads of major road and rail networks linking the nation's markets. The city also has a long association with industry, a range of established firms that provide support services, and close proximity to expanding mining and defence activities in the Far North region.

Growth in commercial and retail activity is reinvigorating Port Augusta's central business district and strengthening the city's role as a major regional service centre.

Tourism is another key industry and economic driver as the city and the surrounding region provide a number of attractions for visitors.

In addition to supportive Development Plan policies, investment in infrastructure, expansion of local training opportunities and attraction of skilled labour are critical to realising the city's economic development potential.



The *Port Augusta Structure Plan* has principles and policies aimed at ensuring that:

- there is a supply of well located land suitable for industrial, commercial and residential development
- commercial growth occurs according to the city's role and function as a service centre for the region
- existing industries are protected and strengthened
- opportunities for new and emerging industries are supported.

Land available for development falls into two categories:

- broadacre—large parcels of land (more than 4000 square metres) appropriately zoned (or identified for rezoning) and undeveloped
- redevelopment or infill—land that is appropriately zoned (or identified for rezoning) and is currently underutilised or vacant and hence has the potential for development or redevelopment.

The analysis of land supply undertaken to inform The *Port Augusta Structure Plan* considered a number of factors affecting land supply, including:

- physical attributes—such as topography, biodiversity assets (including quality and significance of native vegetation), soil types and contamination
- infrastructure issues—such as access to major utilities, services and adequate transport infrastructure

- land ownership and withholding issues—the availability of privately-owned sites largely depends on decisions by landowners, not all of whom choose to sell or develop their land in the short term
- rezoning—the Development Plan is subject to regular review by council (through the section 30 review process) and periodic amendment to zoning via the Development Plan Amendment (DPA) process
- best use of land—tight zoning policies for industrial estates prevent encroachment of non-industrial uses (for example, retail/showroom and places of worship)
- land use efficiency—better site utilisation can lead to less land needed to meet demand, effectively increasing the amount of available land; this ensures best use of infrastructure and enables economic and residential expansion without expanding the city's footprint
- interface issues—including residential development near industrial activities or strategic infrastructure assets, or industrial activities near retail hubs, which could lead to conflict between uses and, in some cases, the relocation of industries; it is vital therefore to consider surrounding land uses when planning land supply and to provide adequate separation between incompatible uses as per the Environment Protection Authority *Guidelines for Separation Distances 2007* (for example, barriers between residences and transport corridors to reduce noise and biodiversity buffers to separate incompatible land uses and biodiversity assets).



## Principle 5

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

#### Industrial land

##### *Policies*

- 5.1** Ensure a 200-hectare rolling land supply of development-ready industrial land to accommodate a range of demands.
- 5.2** Focus industrial development in estates on the north-western and southern perimeters of the city, in close proximity to major road and rail corridors.

#### Demand analysis

Port Augusta has considerable industrial growth potential and its location makes it the natural regional centre to service the growing mining and defence industries.

During 2005–2007, 30 developments were approved for industrial land uses, primarily workshops and warehouses. The average annual consumption rate of industrial land in Port Augusta during this period was 14 hectares (ha), with a median site area of 1.3 ha. Several warehouse and workshop developments required larger sites up to four ha.

#### *Transport industry hub*

Port Augusta is a natural hub for transport and distribution services crossing Australia. Spencer Junction, the busiest inland rail junction in the nation, handles 123 services a week linking the north and west of Australia with the major population centres of south-eastern Australia. A triple road train consolidation centre is located on the northern side of the city.

Companies such as Downer EDI, Pacific National, Transfield Services and Linfox have large engineering, freight distribution and logistics operations in the city and provide a significant amount of employment. It is anticipated that the freight transport industry will expand as mining and defence activities grow. Opportunities for the development of a road-rail intermodal facility have been identified at Port Augusta.

Industrial sites that are strategically located on road and rail routes are likely to be in high demand as industries dependent on access to freight corridors and companies servicing the resources sector seek a presence in the Upper Spencer Gulf.

As part of the proposed expansion of Olympic Dam, BHP Billiton intends to barge heavy equipment up the Spencer Gulf to Port Augusta for assembly. (The proposal has gone through the Development Assessment process involving detailed assessment of social, economic and environmental impacts and public consultation).

The Port Augusta airport provides a base for regular services to Adelaide and charter flights to mines and outback towns, as well as an operations centre for the Royal Flying Doctor Service (in 2007 the RFDS base received a \$3 million upgrade). The Airport Master Plan informs future investment and management to ensure aviation requirements can be met. Vacant land adjacent to the airport is earmarked for development as a business park.

### *Light manufacturing, trade services and utilities*

Port Augusta has an established cluster of metal fabricators and engineering firms, complemented by trades servicing residents, mining companies, and pastoralists across the Far North region. The city also has established rail and heavy machinery maintenance companies.

Opportunities are emerging to strengthen the base of companies providing services such as catering and laundering for an expanding defence training facility at Cultana, various mining companies in the region, and local aged-care facilities and serviced apartments.

Port Augusta is also the preferred location for many government services and private utility providers, including ETSA Utilities, Telstra and Department of Energy and Infrastructure, which will continue to require industrial land for workshops and depots.

### **Supply analysis**

Table 1 shows the land, location and access requirements for activities likely to place demand on industrial land in Port Augusta.

Table 1 – Land, location and access requirements for industrial activities in Port Augusta

<b>Activity type</b>	<b>Land requirement</b>	<b>Location/access</b>
Light manufacturing (including general engineering, metal fabrication, machinery repair)	<ul style="list-style-type: none"> <li>• small to large sites</li> <li>• flat land</li> <li>• small to medium separation buffers from residential uses</li> <li>• provision of utilities and information communications and technology (ICT)</li> <li>• industry/mixed zoning</li> <li>• competitively priced land</li> </ul>	<ul style="list-style-type: none"> <li>• access to freight routes, including double road train routes</li> <li>• access to supply chain/labour/customers</li> </ul>
Transport/warehousing	<ul style="list-style-type: none"> <li>• large sites</li> <li>• flat land</li> <li>• industry zoning</li> <li>• competitively priced land</li> <li>• ready site access/egress</li> <li>• advanced ICT</li> </ul>	<ul style="list-style-type: none"> <li>• triple road train staging points adjacent Stuart Highway</li> <li>• access to freight routes, including double road train routes</li> <li>• direct access to ports/rail/intermodals</li> <li>• proximity to customers/labour</li> <li>• buffered from residential areas to enable 24-hour operation</li> </ul>



### Short-term supply

Approximately 280 hectares of vacant land are available for development in Port Augusta. The main industrial areas are Eureka Estate and Footner Road–Highway One Estate, complemented by the smaller Yorkeys Estate and Stuart Highway Estate.

Structure Plans have been developed for Footner Road–Highway One Estate and Eureka Estate; both offer flexible land assembly and access to transport and other services.

This estimation takes into account the potential land uses already identified, including suitable buffers between existing transmission lines and industrial buildings and property boundary fences through allotments in the Footner Road–Highway One Estate. It also considers the BHP Billiton Environmental Impact Statement and identifies the need for an additional powerline alongside the Davenport to Olympic Dam powerline, should the Olympic Dam Mine expansion proceed.

A supplementary source of land supply could derive from the re-use of existing sites, including through the relocation of commercial/retail uses to alternative locations.

### Long-term supply

Long-term supply of industrial land should be located close to existing industrial areas. Two sites have been identified for further investigation:

- The site labelled ‘Eyre Highway’ on Map 2 provides a logical extension to the western industrial area and is located between the National Land Transport Network and National Rail Network corridors. Some of this land may be required for a haul road as part of BHP Billiton’s proposed expansion of the Olympic Dam Mine. SA Water has reserved a portion for the expansion of the wastewater treatment plant, should it be necessary in future.
- Land north of the Footner Road–Highway One Estate has been identified by SA Water for the possible relocation of the Port Augusta East Waste Water Treatment Plant. The remainder of this area could be investigated for industrial use.

The State Government, Port Augusta City Council and the Northern Regional Development Board continue to plan for future industrial land to ensure a supply that meets future requirements. A key element of this planning will be to protect and assist the growth of strategic industrial sites to maximise investment. These sites can be protected through appropriate zoning provisions and the prevention of development on adjoining land that may impact on future industrial use.

Table 2 shows the sites identified for the short- and long-term supply of industrial land. It provides site-specific information on the status of Development Plan policy and structure planning and the capacity and future requirements of infrastructure and services.

Table 2 – Indicative supply of vacant industrial land<sup>8</sup>

Sites	Area (ha)	Development Plan Zone and Structure Plan	Services and infrastructure capacity and requirements
<b>Short-term supply</b>			
<b>Stuart Highway Estate</b> Activity types envisaged: transport, warehousing, manufacturing	10	Industrial	<b>Transport:</b> Only use existing junctions with Stuart Highway.
<b>Yorkeys Estate</b> Activity types envisaged: light manufacturing, utilities, trade services, transport/warehousing	24	Partly zoned industrial. Abuts residential areas, requires appropriate buffers/separation distances	<b>Electricity:</b> 11kV & 33kV Infrastructure exists in the delineated area for proposed development. Existing 11kV feeder load (PA02) supplying this area is at 65 per cent capacity. <b>Transport:</b> Access by way of Yorkeys Crossing bypass route (that is, avoiding residential areas). Junction with Port Augusta–Port Wakefield Road may need improvement.

Table continues on the following page →

<sup>8</sup> This table provides an example of how the identified land matches the activity types likely to be established in Port Augusta (as identified through the structure planning process) and is not intended as an exhaustive list.



<p><b>Eureka Estate</b> Activity types envisaged: transport, warehousing, manufacturing</p>	<p>75</p>	<p>Industrial Structure plan prepared, including potential for an intermodal facility</p>	<p><b>Wastewater:</b> Significant development would require expansion/augmentation of the Port Augusta West wastewater treatment plant (WWTP) and network. Area surrounding the WWTP must be left undeveloped to ensure sufficient buffer distances.</p> <p><b>Electricity:</b> 11kV &amp; 33kV infrastructure exists on the south-eastern side of the site (Madlands Road). Existing 11kV feeder load (PA07) supplying this area is at 60 per cent capacity. Development demand in excess of 2 MVA could warrant dedicated substation or a further upgrade of the Port Augusta West Substation with additional feeder exits. An alternative supply to support the Port Augusta West Substation would require consideration.</p> <p><b>Transport:</b> Use existing junctions with Stuart Highway and Eyre Highway only. Junctions may need to be improved. Consider intermodal activity in conjunction with proposed Eyre Highway Estate. Access to cater for b-triples.</p>
<p><b>Footner Road–Highway One Estate</b> Activity types envisaged: light manufacturing, utilities, trade services, transport/warehousing</p>	<p>170</p>	<p>Industrial, some Public Purpose. Partly structure planned—buffer from proposed residential areas in Stirling North.</p> <p>Ensure design layouts of industrial land divisions involve ElectraNet’s advice to ensure functional efficiency of land is not compromised by transmission lines easement encroachment and inappropriately located buildings and steel fencing.</p>	<p><b>Electricity:</b> 11kV infrastructure exists approx. 700 m along Footner Road from Highway One. Existing 11kV feeder load (PA04) supplying this area is at 61 per cent capacity. Development demand in excess of 2 MVA could warrant dedicated substation, requiring land to locate substation. Voltage regulation may be applicable.</p> <p><b>Transport:</b> No direct property access to Port Augusta–Port Wakefield Road. All property access is to be by way of service roads. The location and nature of local road junction points needs to be considered in the context of maintaining current road performance (including speed zone). This may require consideration of grade separated junction (in conjunction with commercial area). Consider intermodal activity. Access to cater for b-triples.</p>

Table continues on the following page →

Long-term supply			
<p><b>Eyre Highway</b> Activity types envisaged: transport/warehousing, manufacturing</p>	224	Constrained—requires rezoning	<p><b>Wastewater:</b> Significant development would require expansion of Port Augusta West WW network and augmentation of WWTP. Abut Port Augusta West WWTP. Essential that immediate area surrounding the WWTP be left undeveloped to ensure sufficient buffer distances.</p> <p><b>Electricity:</b> 11kV &amp; 33kV Infrastructure is within 1.5kM (Madlands Road). Existing 11kV feeder load (PA07) supplying this area is at 60 per cent capacity. Development demand in excess of 2 MVA could warrant dedicated substation or further upgrade of Port Augusta West Substation with additional feeder exits. Alternative supply to support Port Augusta West Substation would require consideration.</p> <p><b>Transport:</b> No direct property access to Eyre Hwy. All property access is to be by way of service roads. The location and nature of local road junction points needs to be considered in the context of maintaining current road performance (including speed zone). This may require consideration of grade separated junctions. Consider intermodal activity in conjunction with Eureka Estate. Access to cater for b-triples. Height of buildings must meet requirements of development near airfields.</p>
<b>Total potential supply</b>	<b>503</b>		



Table 3 – Industrial workforce projections

Timeframe	Additional population <sup>a</sup>	Additional workforce <sup>b</sup>	Industrial workforce <sup>c</sup>
15 years, 2011–2026	5000	1985	597
25 years, 2011–2036	9700	4415	1329
30 years, 2011–2041	13,400	5940	1788

Notes:

- a Additional population was calculated using IBIS World's moderate growth scenario.
- b Additional workforce (excluding unemployed persons) comprises 40 per cent of the population over the first 15-year period and 45 per cent over the subsequent periods.
- c Assumes that the industrial workforce comprised 30.1 per cent of the 2006 Census workforce population (consisting of: Managers/Administrators–1 per cent; Professionals/Associate Professionals–2 per cent; Clerical–4 per cent; Production/Transport–9.1 per cent; Labourers–8 per cent; and Not Stated–6 per cent).

Table 4 – Industry floor space projections

Timeframe	Workforce	Floor Space (m <sup>2</sup> ) <sup>a</sup>	Site Area (ha) <sup>b</sup>	Precinct Area (ha) <sup>c</sup>	Allowance (ha) <sup>d</sup>
15 years, 2011–2026	597	59,700	59.7	79.6	103
25 years, 2011–2036	1329	132,000	132.9	177.2	230
30 years, 2011–2041	1788	178,800	178.8	238.4	310

Notes:

- a Assumes 100 square metres of floor area per worker.
- b 10 per cent site coverage.
- c Assumes 25 per cent infrastructure requirements.
- d Assumes additional allowance for land not brought to the market.



Tables 3 and 4 show the predicted increase in employment in industry and the associated demand for land to accommodate growth. Based on IBIS World's moderate growth scenario, Port Augusta has sufficient vacant industrial land to meet needs for the next 30 years. Structure Plans have been developed for the Footner Road and Eureka sites, with both offering flexible land assembly and access to transport and services.

As with all privately owned land, there is a possibility that existing land may not be made available to the market. This necessitates rezoning of a further 30 per cent of land to ensure supply meets demand. Accordingly, the industrial land required for the first 15 years would be around 103 hectares (ha), rising to about 230 ha over 25 years and 310 ha over 30 years.

The additional land to be rezoned should be located close to existing industrial areas. The site to the south-west of Eureka Estate provides a logical extension to the western industrial area and is located between the National Land Transport and Rail Network corridors. The land north of the Footner Road–Highway One Estate is also a strategic site.

A supplementary source of land can also be obtained by the redevelopment of existing sites.

## **Commercial, retail and services supply and demand**

### **Principle 6**

**Ensure commercial development is well sited and designed to support the city's role and function**

#### **Demand analysis**

The growth of commercial and retail activity is reinvigorating the Port Augusta CBD and strengthening the role of the city as a major regional service centre.

Since 2001, more than \$24 million has been invested in development along the picturesque foreshore in the CBD, including two major retailers and tourist accommodation. These developments have been a catalyst for proposals for new office developments and the refurbishment of shops, cafes, supermarkets, restaurants and hotels.

In 2005 Port Augusta serviced an estimated regional population of 27,000 people as well as more than a million visitors and passing travellers every year.<sup>9</sup> Estimated retail spending in the main catchment area was \$242 million, which was forecast to grow at an average of 6 per cent per year to \$459 million in 2016, with the greatest growth expected in catering and home wares.<sup>10</sup> The majority of growth in trade was assumed to flow from the increased regional population associated with the proposed expansion of the Olympic Dam Mine.

<sup>9</sup> Urbis JHD (2005) *Port Augusta Economic Profile*, prepared for Port Augusta City Council, Northern Regional Development Board, and Dequetteville Pty Ltd.

<sup>10</sup> Ibid.



During 2005–2007, the consumption rate of commercial land in Port Augusta averaged nine hectares per year, while the median site area of allotments being developed for commercial purposes was 1755 square metres, with several medical centres and tourist accommodation developments on much larger sites.

#### **Retail**

There are currently two major supermarkets in the city centre. Regional population and visitor growth, together with a desire to improve the function of the city centre, may increase calls for the refurbishment and/or expansion of the older supermarket developments.

A number of small retail/service outlets and shopfront offices (such as hairdressers, medical practitioners, real estate agents, solicitors, tax agents, banks) are also located in the city centre, adding vibrancy to the CBD and providing a diversity of shopping options. This will be enhanced as redevelopment of hotels is occurring and a number of new restaurants and cafes have been proposed.

Smaller neighbourhood centres within walking distance of homes and providing for the daily needs of local communities are located in Stirling North and Port Augusta West.

Along Highway One there are a number of fast food outlets to cater for the high volume of passing trade. There is strong developer interest in larger sites outside the city centre, located close to freight routes, to establish a cluster of bulky goods furniture, electrical and hardware retail stores. Such sites could also provide for the relocation of existing bulky goods outlets located in industrial areas, as well as satisfy increasing demand for motor showrooms and truck/machinery sales and service operations.

Surveys undertaken in 2005 show that 73 per cent of households shop out of town every three months and 45 percent of those households use Port Augusta as their primary place of shopping.<sup>11</sup> This presents an opportunity to capture more retail spending through an improved range of retail facilities and services in the city.

#### **Business accommodation and facilities**

Contemporary office space is in high demand in Port Augusta as companies servicing the mining and defence sectors are increasingly seeking to establish a presence in the Upper Spencer Gulf. In addition, many firms and service providers operate out of ageing offices or converted houses near the city centre. Council and Regional Development Australia (Far North) established a successful business incubator providing serviced offices for start-up businesses in the old Way and Works Building.

Demand also is growing for tailored accommodation for visiting business people. Such accommodation should provide spaces for meetings and conferences as well as business centre facilities. In addition, there is a strong demand for accommodation for employees of industries located temporarily in the region to support mining expansions.

<sup>11</sup> The Port Augusta-Regional Service Centre Report (April 2006) prepared by Collins Anderson Management.

### *Health and education services*

Port Augusta has the highest proportion of people employed in the health and community services sector outside of Adelaide. Port Augusta Hospital is the headquarters for Health SA Regional and the Centre for Excellence in Aboriginal Health. It services the Far North region with a catchment of 31,000 people. It provides a comprehensive range of services, including health training programs, and is easily accessible by public transport. The hospital site has scope for further expansion, should the need arise in the future.

In addition, Port Augusta has an extensive range of specialist, community and allied health services, including dentists, orthodontists, chiropractors, physiotherapists, a Medicare office and ambulance service. The city is also the South Australian base for the Royal Flying Doctor Service.

Port Augusta also has a wide range of public and private, primary and secondary schools, as well as an Indigenous education centre, School of the Air and TAFE. The location of these facilities across Port Augusta provides an opportunity for users to walk or cycle.

### *Justice*

Port Augusta is the regional centre for policing and dispensing justice in the Far North Local Service Area, which is the largest policing service area in South Australia, covering 670,000 square kilometers, or 73 per cent, of the state's land area. The city has a recently upgraded the courthouse, which houses a full range of courts and tribunals, and Port Augusta Prison, which provides accommodation for up to 282 prisoners.

### *Tourism facilities*

Port Augusta has a good range of tourist accommodation and attractions, including the popular Wadlata Outback Tourism Centre and the Australian Arid Lands Botanic Gardens. An increase in visitor numbers highlights the importance of retaining popular tourist attractions, upgrading existing accommodation and developing new facilities.

There is a strong need for facilities that provide for larger motor homes. The State Government and Port Augusta City Council are exploring the potential for new tourist experiences, including through the implementation of the Flinders Ranges and Outback Integrated Regional Strategic Tourism Plan, which sets out the vision for tourism growth in the region for the next 20 years.

### *Arts and culture*

Demand for a wider range of entertainment options has prompted the Commonwealth Government and the Port Augusta City Council to invest in significant arts venues in the city. The former Magistrate Courts Building is being transformed into a high quality visual arts space with a courtyard for outdoor performances. The heritage Institute Building is also being renovated into a 150-seat, multi-purpose performing arts theatre and function hall.



### Supply analysis

Table 5 outlines the land, location and access requirements of various commercial, retail and service activities in Port Augusta.

Table 5 – Land, location and access requirements for commercial, retail and services activities in Port Augusta

Activity type	Land requirement	Location/access
Office/service centre	<ul style="list-style-type: none"> <li>• small to medium site</li> <li>• commercial zoning</li> <li>• information and communications technology (ICT)</li> </ul>	<ul style="list-style-type: none"> <li>• central to customers</li> <li>• access to labour</li> <li>• CBD or local centre location</li> </ul>
Supermarkets	<ul style="list-style-type: none"> <li>• medium to large site</li> <li>• commercial zoning</li> <li>• ICT</li> </ul>	<ul style="list-style-type: none"> <li>• ready access from all parts of the city, including by public transport</li> <li>• access to labour/supply chain</li> <li>• CBD or local centre location</li> <li>• high traffic exposure</li> <li>• access to freight route</li> </ul>
Small retail such as shops, cafes, banks, newsagents, delis	<ul style="list-style-type: none"> <li>• small site</li> <li>• commercial zoning</li> <li>• high through/passing traffic</li> </ul>	<ul style="list-style-type: none"> <li>• CBD or local centre location</li> <li>• proximity to labour supply</li> <li>• access to supply chain</li> <li>• high traffic exposure</li> </ul>
Hotels/motels/clubs	<ul style="list-style-type: none"> <li>• medium to large site</li> <li>• commercial zoning</li> <li>• competitively priced land</li> <li>• ICT</li> <li>• buffer to residential areas</li> </ul>	<ul style="list-style-type: none"> <li>• access to labour</li> <li>• high traffic exposure</li> </ul>

Table continues on the following page →

Activity type	Land requirement	Location/access
Bulky goods retail outlets	<ul style="list-style-type: none"> <li>• medium to large site</li> <li>• commercial zoning</li> <li>• competitively priced land</li> <li>• ICT</li> </ul>	<ul style="list-style-type: none"> <li>• double road train access</li> <li>• proximity to customers</li> <li>• access to labour/supply chain</li> <li>• proximity to freight route</li> </ul>
Showrooms/ motor vehicle sales and service	<ul style="list-style-type: none"> <li>• medium site</li> <li>• commercial zoning</li> <li>• competitively priced land</li> <li>• ICT</li> </ul>	<ul style="list-style-type: none"> <li>• b-double access</li> <li>• proximity to customers</li> <li>• proximity to labour/supply chain</li> <li>• high traffic exposure</li> </ul>
Medical services	<ul style="list-style-type: none"> <li>• small to large site</li> <li>• competitively priced land</li> <li>• advanced ICT</li> </ul>	<ul style="list-style-type: none"> <li>• ready access from all parts of the city, including by public transport</li> <li>• access to labour</li> </ul>
Fast food outlets	<ul style="list-style-type: none"> <li>• small to medium site</li> <li>• commercial zoning</li> </ul>	<ul style="list-style-type: none"> <li>• proximity to customers</li> <li>• access to labour/supply chain</li> <li>• high traffic/people exposure</li> </ul>



Table 6 shows Port Augusta’s four distinct types of commercial and retail centres. Each centre provides for a specific mix of uses that collectively ensure a comprehensive range of activities to service residents and visitors. It is important that their distinct roles are maintained to ensure each centre remains viable.

In general, infrastructure servicing the centres has sufficient capacity to allow for redevelopment and growth. Developments with significant demand could warrant network extensions and/or augmentation. Comprehensive traffic impact studies need to be prepared to determine road improvements to cater for expected traffic (including cumulative impacts).

Table 6 – Role and function of centres in Port Augusta

City centre	<p>Role: main centre serving city and surrounding region</p> <p>Mix of uses: major retail, commercial, administrative, entertainment, education, health, civic, recreational and open space facilities</p>
Highway One	<p>Role: to serve highway traffic and provide for large floor space retail outlets that require access to freight route</p> <p>Mix of uses: bulky goods, fuel outlets, drive-through fast food outlets</p>
Neighbourhood Centre – Stirling North – Westside	<p>Role: to provide shopping and community facilities to serve the daily needs of the local community; generally located within walking distance of homes</p> <p>Mix of uses: daily convenience shopping and local services</p>
Port Augusta Airport Business Park	<p>Role: to service commercial and industrial activities</p> <p>Mix of uses: commercial/industrial activities requiring close proximity to the airport</p> <p>Specific requirements: development must comply with design guidelines for ‘developments near airfields’</p>

## **Policy**

**6.1** Reinforce the primacy of the city centre.

### *City centre*

Retaining the primacy of the city centre is a priority to ensure that it remains the vibrant focus of civic, commercial, shopping, social and cultural activity in Port Augusta and the region.

The city centre provides a mix of major supermarkets, specialty shops, cafes and restaurants, offices and consulting rooms, financial and business services, arts venues and hotels. It is also the location of the city's major civic facilities. These activities are complemented by high-density residential and tourist accommodation in adjacent areas, which will take advantage of the waterfront views and add vibrancy to the precinct once completed.

The city centre has retained a number of heritage buildings and locations, such as the wharf area, which link the local community and visitors with the strong, confident attitudes and values that have shaped and sustained the city. It is essential that sites of national, state and local significance be identified in the Development Plan and that urban design retains the heritage character of this precinct.

Two urban design studies<sup>12</sup> have been prepared to inform the reinvigoration of the city centre to improve its appeal and make it more functional. These studies provide clear direction for future development, building on the strong sense of place provided by iconic buildings and heritage sites, and informing the character of new buildings, streetscapes and open spaces in the precinct.

## **Policy**

**6.2** Retain highway services and investigate suitable locations for bulky goods retailing.

### *Highway One*

A number of service stations, fast food outlets and motels are located adjacent to Highway One, as well as machinery sales and service retailers. It is envisaged that these services will remain in their existing locations; however, vacant sites with high exposure frontages provide considerable scope for further development.

Should bulky goods developments that require large floor space (more than 500 square meters) be proposed, they should be clustered in potential sites adjacent to the highway; such proposals require detailed traffic impact assessments and structure planning investigations.

Maintaining the performance (including the speed zone) of national highways is paramount to supporting efficient and safe traffic movement. Detailed investigations need to incorporate the requirement for no direct access to the Port Augusta–Port Wakefield Road, with all property access via service roads. The location and nature of local road junction points would also need to be carefully considered, including a grade separated junction.

Flinders View Business Park offers sites for industry-focused commercial developments, with 75 per cent of sites developed in the first 12 months of release. Similar commercial developments may be suitable in the industrial zoned area on the northern side of the highway, subject to detailed traffic impact assessments and structure planning.

All development along Highway One should have consideration for the desired city entry statement.

<sup>12</sup> Port Augusta Central Business District Urban Design Framework Study (2002); Civic Centre Precinct Urban Design Study (2008).



### **Policy**

- 6.3** Ensure neighbourhood and local centres continue to provide basic levels of service to the immediate area to encourage walking and cycling.

#### ***Neighbourhood centres—Westside, Stirling North***

The scale of growth predicted by council for Port Augusta West will generate demand for additional retail, personal services, health and community services, finance and insurance, property and business services, education and training (including primary and secondary schooling), infrastructure provision, communication services, construction services, and accommodation, cafes and restaurants to support the population. To meet this demand when it eventuates, provision for a new neighbourhood centre and local centres should be incorporated into this area provided it can be demonstrated that no adverse effects on existing centres will be experienced.

Stirling North is a residential area, with commercial activity limited to convenience shops and a hotel. As this area continues to develop, a commensurate range of retail facilities and services will also need to be provided to support the growing resident population.

### **Policy**

- 6.4** Support commercial growth through the establishment an Airport Business Park.

#### ***Port Augusta Airport Business Park***

Expansion of operations at the Port Augusta Airport may stimulate demand for commercial-related activity. Following the \$3 million upgrade of the Royal Flying Doctor Service operation base, there is scope to develop some of the nearby land as a business park for commercial activities requiring proximity to the airport, such as transport, warehousing and logistics, as well as engineering knowledge-based industries.

Buildings and their intended use need to meet strict height and design guidelines required for developments near airports.

### **Policy**

- 6.5** Provide health and education facilities and services in suitable locations, enabling equitable access to the community.

#### ***Health and education facilities***

Good access by public transport, car or walking and cycling to health and education facilities is essential to enable a community to function effectively. Equally important is having close proximity to related services (for example, locating child care near schools to provide convenience for parents, enhance the potential for integrated education and reduce the need for transport).

Demographic shifts change in the community could lead to other sites requiring development as education facilities and may render some existing sites surplus to needs in the future.



Table 7 – Office, retail, administration and community (ORAC) workforce projections

Timeframe	Additional population <sup>a</sup>	Additional workforce <sup>b</sup>	ORAC workforce <sup>c</sup>
15 years, 2011–2026	5000	1985	979
25 years, 2011–2036	9700	4415	2177
30 years, 2011–2041	13,400	5940	2928

Notes:

- a Additional population calculated using IBIS World's moderate growth scenario.
- b Additional workforce (excluding unemployed persons) comprises 40 per cent of the population over the first 15-year period and 45 per cent over the subsequent periods.
- c Assumes that ORAC workforce comprised around 49.3 per cent of the 2006 Census workforce population (consisting of: Managers/Administrators–4.3 per cent; Professionals/Associate Professionals–19 per cent; and Clerical–26 per cent.)

Table 8 – Office, retail, administration and community floor space projections

Timeframe	Workforce	Floor Space (m <sup>2</sup> ) <sup>a</sup>	Site Area (ha) <sup>b</sup>	Precinct Area (ha) <sup>c</sup>
15 years, 2011–2026	979	24,475	6.1	79.6
25 years, 2011–2036	2177	54,425	13.6	177.2
30 years, 2011–2041	2928	73,200	18.3	238.4

Notes:

- a Assumes 25 square metres of floor area per worker.
- b 40 per cent site coverage.
- c Assumes 25 per cent infrastructure requirements and excludes areas for school ovals, recreation areas etc.



## Service and commercial trades supply and demand

### Policy

- 6.6** Ensure an adequate supply of appropriately zoned land to support opportunities for small scale and local industries within the city.

### Demand analysis

Port Augusta has a range of well established metal fabricators, engineering firms, trades servicing residents, mining companies, and pastoralists across the region. The city also has established rail and heavy machinery maintenance companies, government and private utility companies, including ETSA Utilities, Telstra and Transport SA.

Additional opportunities are emerging to strengthen the base of these companies. As employment opportunities improve, population numbers are expected to increase which will provide additional demand for services.

### Supply analysis

The following table outlines general topographical location and access requirements of activities likely to place demand on trade services in Port Augusta.

Although local trade services in general do not require a significant amount of land, the continued development of a range of industry sectors in Port Augusta may be significant. Port Augusta is well positioned as industry has tended to develop in clusters and continued development of these linkages is encouraged.

Projected workforce associated with the service trade industry is comparable to that of the industrial sector although due to the nature of these activities however, a smaller amount of total land area is required to accommodate the growth.

Service trade industries often provide secondary services to key ‘anchor’ companies. Where practical, these should be located in close proximity to one another. These synergies support flexible zoning, which would encourage the co-location of anchor and smaller support industries and trade services.

Table 9 – Land, location and access requirements for local trade services in Port Augusta

Activity type	Land requirement	Location/access
Local trade services	<ul style="list-style-type: none"> <li>• Small sites</li> <li>• Competitively priced land</li> <li>• Minor buffers from residential uses</li> <li>• Light industry/commercial zoning</li> </ul>	<ul style="list-style-type: none"> <li>• Central to customers</li> </ul>

Table 10 – Services, trades and commercial (STC) workforce projections

Timeframe	Additional population <sup>a</sup>	Additional workforce <sup>b</sup>	STC workforce <sup>c</sup>
15 years, 2011–2026	5000	1985	409
25 years, 2011–2036	9700	4415	909
30 years, 2011–2041	13,400	5940	1223

Notes:

- a Additional population calculated using IBIS World's moderate growth scenario.
- b Additional workforce (excluding unemployed persons) comprises 40 per cent of the population over the first 15-year period and 45 per cent over the subsequent periods.
- c Assumes that STC workforce comprised around 20.6 per cent of the 2006 Census workforce population (consisting of: Managers/Administrators–1 per cent; Tradespersons–13.4 per cent; Labourers–4.2 per cent; and Not Stated)

Table 11 – Services, trades and commercial workforce floor space projections

Timeframe	Workforce	Floor Space (m <sup>2</sup> ) <sup>a</sup>	Site Area (ha) <sup>b</sup>	Precinct Area (ha) <sup>c</sup>	Allowance (ha) <sup>d</sup>
15 years, 2011–2026	409	16360	4.9	6.5	8.5
25 years, 2011–2036	909	36360	10.9	14.5	18.9
30 years, 2011–2041	1223	48920	14.7	19.6	25.5

Notes:

- a Assumes 40 square metres of floor area per worker.
- b 30 per cent site coverage.
- c Assumes 25 per cent infrastructure requirements.
- d Assumes 30 per cent additional allowance for land not brought to the market.



## Housing and residential land supply for sustainable growth

### Principle 7

#### Strategically plan and manage growth of the city

The *Port Augusta Structure Plan* seeks to ensure a supply of land zoned for residential use and identifies directions for long-term supply. The amount of land required to accommodate new dwellings depends on several factors, including:

- density of development
- opportunities for infill/redevelopment of land in the city and uptake of those opportunities
- housing market trends and the needs of different demographic groups.

Planning the expansion of Port Augusta needs to consider the city's strategically significant environmental and infrastructure assets. Priority should be given to making the best use of land within the current city boundaries through redevelopment, infill and increasing yields on broadacre land, prior to rezoning of additional land for residential uses unless development occurs in a Master Plan approach.

Emphasis is on ensuring a logical and efficient extension of the city's physical infrastructure as the cost of providing essential services, such as roads, energy, water and sewerage, make it essential that the development of Port Augusta proceeds in an orderly manner.

This approach will make optimal use of the community's investment in infrastructure, facilities and services. In addition, redevelopment and infill can add vitality to underutilised parts of the city and where existing development no longer meets market demand.

Port Augusta is divided into three distinct precincts—central Port Augusta, Stirling North and Westside.

**Central Port Augusta** is the heart of the city and features the city centre, Port Augusta Hospital and Health Services, the Central Oval Precinct and Cultural Arts Centre. With proximity to services, gulf views and ageing housing stock, Central Port Augusta offers significant potential for residential infill and redevelopment. Most development opportunities can be expected from:

- infill of unused or underutilized allotments
- redevelopment of sites along the waterfront
- broadacre development of the few remaining parcels (for example, Camel Flat).

Stirling North is located to the south-east of Central Port Augusta, separated by Bird Lake and a stretch of Highway One bounded by industrial and commercial activities. It is dominated by rural living (large residential allotment) developments, with substantial scope for more intensive residential development.

**Stirling North** has a combination of infill opportunities within the existing urban area and possible future broadacre development surrounding the township. The potential for infill depends on landholders releasing allotments to the market place.

Land surrounding the township is constrained by current zoning, easements, separation buffers and limited wastewater treatment facilities; however, Stirling North has considerable scope for land supply for residential development in the long term.

**Westside** is across the Gulf from Central Port Augusta and features residential development with land zoned for large-allotment rural living toward the airport. Development opportunities are largely broadacre in nature and subject to rezoning and service provision. Detailed investigations are required to determine the potential for more intensive residential development in the rural living area and possible residential expansion to the west (south of Eyre Highway).

### Demand analysis

The *Port Augusta Structure Plan* is robust enough to accommodate a range of growth possibilities. Table 12 sets out the potential demand for new dwellings based on various population growth rates. The rate of growth has significant impact on the possible future size of the city. A growth rate of 0.5 per cent would result in a gradual population increase over the next 25 years, whereas a growth rate of 2.5 per cent would nearly double the city's population during the same period.

Table 12 – Port Augusta population growth rates and new dwelling scenarios

Year	0.5 per cent pa growth rate		1 per cent pa growth rate		2 per cent pa growth rate		2.5 per cent pa growth rate	
	Population	Additional dwellings <sup>#</sup>	Population	Additional dwellings <sup>#</sup>	Population	Additional dwellings <sup>#</sup>	Population	Additional dwellings <sup>#</sup>
2006	13,874	–	13,874	–	13,874	–	13,874	–
2013	14,367	205	14,875	417	15,937	860	16,492	1,091
2018	14,730	151	15,634	316	17,596	691	18,659	903
2023	15,102	155	16,431	332	19,427	763	21,111	1,022
<b>Total Increase</b>	<b>1,228</b>	<b>511</b>	<b>2,557</b>	<b>1,065</b>	<b>5,553</b>	<b>2,314</b>	<b>7,237</b>	<b>3,016</b>

Note:

<sup>#</sup> Additional number of dwellings required for period/population size, assuming 2.4 people per dwelling (ABS Census 2006).



Table 13 – Residential land area required based on density<sup>a</sup> of development and growth rate in Port Augusta

Land required for 8.5 dwellings per hectare				
Annual growth rate	0.5 per cent	1.0 per cent	2.0 per cent	2.5 per cent
2013	24	49	101	128
2018	18	37	81	106
2023	18	39	90	120
<b>Total hectares to 2023</b>	<b>60</b>	<b>125</b>	<b>272</b>	<b>354</b>
Land required for 10 dwellings per hectare				
Annual growth rate	0.5 per cent	1.0 per cent	2.0 per cent	2.5 per cent
2013	21	42	86	109
2018	15	32	69	90
2023	15	33	76	102
<b>Total hectares to 2023</b>	<b>51</b>	<b>107</b>	<b>231</b>	<b>301</b>
Land required for 13 dwellings per hectare				
Annual growth rate	0.5 per cent	1.0 per cent	2.0 per cent	2.5 per cent
2013	16	32	66	84
2018	12	24	53	69
2023	12	26	59	79
<b>Total hectares to 2023</b>	<b>40</b>	<b>82</b>	<b>178</b>	<b>232</b>

Note:

<sup>a</sup> Gross density is calculated from total site area including area to be used for roads (20 per cent) and open space (12.5 per cent) and non-residential development such as schools and shops. Typically roads account for around 20 per cent of broadacre developments and open space 12.5 per cent (legislated minimum); that is, a gross density of 10 dwellings per ha would result in lot sizes of around 675 square metres.

### *Housing stock*

It is essential to understand that a range of markets will need to be addressed within that land supply, including:

- lower cost/affordable housing
- welfare housing
- aged/retirement accommodation
- tourist and short stay accommodation
- transient worker accommodation
- waterfront and marina housing
- medium density housing
- infill housing
- family housing
- executive housing
- larger lot housing.

Particular attention must be given to ensuring a good supply of affordable temporary and permanent housing for Aboriginal people, including large family groups, to avoid overcrowding and associated poor health outcomes.

Delivery of a range of housing types at a range of price points can be assisted by a spread of development opportunities.

At the 2006 Census, 87 per cent of the 6218 houses in Port Augusta were occupied. The stock is dominated by detached dwellings (80 per cent), with approximately 1000 semi-detached dwellings or townhouses and 370 high- density units or apartments.

It is important to note that while housing allotments in South Australia have nearly halved and floor areas of detached dwellings have nearly doubled during the past 20 years, Port Augusta's housing stock has not followed this trend. This provides scope for redevelopment of suitable established areas with infill, which will make better use of the infrastructure in these areas.

Dwelling approvals have increased substantially since 2000–2001 to stabilise around 80 to 100 dwellings per year. During this period, the average value of new dwellings was \$160,000. In addition, an average of 37 home extensions or alterations were approved per year during this period.

Between 2003 and 2008, average housing prices rose from \$76,500 to \$219,000, representing an average annual growth rate of 19.1 per cent. During that period, the average housing allotment was 835 square metres, which indicates new housing stock is predominantly detached dwellings.

Vacant land sales rose by 31 per cent from 66 in 2003 to 87 in 2007, while prices rose from \$30,000 to \$80,000 at an average annual growth rate of 33 per cent.

Rental prices have increased from an average of \$114 per week to \$186 per week between 2006 and 2008. There is significant demand for affordable, high quality rental accommodation in Port Augusta from a range of people, including employees in the services sector based in Port Augusta on 2–3 year contracts and contractors servicing the mining industry.



### **Policies**

- 7.1** Facilitate redevelopment and rejuvenation of existing residential and other developed areas and surplus government land where it does not compromise the city's character or heritage.
- 7.2** Retain very low densities in existing residentially zoned areas adjacent strategic industrial areas, major transport corridors and/or areas of environmental/cultural significance.
- 7.3** Achieve greater housing yields in rural living areas.
- 7.4** Ensure new areas are continuous with and form compact extensions of existing built-up areas, and prevent linear development along the coast and arterial roads (unless development occurs in a Master Plan approach).
- 7.5** Ensure that new residential areas do not encroach on areas of importance to economic development or environmentally-sensitive areas.
- 7.6** Promote strong linkages between all parts of the city, particularly between residential areas, the city centre, sporting and recreational facilities, and open space
- 7.7** Locate land for rural living in such a way that it retains opportunities for the future expansion of the city or acts as a buffer between Port Augusta and Stirling North.

## **Principle 8**

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

Planning is required to ensure a supply of housing to meet the varying needs of people who live and work in the city, taking into account demographic changes. Development strategies are required to ensure a range of housing options, including affordable housing, to maintain the city's attractiveness as a place to live and help retain young people and the working-age population.

### **Policies**

- 8.1** Ensure a continuous supply of land for residential development (including a 15-year supply from both new and established areas).
- 8.2** Ensure zoning promotes a range of housing types and densities that reflect the current and projected demographic, including Aboriginal people, young people and single-parent families.
- 8.3** Provide a range of accommodation for older people and people with disabilities, ranging from independent living units through to high-level care accommodation.
- 8.4** Provide for 15 per cent affordable housing, including a 5 per cent component for high-needs housing, in all new housing developments.



## Supply analysis

### *Potential yields under current Development Plan policies*

The current Development Plan provides for a range of housing densities, ranging from 210 square-metre (m<sup>2</sup>) site areas for row houses in residential zones, 680 m<sup>2</sup> site areas for detached dwellings in residential zones, to 5000 m<sup>2</sup> in rural living zones. An increasing number of higher density apartments and aged-care accommodation have been developed in the city over recent years to meet market demand.

### *Short-term residential land supply*

The total supply of residential land in Port Augusta at June 2007<sup>13</sup> was 1426 hectares (ha). As illustrated in Figure 1, this land is made up of broadacre land (94 per cent), vacant sites (2 per cent), and underutilised land that has potential for redevelopment and/or re-subdivision (4 per cent).

### *Broadacre*

At June 2007 the available broadacre land consisted of 138 ha zoned residential and 1200 ha zoned rural living.<sup>14</sup> Of the land zoned residential, 12 ha were under a residential land division application. A further 214 ha zoned rural living was under a residential land division application.

Camel Flat is a large broadacre site that is zoned residential and owned by the SA Aboriginal Housing Authority. It consists of 54 ha and is located adjacent to residential areas in central Port Augusta.

### *Port Augusta West*

Many of the land division applications in rural living zones propose creating lots between 350 and 1200 m<sup>2</sup> (equivalent to township size residential blocks), indicating a desire for greater yields in these locations.

### *Redevelopment and infill*

Infill development provides for increased housing within existing residential areas, including the use of vacant allotments or the subdivision of large allotments containing an existing dwelling. Redevelopment involves re-using land previously used for some form of urban development or adapting an existing building.

Much of the housing stock in the older parts of Port Augusta does not meet current market demand. Redevelopment and infill in these areas would enable housing density and housing variety to be achieved.

A total of 31 ha of vacant land allotments zoned residential are available in Port Augusta, with an average size of 1100 m<sup>2</sup>.<sup>15</sup> An additional 57 ha of residential/rural living land has been identified as having redevelopment or re-subdivision potential.<sup>16</sup>

Making best use of existing residential and rural living areas.

With the majority (84 per cent) of land supply in Port Augusta zoned for very low density development (rural living, minimum site area of 1 ha) and a desire for township size blocks in these areas, there is considerable opportunity to accommodate future demand through rezoning to achieve higher yields.

13 June 2007 is the latest data currently available.

14 Broadacre land assessed was land zoned residential, rural living or deferred urban and greater than 4000 m<sup>2</sup> (June 2007).

15 Vacant residentially zoned allotments (>200 to <4000 m<sup>2</sup>) derived from DCDB/Valuation data (June 2007).

16 Re-subdivision potential based on developed residentially zoned lots, greater than 1500 m<sup>2</sup> and less than 4000 m<sup>2</sup>; Redevelopment potential based on residentially zoned lots with low capital value, low site value, and buildings >30 years old.



However, the very low density zoning (minimum site area 1 ha) must continue to apply to around half of the existing rural living zones located in proximity to national transport corridors, strategic industrial areas and areas of environmental or cultural significance. The affected locations are shown on Map 2 (marked “Maintain Very Low Density”). These locations have the potential to provide for around 600 additional homes.

The *Port Augusta Structure Plan* supports investigations to assess the potential for rezoning land in Stirling North for intensive residential development (identified on Map 2 as SN1, SN2, SN3). Such investigations involve preparation of detailed Structure Plans indicating how the site will be developed, likely infrastructure requirements, and how the design of the development will address the issues raised in Table 14.

A factor affecting increasing housing yields in Stirling North is the lack of wastewater infrastructure. Without this infrastructure, housing blocks need to be larger to accommodate on-site wastewater disposal and treatment in accordance with public health requirements. The structure planning for the area must incorporate provision for off-site wastewater disposal, treatment and re-use.

This may be affected by SA Water investigations and the possible relocation of the Port Augusta East Waste Water Treatment Plant closer to Stirling North.

#### ***Potential short-term land supply***

The *Port Augusta Structure Plan* identifies sufficient land to meet residential demand until 2032 (24 years, or 12,530 additional people and 5221 additional dwellings), based on:

- a very high growth (2.5 per cent per year) and a very low yield scenario (8.5 dwellings per ha)
- land zoned residential that is broadacre, vacant or suitable for infill or redevelopment (226 ha)
- retaining the rural living zoning for sites identified as “Maintain Very Low Density” on Map 2, and the existing rural living area in Port Augusta West (south of Eyre Highway)
- rezoning of rural living areas at Stirling North (280 ha).

If supply issues such as land ownership or withholding of land prevent development of up to fifty percent of the land identified, there would still be sufficient residential land supply to provide for a high population growth rate until 2021 (12 years, or 6,266 additional people and 2,611 additional dwellings).

### ***Long-term residential land supply***

The expansion of Port Augusta needs to take into account:

- strategic transport corridors and environmental assets not suitable for development in the north
- Spencer Gulf and the power station in the south
- Port Augusta Airport in the west
- Bird Lake conservation area and distance from the city centre to the east.

Several areas of significance to Aboriginal people may also affect the location and extent of residential expansion; investigations into expansion of the city must involve consultation with Aboriginal people and the South Australian Government's Aboriginal Affairs and Reconciliation Division (AARD) to ensure sites and objects of significance to Indigenous culture are not disturbed.

### ***Assess the feasibility of residential expansion to the West***

The *Port Augusta Structure Plan* supports the expansion of residential development to the west (south of Eyre Highway) and the rezoning of adjacent land from primary industry, industrial and rural living to residential.

The investigations for Port Augusta West should include development of a detailed Structure Plan that indicates how the site will be developed, likely infrastructure requirements, and how the design of the development will address the issues raised in Table 14.

Given that considerable infrastructure assets of strategic significance to the state are located adjacent to the site, the land will be considered for rezoning only once the Structure Plan has satisfied the relevant South Australian government agencies that the issues have been adequately addressed.

The Structure Plan must also:

- demonstrate how staging of development would ensure appropriate separation between existing industry on the site and potential residential areas
- involve consultation with Aboriginal people and the AARD with regard to Aboriginal cultural heritage
- involve consultation with BHP Billiton in relation to their stated interest in establishing a heavy vehicle haul road on the site to support the proposed expansion of the Olympic Dam Mine.

Design of any residential development in the area must support the ongoing safe and efficient operation of the proposed BHP Billiton haul road and National Land Transport Network. The design must also support the future directions of the Port Augusta Airport, including ongoing use as an operational base for the Royal Flying Doctor Service.



Table 14 – Locations identified for further investigation into suitability for future residential development (see Map 2)

Potential locations	Area (ha)	Development Plan Zone	Services and infrastructure capacity and requirements
<b>Short-term supply – Stirling North</b>			
SN1			<p><b>Water and Wastewater:</b> Requires significant expansion and augmentation to provide additional water services, including replacement of a PRV, duplication of existing mains, and construction of new mains. Not currently serviced by SA Water’s wastewater infrastructure, require significant augmentation of Port Augusta East WW network and WWTP.</p> <p><b>Electricity:</b> Significant development would warrant upgrade of Stirling North Substation with additional Feeder Exit/s, requiring land within Stirling North to provide for the substation.</p> <p><b>Environment:</b> Ensure NPWS Act rated fauna (various bird species) and native vegetation is not unduly affected by any new development. Appropriate separation distances and design is required to reduce exposure of future residents to noise/air quality issues associated with rail operations. Former rail land on the site may have contamination issues, requiring further investigation before any possible redevelopment/rezoning of this land.</p>
SN2			<p><b>Water and Wastewater:</b> Requires significant expansion and augmentation to provide additional water services, including replacement of a PRV, duplication of existing mains and construction of new mains. Not currently serviced by SA Water’s wastewater infrastructure, require significant augmentation of Port Augusta East WW network and WWTP.</p> <p><b>Electricity:</b> 11kV reticulation within 1km of the area, with moderate capacity available. Significant development would warrant upgrade of Stirling North Substation with additional Feeder Exit/s, requiring land within Stirling North to provide for the substation.</p> <p><b>Environment:</b> Ensure NPWS Act rated fauna (various bird species) are not unduly affected by any new development. Acacia tall open shrubland, small pocket should be maintained if possible.</p>

Table continues on the following page →

Potential locations	Area (ha)	Development Plan Zone	Services and infrastructure capacity and requirements
<b>Short-term supply – Stirling North</b>			
SN3			<p><b>Water and Wastewater:</b> Requires significant expansion and augmentation to provide additional water services, including replacement of a PRV, duplication of existing mains and construction of new mains. Not currently serviced by SA Water’s wastewater infrastructure, require significant augmentation of Port Augusta East WW network and WWTP.</p> <p><b>Electricity:</b> 11kV infrastructure exists along McConnell Road, with moderate capacity available. Significant development would warrant upgrade of Stirling North Substation with additional Feeder Exit/s, requiring land within Stirling North to provide for the substation.</p> <p><b>Transport:</b> No direct property access to arterial roads. All access should be by way of the local road system. DTEI do not support the creation of additional local road junction points on the National Transport Route to service the area. Severely affected by road noise, sufficient buffers and other noise mitigation measures must be established to minimise impact of Highway traffic. The junctions onto the Pt Augusta – Quorn road, as well as the Pt Augusta – Pt Wakefield Rd / Pt Augusta – Quorn Rd junction, may need to be upgraded.</p> <p><b>Environment:</b> Ensure NPWS Act rated fauna (various bird species) and native vegetation are not unduly affected by any new development. This area may be subject to stormwater inundation.</p>

Table continues on the following page →



Potential locations	Area (ha)	Development Plan Zone	Services and infrastructure capacity and requirements
<b>Long-term supply – Port Augusta West</b>			
<p><b>Port Augusta West</b></p> <p><b>Actual site</b> area to be determined through detailed structure planning, taking into account buffer requirements of airport and transport corridors</p>	Approx. 600	Currently zoned ‘rural living’, ‘primary industry’ and ‘industry’	<p><b>Water and wastewater:</b> Require expansion of the water supply network, the extent of augmentation would need to be assessed based on the requirements of individual developments. Not currently serviced by SA Water’s wastewater infrastructure, require expansion of Port Augusta West WW network and augmentation of WWTP.</p> <p><b>Electricity:</b> 33kV reticulation presently supplying the Port Augusta Airport was recently upgraded. 11 &amp; 33kV reticulation exists within current ‘rural living’ zone with moderate 11kV capacity available. Significant development would warrant dedicated 33/11kV substation. 11kV Voltage Regulation to Blanche harbour would need to be addressed. A future substation is planned near east of the site to meet future growth requirements. Extension of the 33,000 volt network to this area and upgrading of services across the gulf will be required to reinforce the network.</p> <p><b>Education/Childrens Services:</b> If fully developed may require additional child care/primary school. Structure plan should provide for a 4ha appropriately located site.</p>

Table continues on the following page →

Potential locations	Area (ha)	Development Plan Zone	Services and infrastructure capacity and requirements
<b>Long-term supply – Port Augusta West</b>			
<p><b>Port Augusta West</b></p> <p>Actual site area to be determined through detailed structure planning, taking into account buffer requirements of airport and transport corridors</p>	Approx. 600	Currently zoned 'rural living', 'primary industry' and 'industry'	<p><b>Transport:</b> No direct property access to arterial roads. All access should be by way of the local road system. No additional local road junction points on the National Road Network routes to service the area. Sufficient buffers or other noise attenuation measures need to be established from the Highway to minimise noise, etc in accordance with EPA guidelines. Existing junctions (e.g. Caroon Rd traffic signals) may need upgrading.</p> <p>Parts of this area lie in close proximity to the Port Augusta Airport and should not be developed for residential use. Two noise boundaries for Port Augusta Airport need to be defined in line with the Better Development Plan module "Building Near Airfields", taking into account the future role of the airport (including the potential to cater for military transport aircraft in association with an expanded Cultana Training Area). Residential development is not permitted within the inner noise contour. Development within the outer contour and outside of the inner contour should be compatible with the airport and not include residential development. However if this is not feasible, residential development may be permitted with conditions such as appropriate noise insulation, or limiting residential development to low density housing such as "rural living" and/or providing warnings on property titles indicating that the area is subject to aircraft noise.</p> <p>The inner noise contour on Map 1 is based on the single event noise contour identified in Port Augusta Airport Master Plan (2007). The indicative outer noise contour (shown on Map 1 as 'indicative airport investigation area') is based on the 'inner horizontal surface' identified in the Port Augusta Airport Master Plan, 1.5 kilometres from the single event noise contour. However, this is indicative only and further detailed investigations are required to identify the actual outer noise contour based on Federal Department of Infrastructure Guidelines. Structure planning for the site would need to include detailed studies to work out a solution that best meets the needs of the airport and the community.</p> <p><b>Environment:</b> Low lying areas subject to inundation. Surrounded by chenopod shrubland/pockets of callitris, habitats for tiger snakes.</p>

Table continues on the following page →



Potential locations	Area (ha)	Development Plan Zone	Services and infrastructure capacity and requirements
<b>Long-term supply – Port Augusta West</b>			
<b>Port Augusta West</b>	Approx. 600	Currently zoned 'rural living', 'primary industry' and 'industry'	<p><b>Health:</b> Residential development within such close proximity to the airport is likely to be subject to aircraft noise. Support DTEI advice regarding need to assess and manage impact of noise around the airport. The continued operation of the airport is a vital part of the industrial, commercial and social life of the City and region. As such, it is considered to contribute to significant health outcomes.</p> <p>In addition, the airport has a Royal Flying Doctor Service (RFDS) base which currently averages 2,212 aircraft movements per annum, and the number is increasing. This Base provides essential and life saving services to residents and visitors in the remote far north and west of the state. It is vital that the RFDS is able to operate its air services unfettered 24 hours a day, every day of the year. RFDS operations must not be compromised by encroachment by inappropriate development, e.g. residential. Mining exploration and development is likely to see aircraft movements at the airport increase over coming years.</p> <p><b>EPA:</b> <i>Recommend minimum 100m separation distance between road corridor and residential development.</i> Significant new subdivision, would require effluent re-use in homes (as per Mawson Lakes) to reduce reliance on River Murray.</p>
<b>Total potential supply</b>	<b>880</b>		





# INFRASTRUCTURE AND SERVICE PROVISION

## Part 5

Planning is crucial to:

- avoid underutilisation of existing infrastructure capacity (thereby also avoiding premature investment in additional infrastructure and services)
- ensure that new infrastructure and services are strategically planned for and proceed in a timely manner. Given the long lead times associated with development, the State Government and other infrastructure providers need to plan, coordinate and budget for infrastructure; this is particularly important with large parcels of land that have been identified as key future supply sites, but which have significant constraints
- ensure strategic infrastructure assets are protected from encroachment by incompatible land uses (particularly housing) that may compromise ongoing operations.

Competitive, efficient transport, water and energy infrastructure are crucial elements of the value chain enabling expansion of South Australia's mining, defence and tourism industries. Protecting and building on these assets and providing for the expansion of export-related and value-adding industries in key locations is imperative to capitalise on investment and provide certainty for industry.

### Water

#### Water supply

SA Water manages the long-term development of water supply to Port Augusta. If any proposed development results in an extension or augmentation of the existing infrastructure, the developer(s) are required to provide infrastructure in the development area and any dedicated approach mains. They also need to contribute to any network augmentation due to the development. In areas where more than one development is occurring, it may be necessary for SA Water to establish an augmentation charge to equitably share the costs among those requiring and/or benefiting from the provision of additional infrastructure.

#### Wastewater

Most of Port Augusta is fully sewered by a system operated by SA Water. Significant growth requires upgrading of existing wastewater treatment services, which is already being implemented by SA Water.

For any development, developers are required to meet the costs of providing wastewater collection and transport sewers in the development site, including (but not limited to) water and wastewater pumping stations, pumping mains and water tanks.

#### Stormwater

Port Augusta is an arid area with a mean annual rainfall of about 260 mm. While the mean monthly rainfall does not vary significantly over the year, occasional intense rainfall events occur, especially in summer. Flash floods accompanying such events can have negative outcomes. Development has the potential to exacerbate the problem.

To address water management issues, the Port Augusta Strategic Plan has the following goals:

- to reduce effluent and stormwater into Gulf waters
- to reduce use of River Murray water
- to move towards becoming a 'green' city
- to enhance and extend effective water management.

New developments therefore must address the following stormwater requirements:

- collection and harvesting of runoff in developments
- storage for re-use
- re-use opportunities within the development
- provision of flood protection
- measures to limit environmental impact.

Incorporating water-sensitive urban design principles at the early stages of development is an effective means of reducing flood risk and increasing stormwater capture for re-use.

Stormwater design objectives that provide flood protection and limit environmental impact include:

- ensuring peak flow rates discharging from development areas are less than or equal to predevelopment conditions for storms up to a 1 in 100 year event
- preventing flooding of residential, commercial and industrial buildings during rainfall events of up to a 1 in 100 year event.

The council is investigating the managed aquifer recharge (MAR) system for stormwater storage, which has the potential to provide effective harvesting and re-use.

## Electricity

Customers are supplied from the ETSA Utilities distribution system via 11,000-volt and 19,000-volt feeders, which are connected to distribution substations. These feeders are extended and upgraded as required to meet customer demand and customer connection requests.

Generally, a developer is responsible to:

- install the electrical infrastructure in the development, including underground cables, transformers, light columns and service pillars for connecting each allotment; the Port Augusta City Council requires all cables within a development to be underground
- pay for the extension from the existing distribution system to the development and the connection infrastructure
- contribute towards the capacity of the distribution network whether or not upgrading of the existing system is required (augmentation charge)
- notify ETSA Utilities as soon as possible during the planning stages of a project as large customer projects may require a distribution substation upgrade as well as feeder modifications.

All proposed developments require a written submission and are subject to capital and augmentation charges (including rebates) as outlined in the Essential Services Commission of South Australia (ECOSA) Distribution Code Chapter 3.

ETSA Utilities has advised that there is no specific disadvantage for development in Port Augusta regarding supply of electricity.

## Transport network

Port Augusta forms the interstate crossroads for the nation's east–west and north–south National Land Transport Network and National Rail Network corridors. All goods arriving or departing Australia from Fremantle and Darwin and originating from or destined for Sydney, Melbourne or Adelaide transit through Port Augusta either by road or rail.

More than 15 million tonnes are estimated to move along these corridors every year, and this will rise substantially as mining and defence activities expand.

Complementing these national corridors is a well-developed grid of local roads. The Structure Plan ensures development will support the ongoing operation of these transport networks.

Comprehensive traffic impact assessments need to be undertaken for each area proposed for rezoning to determine the eventual transport system improvements needed to cater for expected traffic (for example, junction improvements).

These assessments should occur as a part of all Structure Plans and Development Plan Amendments to enable transport infrastructure providers (commonwealth, state and local government) to properly consider the implications and merits of the proposed changes.

Any improvements required to the transport system as a result of proposed changes shall be funded by the developer. Access structures need to be developed to ensure effective performance (efficiency and safety) is maintained on the National Land Transport Network corridors.

## Infrastructure planning

Port Augusta City Council has prepared an Infrastructure Plan (2009), as recommended in the council's Strategic Plan, which provides a crucial stepping-stone between the *Port Augusta Structure Plan* and any subsequent amendments to the Development Plan. Specifically, the Infrastructure Plan provides the foundations for detailed, area-specific structure planning prior to the rezoning of land identified in the Structure Plan.





# APPENDICES

## Appendix A: How the *Port Augusta Structure Plan* was developed

Figure 2 – *Port Augusta Structure Plan* Process



## Appendix B: Background information about Port Augusta's infrastructure and services

Port Augusta is well placed to capitalise on the opportunities associated with the expansion of mining activities in South Australia due to its access to strategic infrastructure of importance to the state.

The *Port Augusta Structure Plan* gives priority to making the best use of Port Augusta's assets, protecting them from encroachment by incompatible development, and providing for the expansion and clustering of activities at major hubs. This approach will enable capitalisation on investment in existing assets, provide certainty for existing industries, and opportunities for new industries.

### Transport

Port Augusta is unique as it forms the interstate crossroads for the nation's east – west and north - south National Land Transport Network and National Rail Network corridors. As such, all goods arriving or departing Australia from Fremantle and Darwin and originating from or destined for the major centres of Sydney, Melbourne or Adelaide transit through Port Augusta either by road or rail.

In excess of 15 million tonnes are estimated to be moved along these corridors every year, and this will rise substantially as mining and defence activities expand. A large locomotive and rail wagon servicing yard and freight distribution and logistics operations are based in Port Augusta which provides a good source of employment. Three sites have been identified in Port Augusta with potential for the development of an intermodal facility.

The Structure Plan ensures development will support the ongoing operation of these transport corridors.

A bridge in the centre of Port Augusta provides the main connection between the Adelaide to Port Augusta corridor and the Stuart, Eyre and Lincoln highways. Yorkeys Crossing, an unsealed bypass of Port Augusta, provides access for vehicles with road restrictions placed on them due to their load type or size of the vehicle, as well as the only alternative access should an incident occur which renders the bridge impassable.

The waters at the head of the Gulf are too shallow for shipping, however as part of the proposed expansion of the Olympic Dam mine, BHP Billiton has identified a landing and haul road to barge heavy equipment into Port Augusta. Submissions received during the public consultation process of the EIS have been evaluated and considered in the preparation of this Structure Plan.

Port Augusta Airport provides an important service to the region in providing regular services to/from Adelaide, charter flights to outback mines and towns, and acting as an operational base for the Royal Flying Doctor Service (RFDS). A \$3 million upgrade of the RFDS base was officially opened in November 2007.

An Airport Master Plan has been prepared to inform future investment and management of the airport. Future investment and management of the airport needs to ensure the facility is positioned to meet potential demands for the expanding mining and defence sectors, developing tourism opportunities and ongoing RFDS operations. Noise-sensitive developments near the airport and under flight paths should avoid being located in this area to protect communities from excessive levels of aircraft noise or sound proofing measures be used with the development.

Bus services operate across the city and daily services operate to/from Adelaide. As the population ages, demand for public transport is likely to increase.

## Defence

In close proximity to Port Augusta is the Cultana Training Range and the Woomera Prohibited Area. Woomera is the largest land based rocket launching and testing site in the western world that is used by a number of international and national rocket launch proponents.

Cultana is used by the Army for year round training and equipment testing and is undergoing a major expansion in both size and operations.

Both activities have valuable flow on effects for the economy of Port Augusta.

## Power

Alinta Energy operates two coal fired power stations at Port Augusta which produce more than 40 per cent of South Australia's energy supply. The electrical interface with Adelaide is a meshed network of 275kV and 132kV transmission lines and substations. A number of substations are currently being upgraded to improve the network's stability. More than \$1 billion is being invested in new wind farms across the Mid North and geothermal power technologies are being tested across the Far North Region.

Electricity is supplied to the Port Augusta Area via distribution substations. These substations are operated at 33 000 volts stepped down to 11 000 volts.

Customers are supplied from the ETSA Utilities distribution system via 11 000 volt and 19 000 volt feeders, which are connected to distribution substations. These feeders are extended and upgraded as required to meet customer demand and customer connection requests.

Port Augusta is currently served by three major substations. ETSA Utilities proposes to expand the existing Port Augusta West Substation in approximately 2010, a potential upgrade of Stirling North Substation in approximately 2011, with the other substation not likely to require expansion in the next five years. Major upgrade works are also planned for the bulk supply ElectraNet / ETSA Utilities Connection Point in 2010/11 to augment the 33kV network in the Port Augusta region.

Further information is available in ETSA Utilities 'Electricity System Development Plan' on ETSA Utilities website at <[www.etsautilities.com.au/](http://www.etsautilities.com.au/)>.

Table B1 – Port Augusta power supply

Substation	Current capacity 2009/10	Expected demand 2009/10
Port Augusta West	7.7MVA	7.6 MVA
Port Augusta	23MVA	18.6 MVA
Stirling North	3.3MVA	3.2 MVA

## Gas

There is no reticulated natural gas in Port Augusta; however, it is available as bottled LPG.

## Water supply

SA Water manages the development of water supplies to Port Augusta. The Morgan–Whyalla pipeline provides the current supply and has capacity for moderate growth. Significant growth would require the supply to be augmented in the medium term. A priority for both the South Australian and local government is to reduce reliance on the River Murray by ‘waterproofing’ the city. Private companies are also investigating the potential for a desalinisation plant at Port Augusta.

Port Augusta City Council has also commissioned an Integrated Water Management Plan (Waterproofing the City). The Plan is intended to provide direction for the management of stormwater and re-use of wastewater to reduce the city’s reliance on the River Murray.

## Wastewater

Port Augusta is serviced by two wastewater treatment plants—Port Augusta East and Port Augusta West—which generate water for reuse on parks and sporting grounds.

The newer parts of Port Augusta East are fully sewerred, with the remainder operating on a septic system that feeds into a common effluent system operated by the council. Waste from the sewerred system and common effluent system is transferred via SA Water infrastructure to the Port Augusta East Wastewater Treatment Plant.

To manage future demands on the wastewater system, the treatment plant at Port Augusta West will be expanded on the existing site. An additional buffer has been purchased to ensure development does not encroach on the plant and create a conflict in land use.

Expansion of the plant at Port Augusta East is not desirable due to its proximity to the power station limits, and water cannot be re-used due to its high salt content. SA Water is investigating alternative sites near Stirling North to accommodate future demands on the system.

Future wastewater network requirements will need to be assessed for each development. The developer(s) would be required to provide infrastructure within the development area and for any network augmentation.

## Stormwater management

Port Augusta is an arid area with a mean annual rainfall of about 260 mm. While the mean monthly rainfall does not vary significantly during the year, occasional intense rainfall events associated with thunderstorms are a feature of the region, especially in summer.

Flash flooding accompanying such events can have negative outcomes. Development has the potential to exacerbate the problem.

To address this and other water management issues, the Port Augusta Strategic Plan has the following goals:

- to reduce effluent and stormwater into Gulf waters
- to reduce use of River Murray water
- to move towards becoming a ‘green city’
- to enhance and extend effective water management.



New developments must therefore address the following stormwater system requirements:

- collection and harvesting of runoff in the developments
- storage for re-use
- re-use opportunities in the developments
- provision of flood protection
- measures to limit environmental impact.

Incorporating water-sensitive urban design principles at the early stages of development is an effective means of reducing flood risk and increasing stormwater capture for re-use.

Stormwater design objectives that provide flood protection and limit environmental impact include:

- ensuring peak flow rates discharging from development areas are less than or equal to pre-development conditions for storms up to a 1 in 100 year event
- preventing flooding of residential, commercial and industrial buildings during rainfall events of up to a 1 in 100 year event.

The council is investigating the managed aquifer recharge (MAR) for stormwater storage, which has the potential to provide effective harvesting and re-use.

## **Waste**

The Stirling North Solid Waste Depot (EPA licence 236) is located on Western Plains Road, approximately 750 metres to the north of the township. The infrastructure on the Waste Depot premises will be upgraded by July 2010 in accordance with EPA standards to allow further resource recovery, prior to transportation of residual waste to an alternative landfill site outside the council boundary. A separation distance of at least 500 metres must be maintained between the waste depot and residential, commercial, industrial and agricultural land uses.

## **Telecommunications**

Telecommunication infrastructure is extensive in Port Augusta with a wide availability of broadband. For any major new development, Telstra pays for provision of infrastructure, provided access is provided to the common service trench by the developer and development occurs in a planned, contiguous manner.

## **Health**

Port Augusta has the highest proportion of people employed in the health and community services sector outside of Adelaide. Port Augusta Hospital is the headquarters for the South Australian Government regional health services (Health SA Regional). The hospital provides a comprehensive range of services to the local community and the communities of the Far North region, as well as health training programs.

The hospital is also an important facility for Aboriginal health, with Aboriginal patients making up one-third of admissions and occupied bed-days. Pika Wiya, a specialist Aboriginal health facility, is also based in Port Augusta.

In addition, a range of facilities in Port Augusta provide an extensive specialist, community and allied health services including dentists, orthodontists, chiropractors, physiotherapists, a Medicare office and ambulance service. The city is also the South Australian base for the Royal Flying Doctor Service.

### **Justice and emergency services**

Port Augusta is the regional centre for policing and dispensing justice in the Far North Local Service Area, which is the largest policing service area in South Australia, covering 670,000 square kilometers or 73 per cent of the state's land area. The city has a recently upgraded the courthouse, which houses a full range of courts and tribunals, and Port Augusta Prison, which provides accommodation for up to 282 prisoners. Any substantial growth in population would require a review of police and court staffing requirements.

### **Education and training**

Port Augusta offers a range of public and private, primary and secondary schooling options, including an Indigenous education centre and School of the Air distance education. Port Augusta also has a TAFE SA Campus offering a range of courses tailored to meet the needs of industry. All these facilities could accommodate major population growth.

### **Arts and culture**

The South Australian Government and the Port Augusta City Council are investing in significant arts venues across Port Augusta. Notably, the Magistrates Courts Building will be transformed into a high quality visual arts space with the courtyard space becoming an outdoor performance area. The heritage Institute Building is also being renovated into a 150-seat multi-purpose performing arts theatre and function hall.

## Appendix C: Desk-top assessment of native vegetation<sup>17</sup>

### FUTURE RESIDENTIAL

#### A (currently zoned Rural Living and Primary Industry)

Approximately 585 ha, 255 ha (east side) divided in to 1 – 5 ha blocks, many supporting residences. The balance (west side) comprises large allotments of 15, 20, 35 and 265 ha.

The area supports the following native vegetation types. In the south and west the vegetation appears to be in good – very good condition. In the north and east there are numerous cleared areas totalling approximately 150 ha, and the remaining native vegetation appears to be in moderate – good condition.

**Atriplex (mixed) low shrubland (90 per cent)** - Dominant species are *Atriplex vesicaria ssp.+/- Maireana sedifolia+/-Maireana pentatropis Sclerolaena diacantha, Austrostipa nitida, Sclerolaena obliquicuspis, Tetragonia eremaea, Brassica tournefortii*

**Callitris (mixed) low open forest\Rhagodia (mixed) shrub\Rhagodia (mixed) shrub (10 per cent)** - Dominant species are *Callitris glaucophylla+/- Eucalyptus gracilis+/-Eucalyptus socialis ssp.+/- Eucalyptus intertexta, Rhagodia parabolica, Cassinia laevis, Dodonaea lobulate, Rhagodia spinescens, Ptilotus obovatus var., Maireana pyramidata*

#### A (currently zoned Industrial)

Approximately 40 ha, 50 per cent cleared. Of 13 allotments, 6 appear to have been cleared completely. The remaining 20 ha of native vegetation appears to be in moderate – good condition.

**Atriplex (mixed) low shrubland** - Dominant species are *Atriplex vesicaria ssp.+/-Maireana sedifolia+/-Maireana pentatropis Sclerolaena diacantha, Austrostipa nitida, Sclerolaena obliquicuspis, Tetragonia eremaea, Brassica tournefortii*

#### Golf course – north and south of highway

North side - Approximately 10 ha on one parcel. No vegetation mapping available, suggesting area is degraded. Appears to contain low saltbush shrubland vegetation, likely to have regenerated after previous clearance. Approximately 1 ha is cleared of all vegetation.

South side – Approximately 2 ha on one parcel. No vegetation mapping available. Appears to contain low saltbush shrubland vegetation in poor to moderate condition.

<sup>17</sup> Note: This assessment has been conducted using available aerial photography (dating from 1999-2002) and vegetation mapping which may not have been ground-truthed. All areas proposed for development/rezoning that contain native vegetation require detailed on-ground surveys.

### SN<sub>1</sub>

Area approximately 148 ha divided into 26 allotments ranging from 0.15 ha to 38 ha. Most allotments have at least some development. Northern half zoned Industry contains approximately 85 per cent native vegetation. Southern half zoned Rural Living contains approx 60 per cent native vegetation. Remaining native vegetation appears to be in moderate – good condition and consists of:

**Zygochloa (mixed) tall open hummock grassland\ Acacia shrub (25 per cent)** - Dominant species are *Acacia ligulata*, *Zygochloa paradoxa*, *Crotalaria eremaea ssp.*+/-*Rhagodia spinescens*+/-*Triodia basedowii*+/-*Cynanchum floribundum*, *Trichodesma zeylanicum*, *Aristida holathera var. holathera*+/-*Polycalymma stuartii*

**Atriplex (mixed) low shrubland (75 per cent)** - Dominant species are *Atriplex vesicaria ssp.*+/-*Maireana sedifolia*+/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*

### SN<sub>2</sub>

Area approximately 30 ha on 1 allotment. Approximately 50 per cent cleared. Remaining native vegetation appears to be in moderate condition and consists of:

**Acacia (mixed) tall shrubland\ Avena (mixed) tussock grass** - Dominant species are *Acacia victoriae ssp.*, *Lycium ferocissimum*, *Avena sp.*, *Enchylaena tomentosa var. tomentosa*, *Critesion murinum ssp. (NC)*, *Echium plantagineum*

### SN<sub>3</sub>

Area approximately 130 ha on (mostly) large allotments (15 – 40 ha). Approximately 5 per cent cleared. Remaining native vegetation appears to be in good – very good condition and consists of:

**Atriplex (mixed) low shrubland** - Dominant species are *Atriplex vesicaria ssp.*+/-*Maireana sedifolia*+/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*

### Camel Flat

Area approximately 27 ha, contained mainly in one large and one smaller parcel (26 ha and 1.4 ha). Several small occupied residential lots along northern and western boundary of land. Approximately 4.4 ha appears to have been cleared in the past along the western and southern edge – aerial photography not recent enough to determine whether there has been successful regeneration. Other disturbance mainly from vehicle tracks. Remaining 20+ ha appears to be in good condition. Vegetation mapped as:

**Atriplex vesicaria ssp. (mixed) shrubland** - Dominant species are *Atriplex vesicaria ssp.*, +/-*Maireana sedifolia*, +/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*, *Stenopetalum lineare*, *Senecio pinnatifolius*

Area also appears to contain approx 2 ha of taller shrubland vegetation growing on sand dunes.

## Spencer Junction

Area approximately 20 ha, with 3.5 ha already cleared and/or developed. Undeveloped area comprises 10 larger allotments (0.5 ha to 2.5 ha), and 48 smaller allotments (average size 0.05 ha). Vegetation appears to be in moderate to good condition, with main disturbance from vehicle tracks. Vegetation mapped as:

**Atriplex vesicaria ssp. (mixed) shrubland (60 per cent)** - Dominant species are *Atriplex vesicaria ssp.*, +/-*Maireana sedifolia*, +/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*, *Stenopetalum lineare*, *Senecio pinnatifolius*

**Acacia ligulata shrubland (40 per cent)** - Dominant species are *Acacia ligulata*, *Olearia axillaris*, +/-*Rhagodia parabolica*, +/-*Lycium ferocissimum*, +/-*Geijera linearifolia* over *Brassica tournefortii*, +/-*Crassula sieberiana*, +/-*Sonchus oleraceus (NC)*, +/-*Tetragonia implexicoma*, +/-*Carrichtera annua*, +/-*Threlkeldia diffusa*

## FUTURE INDUSTRIAL

### Eureka Estate

Approximately 145 ha on two large and several smaller parcels. 3.5 ha is land subject to inundation. 9 ha have been cleared of vegetation and are developed for trucking/transport company usage. A further 14 ha of vegetation has been degraded by various activities. Remaining vegetation (approximately 115 ha) appears to be in moderate to good condition

**Atriplex vesicaria ssp. (mixed) shrubland** - Dominant species are *Atriplex vesicaria ssp.*, +/-*Maireana sedifolia*, +/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*, *Stenopetalum lineare*, *Senecio pinnatifolius*

### Eyre Highway

Approximately 185 ha on one parcel, containing intact native vegetation in moderate to good condition. Main disturbance likely to have been grazing. Some small areas subject to inundation at the south western end. Vegetation mapped as:

**Atriplex vesicaria ssp. (mixed) shrubland (95 per cent)** - Dominant species are *Atriplex vesicaria ssp.*, +/-*Maireana sedifolia*, +/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*, *Stenopetalum lineare*, *Senecio pinnatifolius*

**Callitris (mixed) low open forest\Rhagodia (mixed) shrub\Rhagodia (mixed) shrub (5 per cent) -**  
Dominant species are *Callitris glaucophylla*+/-  
*Eucalyptus gracilis*+/-*Eucalyptus socialis* ssp.+/-  
*Eucalyptus intertexta*, *Rhagodia parabolica*, *Cassinia laevis*, *Dodonaea lobulate*, *Rhagodia spinescens*, *Ptilotus obovatus* var., *Maireana pyramidata*

#### **Yorkeys Estate – north and south of Carlton Parade**

Southern side - Approximately 11 ha, partly zoned Industry and Public Purpose. 2/3 appears to be cleared and developed. Remaining 1/3 appears to contain native vegetation in moderate condition. Vegetation mapped as:

**Atriplex vesicaria ssp. (mixed) shrubland -**  
Dominant species are *Atriplex vesicaria* ssp., +/-*Maireana sedifolia*, +/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*, *Stenopetalum lineare*, *Senecio pinnatifolius*

Northern side - Approximately 40 ha. Western half currently zoned Industry and appears to be mostly cleared and almost all allotments developed. Eastern half currently zoned Primary Industry. Approximately 8 ha. Existing allotments approx 2 ha each. Remaining vegetation in southern half appears to be quite degraded through development of extensive vehicle track network. One allotment appears to have been totally cleared of vegetation and has been developed. Remaining 4 ha appears to be in poor to moderate condition. Vegetation mapped as:

**Atriplex vesicaria ssp. (mixed) shrubland -**  
Dominant species are *Atriplex vesicaria* ssp., +/-*Maireana sedifolia*, +/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*, *Stenopetalum lineare*, *Senecio pinnatifolius*

#### **Footner Road – Highway One Estate**

Approx 260 ha over several allotments (largest is 50+ha). Almost 100 ha is either highly degraded native vegetation, cleared land and/or development. 25ha is sand dunes with vegetation degraded by vehicle activity and erosion. 130 ha is saltbush shrubland vegetation in moderate to good condition. Vegetation is mapped as:

**Atriplex vesicaria ssp. (mixed) shrubland (85 per cent) -** Dominant species are *Atriplex vesicaria* ssp., +/-*Maireana sedifolia*, +/-*Maireana pentatropis*, *Sclerolaena diacantha*, *Austrostipa nitida*, *Sclerolaena obliquicuspis*, *Tetragonia eremaea*, *Brassica tournefortii*, *Stenopetalum lineare*, *Senecio pinnatifolius*

**Zygochloa (mixed) tall open hummock grassland\Acacia shrub (15 per cent) -**  
Dominant species are *Acacia ligulata*, *Zygochloa paradoxa*, *Crotalaria eremaea* ssp.+/-*Rhagodia spinescens*+/-*Triodia basedowii*+/-*Cynanchum floribundum*, *Trichodesma zeylanicum*, *Aristida holathera* var. *holathera*+/-*Polycalymma stuartii*

## Appendix D: Related reports and studies

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

Aerodome Design Pty Ltd (2009) *Port Augusta Laurie Wallis Aerodrome Master Plan*

The Port Augusta-Regional Service Centre Report (April 2006) prepared by Collins Anderson Management

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Connor Holmes (2009) *Infrastructure Plan*

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