Central Eyre Subregional Description





The Central Eyre subregion extends from Munyaroo Conservation Park inland toward the Gawler Ranges until Minnipa in the west, and then south-west to Ungarra and Lipson. It includes large area of the mid Spencer Gulf.

QUICK STATS

Population: Approximately 5,250

Towns (population): Cowell (940), Cleve (750), Kimba (670), Wudinna (560), Lock (430)

Traditional Owners: Barngarla, Nauo and Wirangu nations

Local Governments: Wudinna District Council, District Council of Cleve, District Council of Kimba, District Council of Franklin Harbour and District Council of Tumby Bay

Land Area: Approximately 21,100 square kilometres

Main land uses (% of land area): Cropping (65%), conservation (18%))

Main industries: Agriculture, health care, aquaculture, transport

Annual Rainfall: 270 - 400mm

Highest Elevation: Caralue Bluff (486m AHD)

Coastline length: 280 kilometres (excludes islands)

Number of Islands: 4



Central Eyre

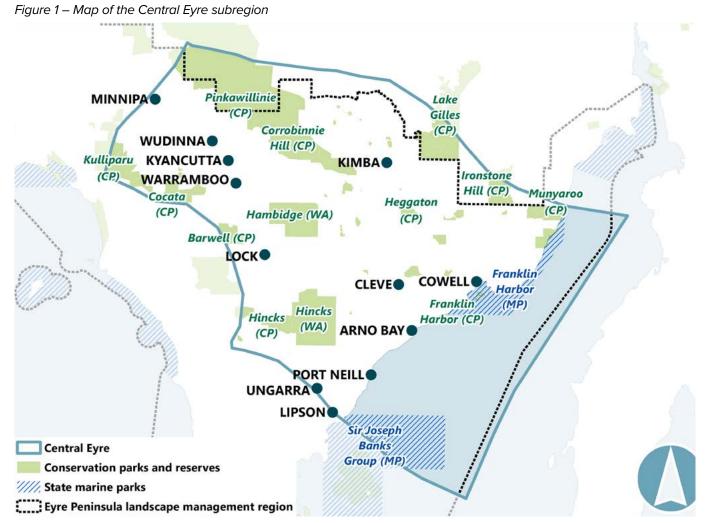
What's valued in Central Eyre

Central Eyre is about work, play and home to the community. Natural resources and local landscapes are fundamental to livelihoods and lifestyles. Agriculture is the main livelihood for Central Eyre, and many farmers take great pride in growing food and looking after their land. The strong community spirit among the farming community creates optimism and people believe they can overcome most challenges they are faced. The family farm is the most cherished landscape for many of the farming community as it provides them with their livelihood, lifestyle and identity. Many farmers enjoy the beauty of their own farms with rolling hills and outcropping rocks valued as well as the space and sense of freedom.

Our farm is our life. We see it as our future, and an important part of our family history.

The coast is another important contributor to Central Eyre's identity. Port Neil, Redbanks, Lucky Bay, Franklin Harbour and Arno Bay are some of the most popular coastal areas. The beaches are valued for their scenic beauty, tranquillity, fishing and recreation opportunities. The community at Arno Bay is particularly proud of the boardwalk they built, that allows access to the estuary for people to enjoy the environment without damaging it.

Central Eyre's wide open landscapes, parks, scrub and geology are highly valued for their wilderness, wildlife and picturesque views. The community appreciate both their local environments on their farms or in their towns, as well as Conservation Parks and Wilderness areas



including Hincks, Hambidge, Yeldulknie and Carappee Hill. The solitude and recreation opportunities in these areas are particularly valued. The Gawler Ranges National Park in the northern part of Central Eyre is a popular place to camp and explore. Yellow-footed rock wallabies, waterfalls, the Organ Pipes and Pondanna Outstation are some of the cherished features of the park.

Geological features including granite outcrops and inselbergs have Aboriginal heritage, biodiversity and amenity values. Yarwondutta, Pildappa and Tcharkulda Rocks (near Minnipa), Mount Wudinna, and Polda Rock are visible landscape features and popular visitor destinations.

Our community is strong. If there is something to be done, we can do it – nothing scares us.

The communities of Central Eyre are well connected and have a strong connection to the land and the sea. They are aware of the need to protect the subregion's natural resources now and for future generations. They value the freedom, wide open spaces and fresh air that Central Eyre provides, and want to preserve these. They also want to create a sustainable future for their communities

and future generations with many believing working with children is fundamental to this. Building and sharing knowledge is also critical for a sustainable future.

Landscapes and Seascapes

Central Eyre comprises a land area of about 20,100 square kilometres and 7,700 square kilometres of the waters of Spencer Gulf. There are four islands offshore including Lipson Island and the Franklin Harbour Islands, and two marine parks of Franklin Harbour and Sir Joseph Banks Group.

Central Eyre experiences a Mediterranean climate with cooler wet winters and warm to hot dry summers. Average rainfall ranges from around 270mm per year near Wudinna to just over 400mm per year near Cleve¹. Across the subregion, nearly 60% of rainfall falls between May and September, providing ideal conditions for cropping in most years.

The soils of Central Eyre are diverse and in the Cleve Hills area, shallow loams over rock are common. Between Cleve and Port Neil, the soils are sandier with areas of calcareous loam. Inland, calcareous soils and siliceous



sands are widespread. Around Kimba and Buckleboo, large areas of loams over clay support cereal crops². In the Eastern Cleve Hills area, dryland groundwater-driven salinity is a major issue³.

In the western half of the subregion, the central landscape is gently undulating with parallel dune systems. Quartzite ranges and granite outcrops including Darke Peak (450m) rise above the surrounding area. Along the western boundary adjacent to the Musgrave and Southern Eyre subregions, large areas of mallee are dominated by Coastal White Mallee (*Eucalyptus diversifolia*) in the north and Yalata Mallee (*E. yalatensis*) and Gilja (*E. brachycalyx*) in the south.

Across the centre, much of the mallee that dominated the area has been cleared for agriculture, with remnant vegetation located in the Pinkawillinie Conservation Park, and Hincks and Hambidge Wilderness Protection Areas. In these parks, Ridge-fruited Mallee (*Eucalyptus incrassata*) is the dominant vegetation community. The granite outcrops of Caralue Bluff (486m) and Carapee Hill (490m) south-west of Kimba are prominent in the otherwise flat agricultural landscape.

Close to Cowell and Spencer Gulf, the Minbrie Range with its highest point at Mount Olinthus (447m) rises from the coastal plain inland of Franklin Harbour. Woodland of Broombush (*Melaleuca uncinata*), Southern Cypress Pine (*Callitris gracilis*) and Drooping Sheoak (*Allocasuarina verticillata*) are found on shallow soils on the ranges. In the east, large areas of Yorrell (*Eucalyptus gracilis*) are found on the undulating parallel dune systems that run north-west to south-east⁴.

Between Munyaroo Conservation Park and Lucky Bay, most of the coast has sand-shellgrit beaches with shelly beach ridges and coastal wetlands and shrublands inland. Sandy beaches comprise most of the coast between Franklin Harbour and Port Neill. South of Port Neill, the coast is rockier with small pockets of sandy beach⁵.

The Franklin Harbour Marine Park covers about 635km² extending from Munyaroo Conservation Park south to Point Gibbon. The Park protects areas of mangroves, saltmarsh and tidal flats that provide habitat and nursery areas for many recreational and commercial fish species such as King George whiting, southern sea garfish, blue crabs and western king prawns⁶. On the mudflats at the entrance to Franklin Harbour, rare stromatolites (mineral formations made by blue-green algae) are found.

Offshore, within the Franklin Harbour Marine Park, are dense seagrass meadows and unique, large colonies of stony coral. The lower marine section of the subregion is part of the Sir Joseph Banks Group Marine Park which also includes seagrass meadows and deep water habitats⁷.

Franklin Harbour is classified as a tide-dominated estuary and is also listed as a coastal wetland of national significance in the Directory of Important Wetlands in Australia. Other estuaries along the Central Eyre coast include Salt Creek, Dutton River, Driver River, Arno Bay and Yabmana Creek.

Whilst there are few watercourses through the inland areas of Central Eyre, a number of ephemeral creeks drain from the Cleve Hills toward Franklin Harbour and the coast. Salt Creek has the largest catchment area of all watercourses on Eyre Peninsula (about 2,000km²). The condition of several of the creeks was assessed in 2010 by the Environment Protection Authority which classified all as being in poor or very poor condition, largely due to the degraded condition of riparian vegetation and the high salinities. Although most streams were probably naturally saline, they have been further salinised as a result of native vegetation clearance⁸.

Central Eyre is generally characterised by porous sandy soils, low rainfall and saline groundwater which make it a naturally water scarce area. Potable water supply comes via long-distance water pipelines from either the River Murray or the Southern Basins Prescribed Wells Area.

Through inland areas of Central Eyre particularly around Wudinna, there are a number of salt lake systems including Lake Yaninee, Lake Wannamana and Lake Warramboo. The fringes of these lakes are vegetated with low shrub communities dominated by samphire (*Tecticornia halocnemoides*) and Bladder Saltbush (*Atriplex vesicaria ssp.*).



Just over 30% of the subregion contains native vegetation⁹. About 40% of this is protected within the Conservation Parks. Reserves and Wilderness Protection Areas. Just over 10% (80,000ha) is protected through Heritage Agreements, the majority of this adjoins protected reserves. The remaining 50% (330,000ha) of native vegetation is located on private land or road reserves.

Central Eyre contains 27 Conservation Parks, 9 Conservation Reserves and 2 Wilderness Protection Areas, totalling about 14% of the total land area. Pinkawillinie Conservation Park, the Hincks and Hambidge Wilderness Protection Areas and Munyaroo Conservation Park, contain large areas of mallee woodland that provide important habitat for the nationally vulnerable Malleefowl (Leipoa ocellata).

Central Eyre has a high diversity of flora and fauna. Across the Eyre Peninsula, around 60% of flora and 50% of fauna species of conservation significance, are found within the Central Eyre⁹. In particular, the northern-eastern part (e.g. Eyre Hills) contains a wide variety of habitats, high species richness and high number of endemic plants. As a result, this area has been identified as a high priority area for conservation¹¹. Species and communities of conservation significance are shown in Table 1.

Further information about these species can be seen below:

- The malleefowl (Leipoa ocellata) gets its name from the habitat it occurs in (scrubland and woodland dominated by mallee and wattle species). This ground-dwelling bird is famous for its ability to build enormous mounds. The male and female take months working together to build their nest. The eggs are incubated in sand or soil by the sun or mounds of rotting leaves. While the male maintains the nest during the incubation, the parents take no part in chick rearing, with chicks emerging from the mound completely self-sufficient. Further information about this species can be found at: Malleefowl (Bird). On Eyre Peninsula, the malleefowl is found across the whole region in appropriate habitat. The population is likely in decline.
- The hooded plover (Thinornis cucullatus) is a small Australian beach nesting bird. It mainly occurs on wide beaches backed by dunes with large amounts of seaweed and jetsam, creek mouths and inlet entrances. Nests are found above the high water mark on flat beaches, on stony terraces, or on sparsely vegetated dunes. As the hooded plover occurs on beaches, it is easily disturbed by human activities, particularly off-leash domestic dogs.

Table 1 - Selected fauna, flora and vegetation communities of conservation significance

Fauna	Flora	Vegetation communities
Malleefowl (Leipoa ocellata)	Silver Daisy-bush (Olearia pannosa ssp. Pannosa)	Eyre Peninsula Blue Gum (Eucalyptus Petiolaris) Woodland
Hooded Plover (<i>Thinornis</i> cucullatus)		Temperate coastal saltmarsh
Eastern Curlew (<i>Numenius</i> madagascariensis)		
Plains-wanderer (<i>Pedionomus</i> torquatus)		

Further information about this species can be found at: Hooded Plover (eastern) (Bird). On Eyre Peninsula the hooded plover is found mainly in coastal areas between Cowell and Fowlers Bay with the appropriate habitat. These populations are currently likely in decline. From July 2019, the Australian Government has funded a five-year project with the Eyre Peninsula Landscape Board – the Saltmarsh Threat Abatement and Recovery project - that includes actions to support the conservation of the hooded plover.

- The eastern curlew (Numenius madagascariensis) is Australia's largest shorebird and a long-haul flyer. It is easily recognisable, with its long, down-curved bill. The eastern curlew takes an annual migratory flight to Russia and north-eastern China to breed, arriving back home to Australia in August to feed on crabs and molluscs in intertidal mudflats. It is extremely shy and will take flight at the first sign of danger. Further information about this species can be found at: Eastern Curlew (Bird). On Eyre Peninsula, the eastern curlew is found in coastal areas between Whyalla and Ceduna with the appropriate habitat. It is likely the population is in decline but being a migratory species it is likely the main cause is of this decline is development in its habitat in other countries.
- The plains wanderer (Pedionomus torquatus) is a highly unique, ground-dwelling bird that lives in the grasslands of Queensland, New South Wales, Victoria and South Australia. It is a very ancient member of Australia's avifauna, with its origins tracing back more than 60 million years. Plains wanderers inhabit sparse native grasslands and are often absent from areas where grass becomes too dense or too sparse. They nest amongst native grasses and herbs, or sometimes amongst crops, feeding on a mixture of seeds, invertebrates and leaves. Further information about this species can be found at: Plains-wanderer (Bird). On Eyre Peninsula the plains wanderer has been rarely seen with only four records in the biological database of SA. The population trend is unknown.
- The silver daisy-bush (Olearia pannosa subsp. pannosa) is endemic to South Australia where it is scattered throughout agricultural areas. Its tuberous roots provided Indigenous people with water and food resources during summer. Further information about this species can be found at: Silver Daisy-bush (Plant).

- On Eyre Peninsula, the silver daisy-bush is found in the Koppio and Cleve Hills in appropriate habitat. The population trend is unknown but is likely in decline.
- The Eyre Peninsula Blue Gum (Eucalyptus petiolaris) Woodland has a canopy dominated by Eucalyptus petiolaris and is associated with sheltered valleys and lower hill slopes and along watercourses on the Eyre Peninsula particularly in the Koppio and Cleve Hills. Further information about this species can be found at: Eyre Peninsula Blue Gum (Eucalyptus petiolaris) Woodland. The health of the vegetation community is in decline. A management plan was completed in 2019 to direct further conservation works in the future.
- The subtropical and temperate coastal saltmarsh ecological community consists of organisms including and associated with saltmarsh in coastal regions of sub-tropical and temperate Australia. Further information about this species can be found at: Subtropical and Temperate Coastal Saltmarsh. The health of the vegetation community is in decline. The Australian Government's five-year project with the Eyre Peninsula Landscape Board – the Saltmarsh Threat Abatement and Recovery project - includes actions to support the conservation of this vegetation community.

Detailed information about species listed under the EPBC Act 1999 and the National Parks & Wildlife Act 1972 can be found at www.environment.sa.gov.au/files/ sharedassets/public/plants_and_animals/west_report_ rsca_phase1.pdf

Livelihoods

The Central Eyre landscapes and seascapes support many of the industries and businesses that sustain the communities' livelihoods.

Just over 65% of the Central Eyre subregion is used for dryland cropping¹². Cropping including wheat, barley, oats, canola and legumes are grown. Central Eyre on average produces about 50% of the Eyre Peninsula wheat crop – about 20% of South Australia's total production¹³. Nearly 40% of employment in the subregion is in agriculture. Other major employment sectors include transport, retail trade and services associated with townships including health care and social assistance and education¹⁴.

About 5% of employment in Central Eyre is currently in mining however this is expected to grow in coming years. Current mines and quarries in the subregion include the Desert Rose granite mine near Wudinna, Cowell jade mine, Port Neill sand mine and the Bayley Plain gypsum mine east of Lock. The Centrex Wilgerup iron ore mine has been approved but not yet commenced production. In addition, mining operations at Bungalow, Campoona and Warramboo are currently at feasibility stage or waiting approval.

Commercial wild fisheries are an important industry in the subregion. Wild catch including prawns, blue crab, sardines, abalone and scale fish from Spencer Gulf contribute to the regional economy and are important contributors to the State's commercial fishing industry. The Spencer Gulf Prawn Fishery that relies on the subregion's mangroves and tidal flats for nursery habitat, is one of the more valuable fisheries in Australia¹⁵.

Aquaculture industries in the subregion include Pacific oyster farms in Franklin Harbour and King Fish hatchery at Arno Bay.

Tourism is an important contributor to the local economy. In coastal areas, visitors enjoy activities including recreational fishing, boating, beach walking, bird watching and water sports. Inland, visitors enjoy camping, four-wheel driving and nature-based activities.

Lifestyles

Central Eyre is home to around 5,250 people¹⁶ roughly spread equally across the District Councils of Wudinna, Cleve, Kimba and Franklin Harbour. Each of the Councils

has a total population of between 1,000 and 2,000 residents. The subregion also includes portions of the District Councils of Elliston and Tumby Bay. The main townships of Central Eyre include Cowell, Cleve, Lock, Port Neill, Kimba, Kyancutta and Wudinna.

The population of the subregion has been declining in recent years. From 1998 to 2011, the populations of the Cleve, Kimba and Wudinna Council areas declined by 9%, 13% and 19% respectively. Only the District Council of Franklin Harbour has experienced growth, with a small increase of 3% between 1998 and 2011⁷⁷.

The age distribution of the population of Central Eyre mirrors that of the broader Eyre region, with around 30% aged under 25 years, just over half aged between 25 and 64 years, and around 18% aged 65 years and over¹⁸.

About 1% of people in Central Eyre identify as having Aboriginal or Torres Strait Islander heritage¹⁹. This is lower than the average for all of Eyre Peninsula (4%). Most of the Central Eyre is the traditional land of the Barngarla Traditional Owners Group.

An important indicator of community connection is volunteering rates. Volunteering rates are very high in Central Eyre at around 45%. The highest rate of volunteering occurs in the Kimba council area, with one in two people volunteering.

Central Eyre residents enjoy a range of land and waterbased sports and recreational activities including football, netball, cricket and tennis as well as fishing, boating and bushwalking. These activities provide opportunities for community connections to be established and maintained.

Systems Understanding

Central Eyre is a complex system of connections and interactions between people, industries and natural resources. These connections and interactions mean that when one feature is impacted, flow on effects will be experienced by other features in the system. Developing this understanding can help identify the factors that make the system resilient or vulnerable to change. The Southern Eyre system is conceptually depicted in Figure 2, where the arrows represent the connections between the system's features.

The key feature of the system is agriculture, as it has many connections with other valued features. Maintaining agriculture and its connections to other features is integral to the viability of the Central Eyre subregion. Without viable agriculture to support the population, community groups, social fabric, service provision and the regional economy will be at risk.

Planning for the future of Central Eyre requires acknowledging that change will occur and considering how change might influence the future. Some changes create opportunities that can lead to positive outcomes that will improve the future of Central Eyre, for example improvement in agricultural technologies may lead to increased productivity. Some changes create challenges that if left unabated, may result in an adverse outcomes for the subregions' natural resources.

Technology, research and innovation are driving agriculture to produce higher yields using lower inputs in a more sustainable way. Minimum or no till cropping, crop rotations, GPS-guided machinery, and improved grain breeding programs have contributed to improving the agricultural industry. Soil salinity and acidification currently affect agricultural productivity in some areas of Central Eyre and may increase further in the future.

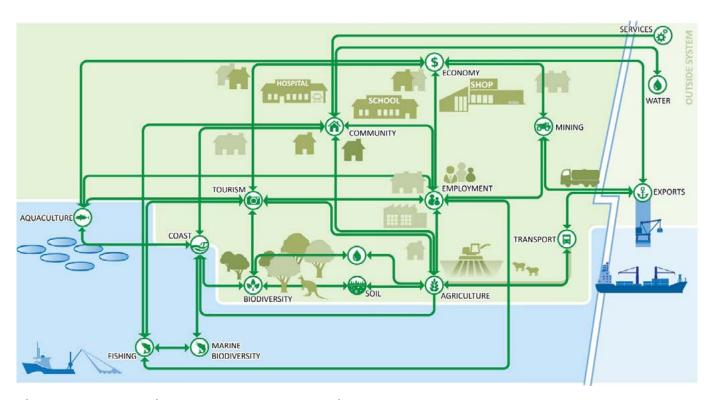


Figure 2 – Interconnections of the Central Eyre subregion

Key challenges and opportunities

A range of opportunities were identified by the community and stakeholders to address the key challenges facing natural resources in the Central Eyre subregion. Table 2 identifies key landscape challenges and opportunities to address them.

Table 2 – Key challenges and opportunities for the Central Eyre subregion

Challenges	Opportunities to address challenges		
Agricultural viability	 Support extension officers and agronomists to facilitate practice change and promote sustainable agriculture practices, this includes information sharing with farming groups and agricultural bureaus 		
	 Promote practices that prepare landholders to be drought ready, and promote practices that build soil health, and address the causes of soil acidity, soil erosion, dryland salinity and soil structure decline 		
	 Support the development and utilisations of water efficiency measures and alternative water supply infrastructure including sheeted catchments 		
	 Promote the adoption of restorative farming practices that build soil life and diversity, and maximise ecosystem services 		
Limited economic diversity	 Through the Eyes on Eyre initiative, facilitate the development of tourism infrastructure, facilities, information and signage to enable sustainable access and use of the coast 		
Coast and marine degradation	 Support local and regional partners implement the Off-Road Vehicle Strategy, including investigations for designating areas for biodiversity protection and recreational use 		
	 Support on-ground works to protect and enhance coastal condition including track rationalisation, fencing, erosion control, access tracks, revegetation and pest control 		
	 Raise awareness about coast and marine conservation including education about human impacts 		
	 Through the Eyes on Eyre initiative, facilitate the development of tourism infrastructure, facilities, information and signage to enable sustainable access and use of the coast 		
Declining biodiversity	 Protect and restore coast and marine habitats, particularly for priority areas identified in the Coastal Action Plan and Marine Parks' plans 		
	 Protect and restore remnant terrestrial habitats and establish biodiversity corridors that link habitats. Priority areas include <u>WildEyre</u> and Eyre Hills 		
	 Facilitate whole of catchment management planning and supporting works to restore riparian and wetland ecosystems, and reduce water quality impacts 		
	 Develop and implement integrated pest management strategies that address the impacts and causes of pest persistence or incursion. Particular attention is required for overabundant herbivores, feral predators, woody weeds and new pest incursions such as buffel grass 		
	 Develop and implement strategies and plans to protect threatened species and ecological communities, includes implementing threatened species recovery plans 		
	 Monitor and evaluate natural landscape actions, and their effect on natural resources' condition and trends 		
	 Increase participation in citizen science initiatives that assist understanding of trends and the condition of natural resources 		
Aboriginal involvement	Support traditional owners, Recognised Aboriginal Representative Bodies, Aboriginal Regional Authorities and Aboriginal communities manage natural resources		
	Support awareness raising activities about Aboriginal cultural knowledge		

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