

# Southern Fleurieu Coastal Action Plan

## Lady Bay (Yangkalyilla)<sup>1</sup>

## to Bungala River (Pangkarla)

### Cell F23

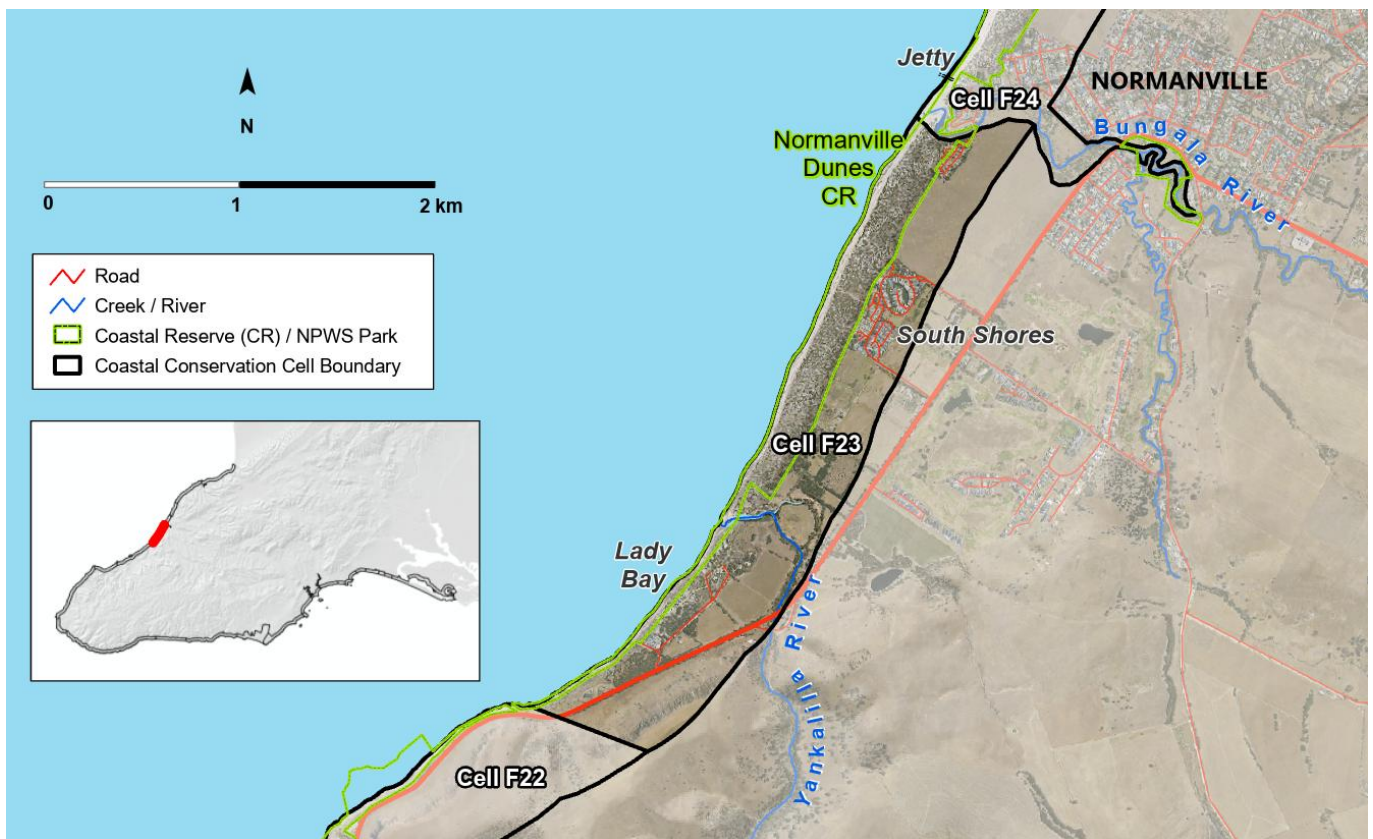
#### Overview

The Normanville dunes in this cell (and F24) form part of the largest and most intact coastal dune system on the western Fleurieu Peninsula. As the last significant remnants of once-extensive dunes along the eastern Gulf St Vincent, they support a rich diversity of flora and fauna and provide habitat across a wide range of vegetation communities.

This cell also supports the largest Nitre-bush (*Nitraria billardierei*) coastal dunes in the

region, placing this cell amongst the highest conservation value in the region.

Impacts of visitation, coastal development pressures and weed incursion all threaten the values of this cell. The Yankaila River estuary is located north, between Lady Bay settlements, but the ecological values of this estuary are largely unknown.



<sup>1</sup> Yangkalyilla was the earliest recorded traditional language word (Kaurna Meyunna) in 1836 when Colonel Light's survey team camped in the area. It means the place where something keeps hanging (rocks on cliff). Pangkarla means two lagoons. The Meyunna language name was recorded in 1939" (Karl Winda Telfer, personal communications, November 2025).

## Traditional Owner and First Nations cultural heritage and connection to land and sea Country

This cell is of high cultural value and significance to the Kurna Patpangga Meyunna people. The Country is part of several Dreaming stories, including Tjilbruke/Tjirbuki, which is a coast and sea songline story. The area features places, artefacts, plants and animals of high cultural and human value, including caves, fish traps and fishing grounds, seasonal campgrounds, sleeping places, and places of creation story and spiritual practices. This cell includes registered and un-registered Aboriginal heritage sites; more broadly, all the lands and waters are of importance to the Kurna Patpa and Mullawirra Meyunna.

*Please respect that cultural concepts and content included in this plan are the Aboriginal Cultural and Intellectual Property (ACIP) of Karl Winda Telfer of the Mullawirra Meyunna (Kurna Meyunna) (cells 20-27). They may not be used or adapted by any other parties without consent.*

### Cell details

This cell extends from southwest of Lady Bay township, approximately 3.5km to the southern bank of the Bungala River estuary. There one estuary in this cell at the mouth of the Yankalilla River. The cell is in the District Council of Yankalilla local government area.

### Tenure, Land Use and Values

The cell has a mix of residential and holiday homes grouped in small settlements (Lady Bay, South Shores and Beachside Caravan Park), as well as privately owned largely cleared coastal slopes and grazing paddocks along the landward edge of the cell. The Crown lands reserve (Normanville Dunes Coastal Reserve) is under the care and control of the Council dedicated for Conservation purposes. Since 2012, the waters surrounding this cell are within the boundaries of the Encounter Marine Park.

Native title has not been established for this cell. The Federal Court did not determine native title for Kurna Yerta Aboriginal Corporation over the lands south of Myponga to the edge of the Ngarindjeri determination (3.5km northeast of Cape Jervis). Kurna Patpangga Meyunna maintain cultural and historical connections to this region, the formal determination was limited to areas from Lower Light in the north to Myponga in the south.

The presence of a functional beach along the length of the cell, as part of the dune sedimentary system, is valuable to the settlements. The cell is utilised for recreational fishing, boating, swimming and diving, beach walking, camping/caravanning, horse riding across the beach, boat launching (tractor only) near Lady Bay. Much of the cell has designated beach access points, and large sections of the rear dune boundary are fenced where they border large private land parcels.

Local volunteer groups, such as Friends of Bungala River, volunteers from the Fleurieu Environment Centre and the Fleurieu Coast Community Nursery have helped to conserve and revegetate the cell and will continue to play a supporting role in conservation and public awareness. There is not a dedicated volunteer group that work across the Normanville Dunes, despite the high conservation value and species diversity. Friends of the Hooded Plover Fleurieu Peninsula (supported by BirdLife Australia) monitor and raise awareness of beach-nesting and shorebirds species within the cell.

### Landforms

Medium energy, microtidal, reflective beach. Narrow dune barrier (c.50 – 70m), pure silica white Holocene sands. Flat coastal plain. Toeslopes of high degraded former sea cliffs, with local slumping within talus (Caton et al 2007).

Nearly the whole length of the cell occupies the Normanville Sand Dunes geological monument (ref 1109) displaying undifferentiated Holocene aeolian sediments, which are the last major relics of similar coastal dunes that once existed along the east coast of Gulf St Vincent. The dunes provide information on the processes of shoreline development during the Holocene (5,000 years), forming a double crested system, with younger foredunes to seaward and older dunes inland. (Geological Society of Australia 2002). These dunes are also an important source for the replenishment of beach sand and an important protective feature of the inland areas, which are very low lying.

Several sand dune blow out areas are known to have occurred in these dunes from the 1940s, resulting in large areas of bare sand, potential through vegetation loss due to grazing (Caton et al., 2007).

The Normanville dunes are recognised for their geological and biodiversity values, and are listed under the Australian Heritage Commission, the South Australian Heritage Register (reference 175586, 14041, 17035) and have been accepted as a Geological Monument (no 1109) by the Geological Monuments Sub-committee of the South Australian Division of the Geological Society of Australia Limited.

Intertidal rocky reef platform that is exposed at low tide, contains culturally significant fish traps.



Lady Bay: Intertidal reef platform, narrow dunes and southwestern end of the Lady Bay settlement (far left)  
(Coast Protection Board, March 2024)

## Terrestrial biodiversity

The Normanville sand dunes, located north of the Yankalilla River to the northern end of this cell (and extending to the Carrickalinga Creek in Cell F24) are the largest and most intact dune system on the western Fleurieu, stretching approximately 4.5km, and are 200 to 250m in width. These dunes are widely recognised as one of few examples of preserved natural dunes (Telfer and Milne 2016, Caton et al., 2007, Geological Society of Australia 2002) and are the highest conservation value coastal dune systems within this plan.

High conservation values in the dunes reflect significant plant habitats and contain coastal vegetation assemblages that are rare in South Australia. The southern areas of the cell have a lower dune system and highly valuable remnant patches of Nitre-bush (*Nitraria billardierei*), Coast Saltbush (*Atriplex cinerea*) mid open shrubland, some of the only remaining patches of this association on the southern Fleurieu. These dunes wrap around the Lady Bay settlement and extend a short distance on the rear of the foredune, north of the Yankalilla River.

The dunes support multiple flora species of conservation significance, and form habitat for reptiles and birds of state or regional conservation significance (Telfer and Milne 2016). This high level of listings reflects the value of these dunes and the scarcity of intact coastal dunes and, in particular, coastal woodland habitats within the region.

Flora species of conservation significance include Pink Gum (*Eucalyptus fasciculosa*), Coast Silver Wattle (*Acacia uncifolia*), Sieber's Crassula (*Crassula sieberiana*), Cushion Fanflower (*Scaevola crassifolia*), Torpedo Arrowgrass (*Triglochin trichophora*), Cup Wattle (*Acacia cupularis*), Coast Bitter-bush (*Adriana quadripartita*), Sea Box (*Alyxia buxifolia*), Short-stalked Purslane (*Calandrinia brevipedata*), Strap Purslane (*Calandrinia corrigioloides*), Notched Sedge (*Carex bichenoviana*), Muntries (*Kunzea pomifera*), Dryland Tea-tree (*Melaleuca lanceolata*), Nitre-bush (*Nitraria billardierei*), Mallee Smooth-nettle (*Parietaria cardiostegia*), Austral Stork's-bill (*Pelargonium australe*),  
Southern Fleurieu Coastal Action Plan 2026

Quandong (*Santalum acuminatum*), and Variable Groundsel (*Senecio pinnatifolius* var. *maritimus*) (Telfer and Milne 2016).

The foredune seaward face vegetation is dominated by wind and salt tolerant species such as Rolling Spinifex (*Spinifex hirsutus*), Coastal Wattle (*Acacia longifolia* ssp. *sophorae*), Coast Daisy-bush (*Olearia axillaris*), and introduced Sea Wheat-grass (*Thinopyrum junceiforme*), which is particularly prevalent on the incipient dune. Behind this is a shrubland community on the dune and swale, and seaward side of the secondary dune, which is generally dominated by the shrub species Coast Beard-heath (*Leucopogon parviflorus*), Coast Daisy-bush *Olearia axillaris*, Coastal Wattle (*Acacia longifolia* ssp. *sophorae*), with patches of Dryland Tea-tree (*Melaleuca lanceolata*) and Sea Box (*Alyxia buxifolia*). At the rear of the secondary dune, the vegetation tends to a woodland community type with small areas of Drooping Sheoak (*Allocasuarina verticillata*) Low woodlands and Red Gum (*Eucalyptus camaldulensis* ssp. *camaldulensis*), Pink Gum (*Eucalyptus fasciculosa*) woodland. Whilst the Pink Gum is considered to be planted in this area, the Red Gum (*Eucalyptus camaldulensis* ssp. *camaldulensis*) is very old and gnarled, with hollows, and is considered to be remnant (Telfer and Milne 2016).



Normanville sand dunes (north of Yankalilla River estuary) with good diversity of coastal shrubland species (B Doyle)

The dunes have significant bird habitat values supporting a variety of conservation rated species, including Hooded Plover (*Thinornis cucullatus cucullatus*), Red-capped Plover (*Charadrius ruficapillus*), Caspian Tern (*Hydroprogne caspia*), Greater Crested Tern (*Thalasseus bergii cristatus*), Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*), Silvereeye (*Zosterops lateralis*), Elegant Parrot (*Neophema elegans elegans*).



*Red-capped Plover (Charadrius ruficapillus), (M Stokes)*

Limited information exists about the fauna species that are present across the Normanville sand dunes, with only a handful of records from mammals, one bat species, and limited reptile records. Telfer and Milne (2016) list fauna species that are likely to be supported by habitats within the dune areas as Water-rat (*Hydromys chrysogaster*), Western Grey Kangaroo (*Macropus fuliginosus*), Common Ringtail Possum (*Pseudocheirus peregrinus*), Bush Rat (*Rattus fuscipes*), Common Brushtail Possum (*Trichosurus vulpecula*), and Short-beaked Echidna (*Tachyglossus aculeatus*).

Reptile and amphibian species considered to be possibly, or likely to be present based on a consideration of past disturbance, isolation and the remnant habitats present include Marbled Gecko (*Christinus marmoratus*), Three-toed Earless Skink (*Hemiernis decresiensis*), Four-toed Earless Skink (*Hemiernis peronii*), Bougainville's Skink (*Lerista bougainvillii*), Four-toed Slider (*Lerista dorsalis*), Dwarf Skink (*Menetia greyii*), Mallee Snake-eye (*Morethia obscura*), Eastern Bearded Dragon (*Pogona barbata*), Red-bellied Black Snake (*Pseudechis porphyriacus*), Eastern Brown Snake (*Pseudonaja textilis*), Sleepy Lizard (*Tiliqua rugosa*) and Eastern Bluetongue (*Tiliqua scincoides*), Common Froglet (*Crinia signifera*), Banjo Frog (*Limnodynastes dumerilii*), Spotted Marsh Frog (*Limnodynastes tasmaniensis*), Southern Brown Tree Frog (*Litoria ewingii*) and Burrowing Frog (*Neobatrachus pictus*) (Telfer and Milne 2016, Caton et al., 2007).

The bird species recorded through surveys in this cell have a diverse range of requirements for food, shelter and nesting. The regionally uncommon woodland habitat in the coastal reserves provides an abundance of lateral branches for perching and dense shrubs for shelter. Telfer and Milne (2016) describe the dead trees as providing perching habitat for numerous birds, including Laughing Kookaburra (*Dacelo novaeguineae novaeguineae*), Crested Pigeon (*Ocyphaps lophotes lophotes*), Australian Magpie (*Gymnorhina tibicen*) and Nankeen Kestrel (*Falco cenchroides cenchroides*). As there are limited to no tree hollows present in the reserve, most of the resident birds did not rely on hollows for nesting. Those birds requiring hollows for nesting, likely nest elsewhere and frequent the reserve for feeding (Telfer and Milne 2016).



*Nankeen Kestrel (Falco cenchroides cenchroides) (M Endacott)*

The coastal dunes and remnant vegetation patches provide substantial butterfly habitats and species-specific hostplants. Butterflies that have the required host plants within this cell include Olane Azure (*Ogyris olane*), Icilius Hairstreak (*Jalmenus icilius*), Bitter-bush Blue (*Theclinesthes albocinctus*), as well as locally uncommon Wood White (*Delias aganippe*) and multiple common butterfly species that are observed across the Fleurieu Peninsula (Stolarski, 2024, Telfer and Milne, 2016, Caton et al., 2007).



*Olane Azure (Ogyris olane) butterfly on mistletoe (M Endacott)*

Olane Azure (*Ogyris olane*) butterflies are recorded in this cell and require mistletoes (*Amyema spp.*) as their larval hosts. These species are only recorded in cells F19, F23, F27 (Storlaski, 2024). Icilius Hairstreak (*Jalmenus icilius*) butterflies are considered rare and are only found in Normanville Dunes (F23 and F24) within the Plan area. This species requires a range of host plants, including Golden Wattle (*Acacia pycnantha*), Wirilda (*A. retinodes*), and Coast Silver Wattle (*A. uncifolia*), with larvae attended by small black ants (Stolarski 2024).

Bitter-bush Blue (*Theclinesstes albocinctus*), whilst locally common at times, is subject to restricted population sites supporting Coast Bitter-Bush (*Adriana quadripartita*), its only larval host plant, without which it would not be able to exist. The butterfly is restricted to cells F4, F15, F19, F23 & F24 (Storlaski, 2024).

The coastal slopes and cliff in the south of the cell, as well as the dunes, provide refuge and valued habitat for a range of seabird species, including the White-bellied Sea Eagle (*Haliaeetus leucogaster*), Eastern Osprey (*Pandion haliaetus cristatus*), Little Pied Cormorant (*Microcarbo melanoleucos melanoleucos*), Australian Pied Cormorant (*Phalacrocorax varius hypoleucos*)

The Hooded Plover (*Thinornis cucullatus cucullatus*), vulnerable in South Australia, has nested and foraged around the Yankalilla River estuary, Lady Bay. Red-capped Plovers (*Charadrius ruficapillus*) that are semi-colonial nesters are also recorded in this cell. The isolated nature of the beaches and nearshore rocky platforms in this cell provide foraging habitats for shorebirds, including Sooty Oystercatchers (*Haematopus fuliginosus fuliginosus*), Caspian (*Hydroprogne caspia*) and Greater Crested Terns (*Thalasseus bergii cristatus*), Silver Gulls (*Chroicocephalus novaehollandiae novaehollandiae*) and Pacific Gulls (*Larus pacificus georgii*).

Seagrass wrack (also known as Beach cast wrack) found regularly on beaches has an important ecological function recycling nutrients back to coastal waters as well as protection and stabilisation of the shoreline and coastal dunes by acting as a trap that binds drifting sands and reduces sand erosion during winter (PIRSA 2014). Beach wrack also provides an important role as habitat and shelter for Hooded Plovers (*Thinornis cucullatus cucullatus*) and Pied Oystercatcher (*Haematopus longirostris*) and Sooty Oystercatchers (*Haematopus fuliginosus fuliginosus*) as well as other shorebirds and juvenile fish. Beach cast wrack collection within Encounter Marine Park is prohibited in all zones except general managed use zones. Therefore, no removal of beach wrack is permitted in this cell.

### **Estuary (Yankalilla River)**

Yankalilla River is a recognised estuary (DEH 2007).

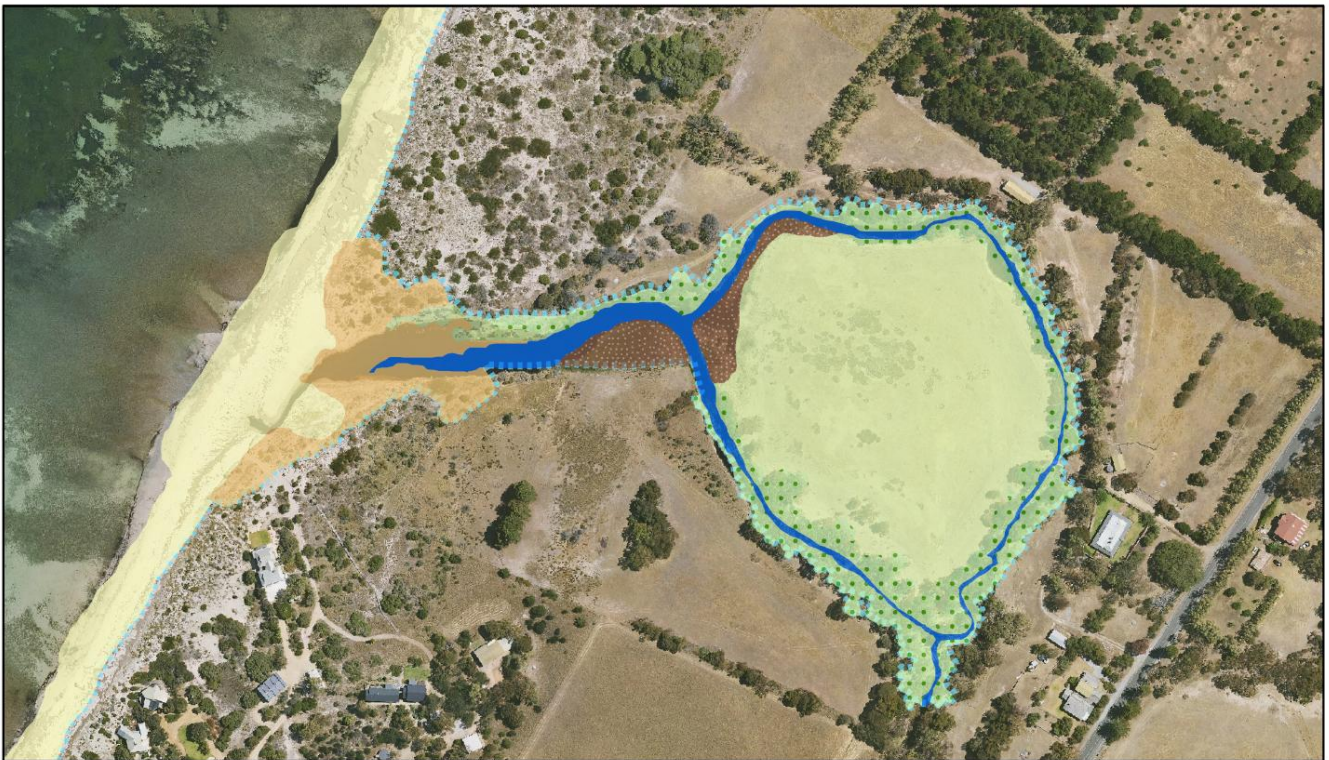
Yankalilla River is a small stream that flows from Parawa, initially in a northerly direction, but then turns west where it discharges through the Yankalilla River estuary (DEH 2007) into Yankalilla Bay. The lower reaches of the river system are tidally influenced and permanently inundated. The estuary entrance often blocks with a sand bar, causing the pool level to be above mean sea level (AWE and SARDI 2020). There is limited information available about the estuary habitats, as it is located on private land. Lower estuary habitats are mapped with pre-European vegetation of Common Reed (*Phragmites australis*) +/- *Typha* spp. Sedgeland, but little of this association remains on site. The mid to upper estuary areas still support areas of River Red Gum (*Eucalyptus camaldulensis spp. camaldulensis*) woodland over mid tussock grasses.

Fish biodiversity and water quality monitoring surveys have been undertaken at the lower reaches of the Yankalilla River. These surveys indicate it supports a small range of fish species, including Common Galaxias (*Galaxia maculatus*), Climbing Galaxias (*Galaxia brevipinnis*), Mountain Galaxias (*Galaxias olidus*), Congolli (congolli (*Pseudaphritis urvillii*) and Big-headed Gudgeon (*Philypnodon grandiceps*) (Schmarr et al. 2022).



*Yankalilla River estuary connects to the nearshore marine environment north of the Lady Bay settlement  
(Coast Protection Board, March 2024)*

# Estuarine Habitats: Yankalilla River



0 100 200 400 Metres

- Channel
- Beach
- Dune
- Estuarine Flat
- Floodplain
- Riparian
- Estuarine Sedges
- Estuary Extent



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Fig 23.1 Yankalilla River estuarine habitats

## Vegetation Communities

### Coastal slopes

Drooping Sheoak (*Allocasuarina verticillata*) Low Woodland

- Drooping Sheoak (*Allocasuarina verticillata*) Low Woodland over an open grassy and herbaceous understorey Hard Mat-rush (*Lomandra multiflora ssp. dura*) + Scented Mat-rush (*Lomandra effusa*) + Wallaby Grass (*Rytidosperma spp.*) + Spear Grass (*Austrostipa spp.*)

### Coastal dunes and shrublands (Telfer and Milne 2016)

\*Sea Spurge (*Euphorbia paralias*) + \* Sea Wheat-grass (*Thinopyrum junceiforme*) grassland

- \* Sea Spurge (*Euphorbia paralias*) + \* Sea Wheat-grass (*Thinopyrum junceiforme*) grassland with emergent Coast Daisy-bush (*Olearia axillaris*) + Coastal Wattle (*Acacia longifolia ssp. sophorae*) ± Coast Cushion Bush (*Leucophyta brownii*)

Nitre-bush (*Nitraria billardierei*) + Coast Saltbush (*Atriplex cinerea*) mid open shrubland

- Nitre-bush (*Nitraria billardierei*) + Coast Saltbush (*Atriplex cinerea*) mid open shrubland over Bower Spinach (*Tetragonia implexicoma*) + \*Common Iceplant (*Mesembryanthemum crystallinum*) + Coast Bonefruit (*Threlkeldia diffusa*) low forbs

Coast Daisy-bush (*Olearia axillaris*) + Coast Beard-heath (*Leucopogon parviflorus*) + Coastal Wattle (*Acacia longifolia ssp. sophorae*) +/- Common Boobialla (*Myoporum insulare*) mid open shrubland

- Coast Daisy-bush (*Olearia axillaris*) + Coast Beard-heath (*Leucopogon parviflorus*) + Coastal Wattle (*Acacia longifolia ssp. sophorae*) +/- Common Boobialla (*Myoporum insulare*) mid open shrubland over Sea-berry Saltbush (*Rhagodia candolleana ssp. candolleana*) low shrubs over Thyme Riceflower (*Pimelea serpyllifolia ssp. serpyllifolia*) + Bower Spinach (*Tetragonia implexicoma*) +/- Coastal Climbing Lignum (*Muehlenbeckia gunnii*) +/- Short-stem Flax-lily (*Dianella brevicaulis*)

Drooping Sheoak (*Allocasuarina verticillata*) low woodland

- Drooping Sheoak (*Allocasuarina verticillata*) low woodland over Coast Daisy-bush (*Olearia axillaris*) +/- Umbrella Bush (*Acacia ligulata*) +/- Sea Box (*Alyxia buxifolia*) +/- Coast Beard-heath (*Leucopogon parviflorus*) +/- Cup Wattle (*Acacia cupularis*) mid shrubs over Sea-berry Saltbush (*Rhagodia candolleana ssp. candolleana*) low shrubs over \*Hare's Tail Grass (*Lagurus ovatus*), \*Pimpernel (*Lysimachia arvensis*) +/- Coast Bitter-bush (*Adriana quadripartita*) +/- Coast Sword-sedge (*Lepidosperma gladiatum*)

Dryland Tea-tree (*Melaleuca lanceolata*) low woodland

- Dryland Tea-tree (*Melaleuca lanceolata*) low woodland over Desert Spear-Grass (*Austrostipa eremophila*) + Bridal creeper (*Asparagus asparagoides*) + Coastal Climbing Lignum (*Muehlenbeckia gunnii*) low tussock grasses

### Estuaries (Yankalilla River)

- Common Reed (*Phragmites australis*) +/- *Typha spp.* Sedgeland
- River Red Gum (*Eucalyptus camaldulensis spp. camaldulensis*) woodland over mid tussock grasses
  - River Red Gum (*Eucalyptus camaldulensis spp. camaldulensis*) mid woodland over Golden Wattle (*Acacia pycnantha*) + *Acacia sp.*, River Bottlebrush (*Callistemon sieberi*) over \*Large Quaking-grass (*Briza maxima*) + Stiff Flat-sedge (*Cyperus vaginatus*) + Kangaroo Grass (*Themeda triandra*) + \*African Daisy (*Senecio pterophorus*) mid tussock grasses

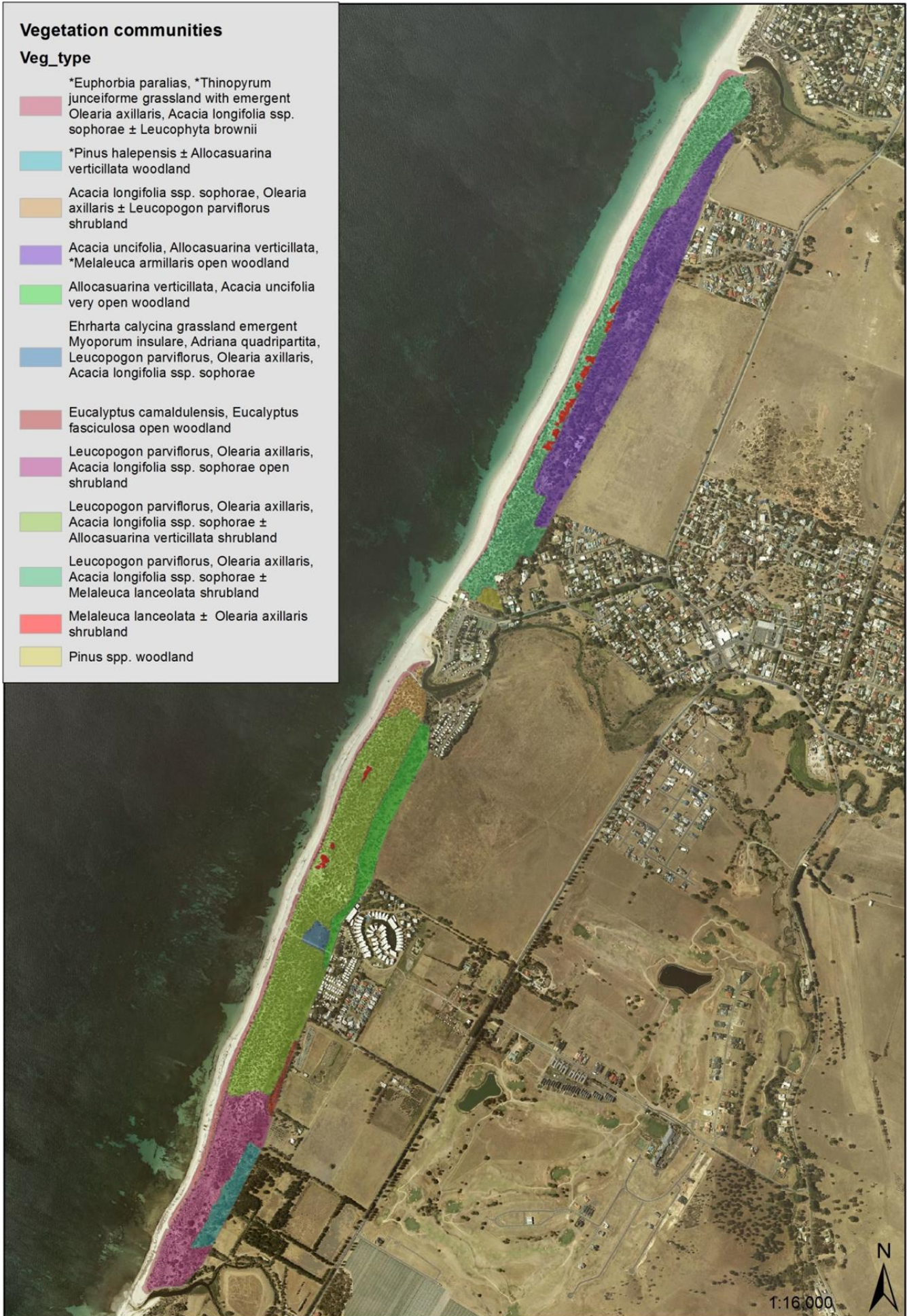


Fig 23.2 Vegetation communities in Normanville Dunes (F23 and F24) (Telfer and Milne 2016)

## Nearshore habitats

This cell forms part of the Encounter Marine Park. The marine areas of cell F23 are within a Habitat Protection Zone (HPZ-5).

Bryars (2013) describes this cell as dominated by continuous seagrass meadows, significant areas of continuous low profile reef inshore and bare sand/soft bottom further offshore beyond the depth limit of seagrass growth (Figure 23.3). Smaller amounts of patchy low profile reef and bare sand are also scattered throughout the cell.

Subtidal reefs in the area are composed of limestone or metamorphic rock with a cover of macroalgae and sessile invertebrates (Turner et al., 2007, DEH 2008, Baker et al. 2009, Bryars 2014, Brook and Bryars 2014, Brook et al., 2020, Brock et al., 2023). The intertidal reef at Lady Bay is composed of a mixture of rock types that likely includes limestone (see Benkendorff and Thomas 2007). The inshore bare sand is characterised by a low-energy, low tide terrace beach system (Short 2001).

The cell is regionally significant due to its substantial coverage of seagrass, inshore reef and bare sand/soft bottom (beach) habitats, extensive intertidal reef at Lady Bay, and existence of the Yankalilla River estuary (Bryars 2013).



*Great Spider Crab (Leptomithrax gaimardii) amongst seagrass (S Bryars)*

### Subtidal and Intertidal reef

Surveys of subtidal reef in nearby cells have found a high diversity of fishes, invertebrates and macroalgae (Edgar et al. 2006, Turner et al. 2007, DEH 2008, Baker et al. 2009, Brook and Bryars 2014, Brook et al. 2020, Brock et al. 2023). The intertidal reef at Lady Bay has been surveyed for macroalgal, seagrass, mollusc and echinoderm species richness, and is characterised by a range of macroalgae (red, green and brown), three seagrass species, and numerous (>25) mollusc species (Benkendorff et al. 2008). The cell lies within a region of low macroalgal species diversity. However, this is probably partly due to a low level of collection effort (see Baker and Gurgel 2010). The inshore habitats of Yankalilla Bay appear to be a hotspot for pipefishes and seahorses (David Muirhead, pers. comm. in Bryars 2013, Baker et al 2009).

The reef ecosystem baseline study (Brook et al. 2020) and current study by Brock et al. (2023), assessing the trends in the condition of rocky reef ecosystems of the greater Adelaide and Fleurieu Peninsula region, found that the overall status of rocky reefs was stable or improving, based on several key indicators of condition (e.g. fish and macroinvertebrate species richness, community structure, large fish biomass, macroalgae percentage cover, and reef thermal index). The Central Fleurieu subregion comprises 24 long term monitoring survey reef sites, with two sites found within the cell. These sites include Lady Bay and Yankalilla River mouth. Combined reef surveys in this subregion indicate that macroinvertebrate and fish species richness, large fish biomass, and the percentage cover of canopy-forming algae has remained stable or is increasing (Brock et al. 2023). Marine species in the Central Fleurieu subregion include 143 bony fish, 12 sharks and rays, 104 species of marine invertebrate, and 20 species of crustacean (Brock et al. 2023, Edgar and Barrett (2012), Edgar and Stuart-Smith (2014), Edgar et al. (2020)).

## Seagrass

The inshore seagrasses in this part of Yankalilla Bay are dominated by *Amphibolis antarctica*, with some *Posidonia* spp. and *A. griffithii* (Murray-Jones et al. 2009). For the inshore waters (<500m offshore) of Yankalilla Bay, between Lady Bay and Carrickalinga, Bryars (2014) documented a mixture of *Amphibolis antarctica*, *A. griffithii*, *Posidonia sinuosa*, *P. angustifolia* and mixed *Amphibolis/ Posidonia* seagrass meadows, patches of macroalgal reef, and scattered sand holes amongst the seagrass and reef.



*Narrow-Leaf Tapeweed (Posidonia sinuosa) and Dusky Morwong (Dactylophora nigricans) in Yankalilla Bay (S Bryars)*

## Species diversity

Bryars (2003) listed 10 fish and two macroinvertebrate species for the sheltered beach habitat between Carrickalinga Head and Lady Bay, 12 fish and four macroinvertebrate species for the seagrass habitat between Sellicks Beach and Rapid Head, 14 fish and six macroinvertebrate species for the unvegetated soft bottom habitat between Sellicks Beach and Rapid Head, 14 fish and six macroinvertebrate species for the reef habitat between Sellicks Beach and Rapid Head.

Surveys for uncommon and cryptic reef fishes have been conducted in the cell (see Baker et al. 2009). The Reef Watch community monitoring program undertakes intertidal surveys at Lady Bay. Intertidal scientific surveys have also been conducted at Lady Bay (Benkendorff et al. 2008).

While the seagrass and bare sand habitats are likely to support a range of species (e.g. see Bryars 2003), apart from mapping studies that have characterised the sea floor (Shepherd and Sprigg 1976, Tanner 2002, DEH 2008, Tanner et al. 2012), no biological surveys appear to have been undertaken on these habitats within Cell F23.

The SA Coast Protection Board's Beach Profile Survey Program initiative, undertaken by Coast Unit, DEW, was first established in 1977 along the Fleurieu Peninsula to monitor and evaluate changes in dune, beach and nearshore seabed levels, with a network of over 600 profiles maintained across the state. Profiles are usually established perpendicular to the shoreline and may extend 1 to 10 km offshore. Erosion hotspots are monitored annually to identify risks to natural assets and infrastructure. Profiles are also used to monitor a range of coastal ecosystems and landforms including saltmarsh and mangroves, seagrass, sand dunes and cliff profiles and provide a rare, long-term dataset which informs evidence-based decision making and coastal adaptation planning.

The program utilises a range of terrestrial and hydrographic survey techniques involving high precision GPS equipment and at some locations, topographic and photogrammetry drone survey is undertaken, which uses overlapping photos to create 2D and 3D digital surface model to map detailed changes to the coastal landforms over time.

There is one historical cross-shore beach profile monitoring site within this cell (profile 625003) established in 1977 at the SW edge of the Lady Bay settlement to monitor trends in beach-dune and nearshore dynamics over time.

The Lady Bay settlement is built on an old sand mining site where the former primary and secondary dune systems were removed and the settlement located on this flattened site of low elevation, fronted only by a narrow foredune that acts as the only erosion buffer to storm surge events. Much of the former dune protective buffer has been removed here by sand removal several decades ago, and adjustment to accelerated sea level rise could be rapid (Caton et al 2007).

Since the late 1980's the foredune has been increasingly colonised by Sea Wheat-grass (*Thinopyrum junceiforme*) a weed native to the Baltic Sea, which has influenced the geomorphology of the dune ever since. This weed, is a very salt tolerant species that can occupy niches further seaward than native coastal species such as coastal *Spinifex* sp. Creating a uniform and densely vegetated dune which has built the foredune upwards by ~1 m and seaward by ~10 m in between periodic erosion event such as the 2016 and recently in 2025 storm events than the natural foredune, creating a uniform and densely vegetated dune face.

The limestone reef itself, while it provides a more erosion resistant natural protection than sandy habitats, will likely become more frequently overtopped with increased sea level rise with increased storm surge risk over time.

In addition, four seagrass profiles within this cell (625016 and 625015 and 625014 and 625013, 625012) established by Coast DEW as part of a study (Murray-Jones et al 2009) in partnership with the South Australian Research and Development Institute (SARDI) Aquatic Sciences and the AMLR NRM Board (now Green Adelaide) to monitor seagrass condition where baseline bathymetric data was collected in 2009. This is an important baseline data set from which to monitor future condition of seagrass conditions as well as changes in seabed bathymetry in response to changes in seagrass cover with historical links between seagrass loss and seabed erosion and deepening off other urban populations (Tanner et al, 2009, 2012 and 2019). This survey was undertaken on the basis that Yankalilla Bay is home to extensive areas of seagrass in the region with the potential to be impacted by settlements with growing urban populations.

# Nearshore Habitats: Cell F23

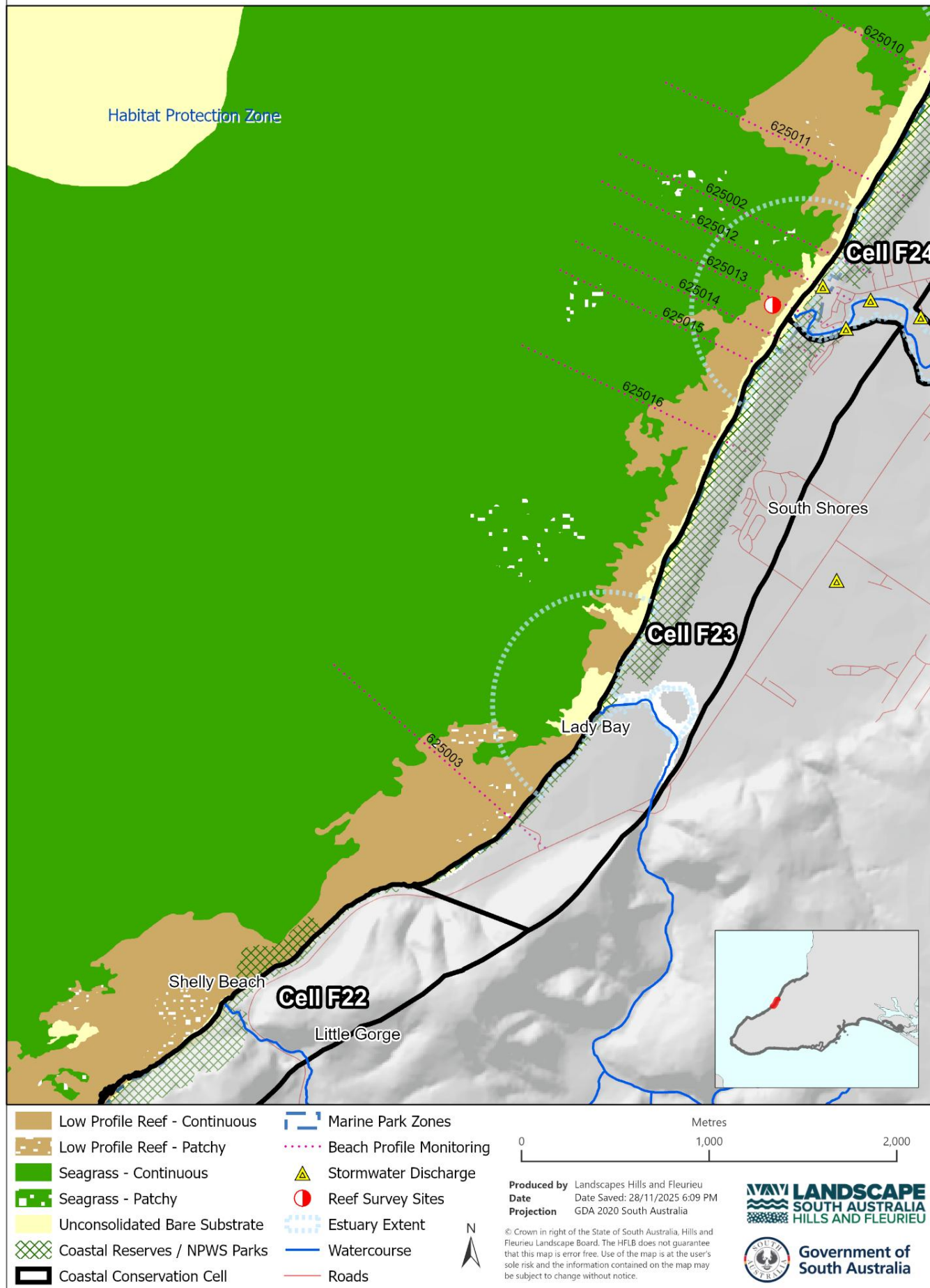


Figure 23.3. Nearshore habitats of Cell F23.

## Threats

### Whole cell

Substantial increases in visitation to coastal townships and reserves has been observed over recent years, placing pressure on natural areas and infrastructure. Desire to visit more remote areas that have less visitation is pushing capacity of caravan parks and camping activities to coastal carparks and roadside locations. Usage of coastal environments via walkers, camp groups, and major events have the potential to increase weed incursions, damage vegetation, introduce litter, and disturb native fauna.

A range of other moderate to high threats exist in this cell for viewshed, percentage of exotic plants, land use and ownership. The threat of land ownership and land use identifies some land parcels as potential threats to coastal areas due to factors like proximity to the coast or vulnerability to hazards. This highlights land parcels for potential intervention, such as zoning changes, restrictions or land purchase, to mitigate risks like erosion, inundation (storm surges, or sea-level rise), or the potential impact of current or future land use on coastal ecosystems, such as development or agriculture.

The diversity and structure of the native vegetation communities in the Normanville dunes and coastal habitats in this cell are threatened by a range of introduced weed species (Telfer and Milne 2016). A seed bank of African Boxthorn (*Lycium ferocissimum*), Olives (*Olea europaea ssp. europaea*) and Blowfly Bush (*Rhamnus alaternus*) remains in the dunes, following years of targeted weed control. A substantial population of Olives (*Olea europaea ssp. europaea*) remains at Bungala Estuary, which presents a fire hazard for the township and an ongoing source of weed spread to the Heritage Listed Normanville dunes.

Encroachments into the dunes from garden weed escapes and intentional planting of non-local plants are a threat (Telfer and Milne 2016, Caton et al 2007), spreading from local residences and the caravan parks, including New Zealand Mirror-bush (*Coprosma repens*), assorted succulents (Tree Aloe (*Aloe arborescens*), Century Plant (*Agave americana*), Cotyledon (*Cotyledon orbiculata var.*), *Aeonium spp.*), Teneriffe Daisy (*Argyranthemum frutescens ssp. foeniculaceum*), Geranium (*Geranium sp.*), Cape Marguerite (*Dimorphotheca ecklonis*) and Gazania (*Gazania linearis*).

The following declared and red alert weeds were found within this cell: Bridal Creeper (*Asparagus asparagoides*), African Boxthorn (*Lycium ferocissimum*), Western Coastal Wattle (*Acacia cyclops*), Gorse (*Ulex europaeus*), Italian Buckthorn (*Rhamnus alaternus*), Golden Wreath Wattle (*Acacia saligna*), Sea Spurge (*Euphorbia paralias*), False Caper (*Euphorbia terracina*), Giant Reed (*Arundo donax*), Salvation Jane (*Echium plantagineum*), Blowfly Bush (*Rhamnus alaternus*), Dog Rose (*Rosa canina*), Three-corner Jack (*Rumex hypogaeus*), Silver-leaf Nightshade (*Solanum elaeagnifolium*), Soursob (*Oxalis pes-caprae*), Olive (*Olea europaea ssp. europaea*), Perennial Veldt Grass (*Ehrharta calycina*), White Arctotis (*Arctotis stoechadifolia*), Horehound (*Marrubium vulgare*), Marram Grass (*Ammophila arenaria*), Cape Weed (*Arctotheca calendula*), White Arctotis (*Arctotis stoechadifolia*), Kikuyu (*Cenchrus clandestinus*), Feather-top (*Cenchrus longisetus*), Trailing African Daisy (*Dimorphotheca fruticosa*), Broad-leaf Cotton-bush (*Gomphocarpus cancellatus*), Pincushion (*Sixalix atropurpurea*), Aster-weed (*Symphotrichum subulatum*), Sea Wheat-grass (*Thinopyrum junceiforme*), Twiggy Mullein (*Verbascum virgatum*), Radiata Pine (*Pinus radiata*), Apple of Sodom (*Solanum linnaeanum*), Feather-top (*Cenchrus longisetus*).

Increasing holiday and local resident population pressures continue to increase demand on natural areas, resulting in increased use of existing access pathways and tracks. Existing coastal infrastructure (fencing, pathways, boardwalks, stairs) and facilities (car parks, viewing platforms) are also at capacity during peak periods of visitation from increasing tourist visitation. Despite relatively defined paths, unintended foot traffic wanders off tracks, which results in creation of unauthorised access tracks within and across the dunes, and damage to native vegetation. Areas of dune blowout have occurred at multiple locations, many likely to have occurred from the mid-1940s due to ongoing grazing pressure (Telfer and Milne 2016).



*Dedicated access points direct beach users within a defined area protecting coastal vegetation and reducing erosion (B Doyle)*

Historic horse-riding trail access to the dunes has impacted coastal geomorphology and stability. While access is no longer permitted, the erosion impacts of the trails are still evident within the dunes. Telfer and Milne (2016) and Taylor (1997) identified that trails running parallel to the dunes (i.e. north to south) are a significant threat, show significant deep erosion, which is likely to cause long term impacts on the vegetation in the vicinity of the trail.



*Horse riding trails still exist within the Normanville dunes with mobile sands and potential for erosion and weed establishment (C Jackson)*

Pest animal threats to coastal fauna and flora from rabbits (*Oryctolagus cuniculus*), foxes (*Vulpes vulpes*), and cats (*Felis catus*). There is a need to monitor and control Fallow Deer (*Cervus dama*) incursions. Coordinated collaboration between landowners and managers is required to manage pest animals (refer to regional pest management strategies). Total grazing pressure within the cell, particularly on coastal slopes, as well as within the dunes, exists through introduced and native species, as well as stock from adjacent land, impacting on vegetation through limiting regeneration and revegetation activities. Telfer and Milne (2016) note Western Grey Kangaroo (*Macropus fuliginosus*) frequent the open grazing areas adjacent to the dunes and also are able to emerge from sheltered areas of remnant vegetation at dusk to graze in the open but then retreat to these remnants at other times.

Development pressures to infill areas behind the dunes (currently zoned Rural and Tourism Development under the Planning and Design Code) continues, as demand for housing is experienced locally. Pockets of undeveloped land are rare within coastal areas and offer opportunity for coastal retreat of dune systems and important habitats that are under increasing pressures and impending climate change impacts.

The Normanville Dunes are one example of nature-based solution for coastal hazard adaptation, where these dunes, stabilised by native vegetation, act as a buffer by absorbing wave energy, trapping large amounts of sediments and protecting lower lying inland areas from storm surge and coastal flooding hazard. This is owed largely to the large proportion of inland areas on the boundary of the dunes that are currently undeveloped.

Hesp, et al 2025, highlights that beaches and foredunes can respond to sea level rise by translating upwards and landwards as sea level rises (Ollerhead et al., 2013; Van Ijzendoorn et al., 2021; Davidson-Arnott et al., 2024) but this can only occur if some sediment is returned to the beach following erosion events, and where there is space for the beach and dunes to do so. If infrastructure is emplaced on or near a foredune then it is unlikely translation would be allowed to take place unless we are willing to retreat (which seldom occurs).

In addition, in order for the Normanville Sand Dunes to be able to persist in the long term, a buffer to development on the land ward boundary will be require to allow for these dunes to translocate inland with sea level rise and to provide a buffer to protect future development from sand dune hazard risk and maintain a dune barrier to protect lower lying inland areas from coastal inundation. The landward dune extent currently sits on the boundary between Crown land and private land currently zoned for Tourism Development.

It is recommended that study be undertaken by a suitably qualified geomorphologist to determine an appropriate buffer to development to 2100 for a 1 metre SLR scenario to allow for these dunes to translocate inland as well as providing a buffer to coastal sand dune drift hazard risk. While there is provision for a Hazard (flooding) overlay landward of the dunes within the Planning and Design Code (PDC), there is no buffer behind the dunes to the Coastal Areas Overlay to accommodate long term planning for any future dune translocation or sand drift hazard risk. While the dunes are within the PDC Coastal Areas Overlay which seeks to ensure the conservation of the natural coastal environment, provide for natural coastal processes and recognise and respond to coastal hazards, there is a buffer required to ensure this.

The dunes are arguably critical going forward as a key element of Yankalilla Bay's coastal hazard adaptation strategy. Opportunities exist for these investigations to be incorporated as part of an overall Coastal Hazard Adaptation Plan for the local area and Council as a whole, to respond to risks posed by coastal hazards and to plan for the protection of natural assets to conserve these relic dune landforms and the ecosystems they support into the future as well as council and private assets increase the resilience of natural habitats into the future.



Normanville dunes stretch nearly the length of the cell. Normanville Holiday Park (middle) and South Shores housing development (left) are located directly behind the dunes in low lying areas. (Coast Protection Board, March 2024)

Dieback of the woodland overstorey species Coast Silver Wattle (*Acacia unicifolia*), Drooping Sheoak (*Allocasuarina verticillata*) has been recorded in recent years, with plants clearly dying at a faster rate than they are regenerating. A loss of this open overstorey layer would reduce the available habitats for woodland birds and greatly change the nature of the dunes (Telfer and Milne 2016). Possible causes include old age, extended periods of low rainfall, competition with introduced species, and replenishment of young trees limited by grazing pressure.

Several butterfly and skipper species that have localised populations are limited in capacity for dispersal and/or colonisation of new sites. The lack of suitable habitats, weed invasion and interconnectivity between habitats prohibits movements and, therefore, creates localised isolation of populations. Several species are now restricted to pockets of isolated habitats, resulting in some being vulnerable to population collapse (Stolarski 2024).

On the beach and dunes Sea Wheat-grass (*Thinopyrum junceiforme*) and *Euphorbia* spp (*Euphorbia paralias* and *E. terracina*) are limiting Hooded Plover habitat and require management. Dunes with introduced grasses develop steeper and higher dune heights than those dominated with local native spinifex plants due to their growth habits. Hooded plovers need a relatively open beach/foredune area to be able to breed, roost and feed. Dunes with high and densely planted areas are not favourable to hooded plovers and put them at greater risk to predators such as silver gulls, ravens, foxes and other species. Foxes are an issue at beaches within this cell and have impacted nesting, chick survival and fledging success.

Coastal raptors are recorded to utilise habitats within the cell, including Wedge-tailed Eagles (*Aquila audax audax*) that have established foraging and breeding territories locally. Current and potential future threats include disturbance, recreational and industrial use of drones, wind-farms and spread of urban development (Rowe et al 2018).

Stormwater management issues are occurring from development behind the dunes that has been constructed on low lying areas.

There is evidence of freshwater soaks to the rear of some sections of the Normanville sand dunes ie presence of a Red Gum (*Eucalyptus camaldulensis*) habitat within the South Shores Development and presence of other freshwater sedge species. There is also freshwater pooling of these lower lying areas following high rainfall events and ongoing issues with managing stormwater from incremental land divisions. With more intense rainfall events, the

combined interaction of seasonal flooding and interactions with rising saline ground water from sea level rise is increasingly uncertain.

Undefined boat launching occurs on the reef near the Lady Bay township, impacting reef condition over a wider area. Vehicles on beach impacts occur, with unauthorised off-road vehicle access and beach driving between the two boat ramps at Lady Bay and Normanville.



*Tractors crossing the beach at Lady Bay to launch boats depending on tidal access and conditions  
(Coast Protection Board March 2024)*

Unauthorised group activities on beaches impacting coastal environments and beach-nesting birds (for example, outdoor education service providers and school groups).

### **Estuaries (Yankalilla River and Bungala River south of mouth)**

Limited information is available about the condition, vegetation associations and habitats of the Yankalilla River estuary. However, weed incursion, grazing pressures and erosion of banks are evident within the estuary.

Water extraction upstream in the Bungala River has reduced environmental flows, which has led to the estuary mouth remaining closed for extended periods (AECOM 2020). Altered mouth opening and closing regimes can have dramatic effects on the estuary, as well as the adjacent reef and seagrass environs. (AECOM and SARDI 2012).

Artificial opening by mechanical opening of the estuary can be undertaken by the Council (associated with an EPA permit) to manage river build-up. There are upstream implications and complexities associated with opening and closure of estuaries, particularly related to permanent water bodies. The opening of the estuary mouth can dramatically affect the functioning of organisms within the estuary and near shore. Changes to mouth opening will impact water quality and fish within the estuary, and the movements of fish between the estuary and the coastal environment (AECOM Australia Pty Ltd 2010).

## Nearshore habitats

Bryars (2013) describes the immediate coastline as sparsely populated but has significant intermittent freshwater inputs from the Yankalilla River and the Bungala River (which lies just outside the cell and which runs through a densely populated area). The Yankalilla and Bungala Rivers are directly connected to the sea only during the wetter months from about April to October. It is unknown if groundwater exchange occurs between the estuary waters and the adjacent seawater during times when the river mouths are closed.

Annual outflows are estimated at 6.4 and 4.3 GL for the Yankalilla River and Bungala River, respectively (AWE and SARDI 2012). The Yankalilla River outflow is mainly derived from catchment flows, but the Bungala River has both catchment and stormwater inputs from the Normanville and Yankalilla settlements. Stormwater in general is a recognised issue within the Yankalilla area and a Stormwater Management Plan (which addresses both urban and rural sources) has been developed that encompasses the Yankalilla River, Bungala River, and Carrickalinga Creek catchments (AWE and SARDI 2012). Local reports of turbid plumes of discharge water from the Yankalilla and Bungala Rivers that spread along the inshore waters of Yankalilla Bay are common. Stormwater management is also an issue for existing developments behind the foreshore dunes and is seen as a potential problem with any future developments in the area. It is unknown if stormwater entering the aquifer behind the foreshore dunes could make its way into the marine environment.

The Bungala River (which has pollution issues, see AECOM Australia Pty Ltd 2010) is directly adjacent to the northern cell boundary (see F24), and inshore reefs adjacent the Bungala River have sediment, mussels, and turfing macroalgae (Bryars 2013), which could be indicative of nutrient and sediment impacts. Sedimentation may be transient in nature depending on weather conditions. Therefore, impacts on inshore reef from the Yankalilla River and Bungala River are evident (Bryars 2013).

Despite the apparent threats, two separate studies concluded that seagrasses in general within the cell were in good condition, with no indication that the Bungala River was impacting on nearshore seagrasses (Murray-Jones et al. 2009, Tanner et al. 2012). Epiphyte cover on seagrasses was also not increased around the Bungala River mouth (Tanner et al. 2012). It is possible that even with increased nutrient inputs to the inshore waters of Yankalilla Bay, wave energy in the area has a cleaning effect on seagrass epiphytes (cf. Bryars 2009). Outflows from the Yankalilla River and Bungala River did not appear to be affecting the reproduction, recruitment or growth of the seagrass, *Amphibolis antarctica*, during 2009 (Irving 2009), although the rivers were apparently not flowing at the time of the study (AECOM Australia Pty Ltd, 2010).

In contrast to earlier seagrass studies, Bryars (2014) documented unhealthy *Amphibolis* seagrass, high epiphyte loads in some areas, widespread erosion scarps and blowouts, and presented evidence for historical inshore seagrass loss in Yankalilla Bay, particularly adjacent to the Bungala River. Bryars (2014) suggested that seagrass loss might be linked to freshwater inputs from the Yankalilla River, Bungala River and Carrickalinga Creek, but also noted that groundwater freshwater upwellings were occurring in parts of Yankalilla Bay.

Surveys using video transects were conducted by Murray-Jones et al (2009) and Tanner et al (2012) and (2019) across Yankalilla Bay encompassing south of Bungala River to North of Carrickalinga Creek to determine the health of seagrass community data using the same methods and data established in 2009. It indicated a seagrass decline from south to north. The study noted epiphyte loads greater in northern seagrass compared to South possibly indicating greater nutrient and stress loads. Nutrients were suspected to be a localized cause of seagrass epiphyte loads documented south of Bungala river.

Bryars (2013) considered the risk ratings for identified threats to seagrass and reef ranged from low to high, while no measurable threats to sand were identified.

Bryars (2013) describes the two major sources of catchment water and stormwater discharging to the coast, and all of the relatively small total area of reef lies inshore where contact with these flows is most likely, it was considered that a severe consequence for reef may occasionally occur, hence the risk rating was high. In contrast, Bryars (2013) notes the relative area of seagrass is much greater than reef and most of it occurs further offshore, and currently limited evidence of an impact on seagrass. Therefore, it was considered possible that there would be a minor consequence for seagrass, and the risk rating was low.

Illegal harvesting of organisms from the intertidal reef at Lady Bay has been identified as a threat (AECOM Australia Pty Ltd 2010).

# Opportunities

## Whole cell

Manage visitor numbers and impacts to ensure coastal areas can support growing demand, while maintaining and improving the quality of experiences without diminishing the values of the cell. Investigate informal camping issues, low-impact walking trails, and further opportunities to reduce impacts on the coastal environment. Education, restrictions and compliance regarding off-road vehicle and informal camping. Opportunity to work with nature-based tourism (commercial and recreational) operators, agencies and community volunteers to increase visitor education and stewardship of local coastal values, environments, protection of species and appropriate behaviors.

Community education opportunities regarding:

- Unique and valuable coastal landscape (for example, wildflowers, birds, and mammals)
- Fragile nature of coastal areas that are sensitive to foot traffic, soil compaction and erosion.
- Coastal gardens and resident/business owner education
- Community education and targeted communications regarding Marine Parks and intertidal reef platforms and regulations related to harvest of intertidal organisms.
- Beach-nesting birds, such as Hooded Plovers (dogs on leash, nesting sites, citizen science projects, managing visitor disturbance)
- Citizen science monitoring to contribute to intertidal reef monitoring, seagrass restoration, dolphin watch, beach pole monitoring, Fleurieu seabird monitoring program and beach-nesting birds.
- Value of place and coastal values, responsible beach use and reducing human impact on coastal habitats.
- There is opportunity for signage renewal across coastal areas to educate the community about coastal conservation, cultural significance and appropriate behaviours across the Fleurieu Peninsula coast.

This cell (and F24) is highlighted as one of three areas (along with Newland Head to the Bluff (F13 - F15) and the beaches and lower slopes of Fishery Beach, Lands End, Cape Jervis and Morgans Beach (F19 - F20) within this plan to have high conservation and high threat values. As a result, the priority of actions (conservation and threat) for these areas have been rated higher than in other cells and warrant prioritised effort and investment.

Review strategic planning to enable targeted actions and the opportunity to guide and prioritise management effort that enhance coastal resilience and environmental protection. These include reviewing and restricting development in high-risk zones, acquiring vulnerable or ecologically valuable land to conserve sensitive coastal environments and managing private land use to safeguard coastal habitats and support long-term ecological health. Consider opportunities and the best mechanisms for greater long-term conservation status and protection of this area (conservation outcomes and ongoing ability to access current funding and resources) and connectivity with cells F23-F25.

The transient population at Normanville (and surround townships) puts substantial pressure on the Coastal areas and the Bungala River estuary. With the sudden doubling of the population in summer, comes increased visitation, litter, trampling and wastewater treatment requirements, as well as pressure to construct more holiday accommodation. Future development in the region, particularly in close proximity to the Bungala River estuary, needs to incorporate the principles of ecologically sustainable development and water sensitive urban design (WSUD) (AECOM 2010, AWE 2020).

Yankalilla Bay is one of the few urban areas on the Southern Fleurieu that still contains extensive undeveloped coastal dunes, including land adjoining estuaries. This makes it one of the last viable locations where long-term adaptation through development avoidance remains feasible. To support this, further investigation is needed to prioritise opportunities for coastal dune retreat under future climate scenarios. Where development proceeds, appropriate buffer zones for riparian, dune, and estuarine habitats should be defined to enable rehabilitation and staged habitat retreat. Planning processes should enforce increased protection and minimum setbacks for these areas.

Implement WSUD features to treat stormwater run-off and improve stormwater quality and biodiversity in the area, and actively manage future stormwater impacts on the coast and marine environment (AWE 2020).



*Normanville dunes between South Shores and Bungala River estuary with buffer areas to allow for dune retreat under future climate change scenarios (Coast Protection Board, March 2024)*

Continued implementation of the Normanville Dunes Biodiversity Action Plan (Telfer and Milne 2016) is a key priority to protect and enhance the biodiversity and conservation values of this cell, while also addressing the multiple threatening processes. Review of this document is likely to be needed throughout the life of this plan, to review actions and update priorities as needed. Resourcing for BushRAT or condition assessment should be supported, to monitor impacts of action and detect change in condition.

Weed management is a key priority to help retain the high biodiversity values within the cell across the parcels of Council and Crown Lands. Targeted control of declared and red alert weeds including Olive (*Olea europaea ssp. europaea*), African Boxthorn (*Lycium ferocissimum*), Coast Tea-tree (*Gaudium laevigatum*), Golden Wreath Wattle (*Acacia saligna*) and Western Coastal Wattle (*Acacia cyclops*) are a high priority, as they are actively invading intact native vegetation and displace or choke out native plant species. Ongoing monitoring for, and mapping of, new weed infestations should also be undertaken as part of an ongoing weed control program, which is critical to addressing high priority weeds and maintaining conservation values for the cell. Garden escape weeds require ongoing monitoring, control, and education for local residents on the impact of coastal garden weeds that spread to coastal reserves.

Monitor the impacts and effects of total grazing pressure that are causing impacts on native vegetation and revegetation programs, reducing plant diversity and habitat quality for other important and conservation-rated species. Implement measures to reduce grazing pressure and erosion on coastal slopes, creek lines, estuaries and high conservation value pockets of remnant vegetation. Replace, repair and maintain existing fencing with private land to restrict stock access to the dunes and areas of conservation values. Support opportunities for revegetation and restoration of coastal slopes and watercourses within and upstream of this cell to reduce sediment loads moving downstream to the estuary and marine habitats. Restoration and revegetation efforts at Normanville Dunes should focus upon supplementing existing habitat, using appropriate species for the vegetation community and planting at appropriate (natural) densities. Telfer and Milne (2016) identified that the vegetation already present in the foredune and dune shrubland areas provides a good benchmark for the appropriate target structure and floristic composition. The hind-dune woodland areas have been modified in the past, and efforts should aim to recreate a woodland structure that may represent the type and diversity of species that was once present in the area. Revegetation of key woodland species (Sheoak, Coast Silver Wattle) is needed to retain important woodland habitat.

Targeted interventions for threatened/rare plant species and communities, including weed control and reintroductions and translocations of rare plants and orchids. Engagement and collaboration with private landowners of high value remnant vegetation communities and opportunities for increased protection from stock, weed incursion and potential future development.

Pest animal threats to coastal fauna and flora from rabbits, foxes, and cats. There is a need to monitor deer incursions and kangaroo numbers, and control through coordinated collaboration between landowners and managers to manage pest animals (refer to Regional Pest Management Strategies). Assessment and rehabilitation of access tracks, previous horse trails (following expiration of permit) and dune blowouts are needed, while addressing continuing access control issues, with visitor pressure on tracks through dunes. From a conservation and biodiversity perspective, it is desirable that no further beach access points are created in the Normanville Dunes (Telfer and Milne 2016, Caton et al 2007). Continue to manage the large blowout areas, following substantial efforts within the dune near the South Shores development, where management intervention (fencing and revegetation) has been very successful in helping to stabilise this area.



*Dune blowout restoration in Normanville Dune Coastal Reserve (C Taylor)*

Maintain and expand coastal restoration actions including revegetation with local native plants and priority weed control, particularly for butterfly populations, including Bitter-bush Blue (*Theclinesthes albocinctus*) and common species. Increase suitable habitat for coastal butterfly populations, including planting of host plants in coastal areas to increase habitat suitability for local introductions.

Icilius Hairstreak (*Jalmenus icilius*) butterflies are considered rare in the region and are only found within the Plan area in Normanville Dunes (F23 and F24). This species requires a range of host plants, including Golden Wattle (*Acacia pycnantha*), Wirilda (*A. retinodes*), and Coast Silver Wattle (*A. uncifolia*) which should be increased within the dunes of this and neighbouring cells to increase potential habitats (Stolarski 2024).



*Icilius Hairstreak (Jalmenus icilius) butterflies are only found within the Normanville dunes within the region (M Endacott)*

Three Azure spp. (*Ogyris* butterfly species – *O. olane* (currently present in this cell), *O. genoveva* and *O. amaryllis meridionalis*) are found within the region and require Mistletoes (*Amyema spp.*) as their larval hosts and would not be able to exist if they are not available. Stolarski (2024) recommended mistletoes should be retained in the environment, and where possible, additional seeding of mistletoes is undertaken across cells to enhance localised Azure (*Ogyris spp.*) populations.

Golden-haired Sedge-skipper (*Hesperilla chrysotricha cyclospila*) with its current Fleurieu Peninsula extant of four known population sites; Stipiturus CP, Myponga River Gorge private property (PP), and Deep Creek PP is considered as locally vulnerable. Opportunities have been identified by Stolarski (2024) in the following cells; F15, F21, F22, F23 and F24 for the restoration of the species habitats with Saw-sedge (*Gahnia ssp.* including Curled Saw-sedge (*Gahnia ancistrophylla*), Limestone Saw-sedge (*Gahnia deusta*), Thatching Grass (*Gahnia filum*), Red-fruit Saw-sedge (*Gahnia sieberiana*); Cutting Grass (*Gahnia trifida*)) in view of introduction into sites.

Bitter-bush Blue (*Theclinessthes albocinctus*), whilst locally common at times, is subject to restricted population sites supporting *Adriana quadripartita*, but requires additional habitat enhancement through plantings of *Adriana* in suitable soils in cells F23 & F24. The facilitation of host plant propagations and habitat creation supports extensive habitat and site interconnectivity across many cells for securing this species into the future.

This cell is important for coastal raptors and ongoing monitoring, and management is critical to minimise visitor disturbance and to support habitat condition for raptor populations. Investigate opportunities to support and implement the recovery plan for Eastern Osprey and White-bellied Sea Eagles (2022). Monitor, maintain and improve the quality of vegetation for the provision of wildlife habitat for priority species.

Define boat launch access areas (Lady Bay and Bungala), community education and compliance to reduce damage to reef and beach environments, including beach-nesting bird locations.

Opportunity for coordinated and permitted beach activities, including awareness for outdoor activity service providers and groups using the beaches.

Continue to support collaborative efforts to protect and conserve Hooded Plover breeding habitats within this cell. Implement actions to support Hooded Plover conservation, including signage for dogs on leash on beach, opportunities for collaboration to manage foxes and increase suitable habitat by replacing introduced Sea Wheat-grass with native Spinifex vegetation associations to support Hooded Plover populations. Maintain council beach controls to support Hooded Plover protection efforts.

As part of the *Coastal Dune and Cliff-top Vegetation Surveys* (1995–1997) (Opperman 1999), long-term monitoring sites were established across South Australia and the Southern Fleurieu region to assess the structure and Southern Fleurieu Coastal Action Plan 2026

composition of coastal dune and cliff-top plant communities, and their relationships to regional and environmental factors. Given that nearly 30 years have passed since these surveys were undertaken, there is strong potential for shifts in geographical range and changes in species composition due to the long-term impacts of climate change. The *Survey of Remnant Vegetation of the Southern Fleurieu Peninsula* involved biological surveys conducted between 1987 and 1991 to establish baseline data on remnant vegetation and swamps in the region south of Adelaide, South Australia.

During the development of this plan, and through the assessment of flora and fauna (both native and introduced) species lists available via the Biological Database of South Australia (BDBSA), significant gaps were identified between recorded species and known species distributions within cells. To address these data deficiencies and improve the accuracy of long-term ecological records, both above foundational vegetation survey projects should be repeated and incorporated into an ongoing monitoring program. Fauna assessments across cells to establish population baselines, update existing records and species distribution, particularly of underrepresented groups (reptiles and invertebrates) should be undertaken.

There is opportunity for collaboration between partners, such as National Parks, Marine Parks, Traditional Owners, First Nations, landscape boards, volunteer groups, community and nature-based tourism operators, for monitoring of seabirds, coastal raptors, marine mammals and other wildlife.

Support community volunteer efforts to undertake priority restoration and conservation work in this cell. Strengthen partnerships with Traditional Owners, First Nations, lessees, adjoining landowners, volunteer organisations, researchers, and the wider community to foster collaboration and long-term management benefits for biodiversity protection and restoration. Continue to develop and maintain good relationships with privately owned land neighbours.

### **Estuary (Yankalilla River and south of Bungala estuary)**

Continue to implement the Bungala Estuary Action Plan (AECOM Australia Pty Ltd (2010) and review as required throughout the life of this plan. Weed control within the estuary and across grazing pastures, bare coastal slopes on private property and Crown lands parcels needs to be maintained to prevent further incursion into limited remnant patches of high conservation value. Upgrades, replacement and installation of appropriate fencing to restrict stock access to cliff lines, watercourses and the estuary is required. Following weed control, undertake activities to improve bank stabilisation and revegetation to reduce further erosion and weed cover (AECOM Australia Pty Ltd 2010).

Create an estuary buffer between Normanville Caravan Park and dunes through planting of native vegetation, to reduce unauthorised access to the dunes and impact of wildlife. Several existing council plans (DCY 2019, AWE 2020) call for the development of a linear park and trail between the townships of Yankalilla, Normanville and the coast to buffer development growth areas and improve water quality of the Bungala River. Development of trail networks should ensure existing areas are improved for biodiversity and conservation outcomes, limit disturbance to fauna, and increase community awareness of environmental values.

Survey and assessment of the Yankalilla River estuary and associated habitats. AWE (2020) recommends the development of an estuary management plan for Yankalilla River estuary, to provide for coordinated and targeted investment in the maintenance and enhancement of the values provided by the estuary. There are opportunities for reusing water from the Normanville Wastewater Treatment Plant, subject to access, approvals and collaboration between land and asset managers. Allowing for sufficient environmental flows is important for estuary health and management.

Improvement to the estuarine flora and fauna habitats and connectivity with marine environments can be achieved through the development and employment of an Estuary Entrance Management Support System (EEMSS). This would include a framework for decision makers, considering both the ecological and infrastructure/amenity concerns. Improved management of estuaries within the region (and across the state) is required for a more strategic planning and management approach to deliver positive and coordinated outcomes for estuary habitats. Improved monitoring of ecological communities, connectivity with marine systems and water quality conditions within the estuary will allow more effective adaptive management; being aware of conditions and responding as required.

Maintenance of natural conditions in rivers, creeks and estuaries depends on integrated catchment management. Land use that minimises the negative impacts to the stream, including limited water extraction, the reestablishment of native vegetation following priority weed control, and exclusion of stock from creek lines, should be encouraged within the cell and throughout the catchment.

Sea level rise will increase the level of sea water flowing up the Bungala and Yankalilla River estuaries leading to increased inundation of estuary floodplains over time between the estuary mouth and Main South Road.

## Nearshore Habitats

Further investigation is required to determine the source of sediments at the mouth of Yankalilla River and possible links with local catchment water (e.g. Yankalilla River) (AWE 2020).

Bryars (2013) recommends biological surveys of the seagrass and sand habitats are required to better understand habitat values and compile meaningful species lists for the cell.

A follow up survey to that of Bryars (2014) to determine if the erosion scarp adjacent to the Bungala River has continued to migrate offshore, with subsequent loss of seagrass meadows.

## Climate change threats on coastal biodiversity (see BMT 2025)

### Potential climate change threats to coastal biodiversity

Cell F23 includes the Yankalilla River estuary ecosystem, and beach and dune ecosystems backed by coastal cliffs. These ecosystems are supported by native vegetation and dune scrub, as well as providing nesting areas for birds. Intertidal ecosystems with infauna for birds to feed, and temperate reef ecosystems including dense seagrass.

Biodiversity assets potentially vulnerable to climate change in this cell include:

- Coastal dunes
- Native vegetation
- River, creek and estuary ecosystems
- Intertidal and reef ecosystems
- Coastal cliffs
- Beach nesting birds

These ecosystems may be particularly vulnerable to the direct impacts of climate change, particularly sea level rise, coastal erosion, increased drought, higher temperatures and more intense storms.

Rising sea levels will see increased storm damage to foredunes; Bruun Rule calculations of beach change suggest a recession of the order 5–30m over 50 years could be likely, given current IPCC sea level forecasts. Both beach and dune recede under this process and over time, consideration will have to be given to dune recession. CSIRO forecasts suggest fewer storms, but a small increase in storm magnitude, increasing the level of unpredictability of seasonal beach change. Rising sea levels threaten tidal inundation, ground water inundation behind the dunes (in low lying areas), and erosion of the former dune area south of Yankalilla River (Caton et al 2007).

All climate models project drier conditions for southern South Australia, together with increased evapotranspiration. It is clear that in some years soil field capacity may not be reached in winter and seasonal run-off in the Yankalilla River may be greatly reduced. However, fast run-off from intense storms in summer may give irregular flows. Over time, increasing aridity will slow natural recovery from damage to dune vegetation (Caton et al 2007).

Marine heatwaves place further stress temperate reefs and seagrasses, reducing biodiversity. Higher atmospheric temperatures will lead to increased marine heatwaves, loss of species in the intertidal with longer than experience to grow back due to increased stressors; e.g. loss of sediment. Higher sea surface temperatures increase the potential for algal blooms.

Changes in ocean temperatures, salinity, and acidity (from increased CO<sub>2</sub> levels) can directly affect the health of temperate reefs. Warmer waters and increased acidification may hinder the growth of calcareous organisms, such as marine molluscs and phytoplankton.

## Cell Action Table

Component	Issue	Proposed Action	Priority	Key Players
Whole cell	Threats and opportunities to improve protection of cultural heritage within cell	Cultural consultation and collaboration to appropriately manage cultural heritage within this area.  Prevent damage, disturbance, or interference to cultural heritage by adhering to the Aboriginal Heritage Act 1988.	High (cons/ threat)	Traditional Owners, First Nations, Council, LHF, Coastal Community groups, Aboriginal Affairs and Reconciliation - Department of Premier and Cabinet
	Need to raise public awareness of the natural and heritage values of Normanville Dunes and the coastal region.	Development of a strategy to involve and raise capacity within the community to conserve natural coastal values and heritage. Structured cultural education and training for land managers, agency staff and land stewards.	Medium (cons)	Traditional Owners, First Nations, Council, LHF, CPB community groups.
	Increased visitation and recreational pressure on dunes and viewing points due to increased local population and tourist promotion.	Assess increased visitation capacity at known sites, ensure infrastructure is sufficient to meet the demands of increasing visitor numbers. Manage visitor numbers within sustainable limits in ecologically and culturally sensitive and significant areas - consult with Traditional Owners.	High (cons/ threat)	Council, DEW, land managers, Traditional Owners, First Nations
		Investigate opportunities for community education and engagement regarding unique and valuable coastal landscape and fragile nature of coastal areas. Structured cultural education and training for land managers, agency staff and land stewards.	High (Cons/ Soc)	Council, LHF, DEW, NPWSSA, Traditional Owners, First Nations, coastal community groups, Community groups
		Opportunity to work with nature-based tourism operators to increase education and stewardship of local coastal environments. Support opportunities for Traditional Owner-led tourism and cultural education.	Medium (Cons)	Council, land managers, Traditional Owners, First Nations, NPWSSA, coastal community groups
		Development of consistent signage and messaging for coastal values and compliance for conservation areas (public managed lands, coastal reserves) across the Fleurieu Peninsula coast. Co-design signage with Traditional Owners/ knowledge holders.	Medium (Soc/ Cons)	Council, land managers, Traditional Owners, First Nations, NPWSSA, coastal community groups
		Collaborate and manage access with event managers to ensure protection of coastal areas and groups do not impact high conservation value areas, or cultural heritage in consultation with Traditional Owners.	High (threat)	Council, Traditional Owners, First Nations, coastal community groups
		Monitor aquatic activities (boating, paddleboard and jet skis) for increased pressures on local coastal habitats and fauna species interactions.	High (threat)	Council, NPWSSA, DEW and land managers
		Events on beaches and coastal habitats must not impact on natural values, especially listed threatened species and communities, in the area or vicinity of events. Event organisers should be informed, where appropriate via permits, on their obligations to not inflict environmental harm and to undertake actions in accordance with relevant legislation and by-laws.	Medium (threat)	Council, DEW, NPWSSA, BirdLife Australia, event managers
	Increase in informal camping.	Monitor Crown and Council reserves and undertake compliance where required. Seek resourcing to support implementation.	High (threat)	Council, tourism body
		Increase public awareness of legal camping areas and responsible use. Support areas set aside for free camping and correct information. Seek resourcing and build partnerships to support implementation.	Medium (threat)	Council, tourism bodies, Crown Lands, DEW
	Weed species threat to significant flora and fauna habitats.	Ongoing control and investment in weed control (particularly WONS and Red Alert Species) to protect and maintain high conservation areas including is difficult to access areas.	High (threat)	Council, land managers, coastal community group, LHF, Traditional Owners, First Nations business/ contractors/ rangers.
		Monitor new and existing incursions of African Boxthorn, Olives and Blowfly Bush.	High (threat)	Council, LHF, land owners, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups

Component	Issue	Proposed Action	Priority	Key Players
Whole cell	Weed species threat to significant flora and fauna habitats.	Targeted interventions for threatened/rare plant species and communities.	High (cons)	DEW, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
		Monitor changes to dunes through BushRAT or similar monitoring to measure condition assessment and change.	High (cons/ threat)	Council, DEW, LHF, Community Groups.
	New weed incursions in reserves adjacent to residential areas.	Monitor for new weed incursions, record incursions via public database (e.g. BDBSA) and control new incursions as a priority.	High (threat)	Council, land managers, coastal community groups
	Ongoing weed incursions and weed control.	Leverage funding opportunities based on previous investment and in-kind contributions from coastal community groups.	High (cons/ threat)	Council, LHF, coastal community groups
	Residential encroachment to coastal reserve.	Assessment of boundaries, education and compliance.	High (threat/ Soc)	Council
		Control and monitoring of garden escape weeds from local residences and caravan parks. Target residences with educational materials, with regard to weeds.	High (Soc / Econ)	Council, coastal community groups
		Removal of introduced non-local species and restoration of pathways and erosion with local native coastal species.	High (threat)	Council, LHF, coastal community groups
	Protection of significant flora and fauna.	Protect existing populations through targeted weed control.	High (Cons/ threat)	Council, land managers, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
		Revegetation programs to improve the conservation prospects of threatened species.	High (cons)	DEW, land managers, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
		Propagate local plants for reintroduction to other sites to maintain genetic diversity and increase source populations.	High (cons)	Council, land managers, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups, local coastal plant nurseries
		Improve knowledge of fauna and flora through increased monitoring, mapping and reporting to better inform conservation management.	High (cons)	DEW, land managers, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
	Improve connectivity, strategic planning and protection of large, high value remnant vegetation blocks.	Investigate opportunities for formal conservation agreement/protection of high biodiversity conservation areas within cell and connectivity of the Normanville Dunes from Yankalilla River to Carrickalinga Creek.	Medium (cons)	CPB, DEW, NPWSSA, LHF, NAC business/ contractors/rangers, Council
	Butterfly habitats and host plant protection.	Identify locations of potential butterfly habitats and host plants with the cell.	High (cons)	Council, DEW, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
		Extension of existing habitats and reintroduction of locally extinct butterfly species.	Medium (cons)	Council, DEW, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
Undertake weed management around existing populations and enhance habitat through additional plantings for Bitter Bush Blue ( <i>Theclinesthes albocinctus</i> ) with Coast Bitter-bush ( <i>Adriana quadripartita</i> ), Icilus Hairstreak ( <i>Jalmenus icilius</i> ) with Golden Wattle ( <i>Acacia pycnantha</i> ), Wirilda ( <i>A. retinodes</i> ) and Coastal Swamp Wattle ( <i>A. uncifolia</i> ) & common species.		Medium (cons)	Council, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups	

Component	Issue	Proposed Action	Priority	Key Players
Whole cell	Butterfly habitats and host plant protection.	Restore wetland and riparian areas and reestablish habitats for Golden-haired Sedge-skipper ( <i>Hesperilla chrysotricha cyclospila</i> ) through plantings of Saw-sedge ( <i>Gahnia spp</i> ( <i>Gahnia deusta</i> ; <i>G. filum</i> ; <i>G. sieberiana</i> ; <i>G. trifida</i> ).	Medium (cons)	Council, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
		Retain and seed where possible mistletoe species ( <i>Amyema spp.</i> ) to support Amaryllis Azure ( <i>Ogyris amaryllis meridionalis</i> ) butterfly populations.	Medium (cons)	Council, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
High value habitat for coastal raptors (White-bellied Sea Eagle and Wedge-tailed Eagle and Eastern Osprey).		Ongoing monitoring and management of high values nesting and foraging areas. Partner with Traditional Owners to understand cultural value and obligations associated with local raptors.	High (cons)	NPWSSA, DEW, Traditional Owners, First Nations
		Implement the recovery plan for Eastern Osprey and White-bellied Sea Eagles (2022).	High (cons)	DEW, NPWSSA, LHF
		Investigate opportunities for establishment of nesting towers on private land for additional habitat.	Medium (cons)	DEW, LHF, Land owners
Coordinated approach to monitoring of coastal wildlife.		Collaboration between land manager and stakeholders to support research and citizen science of beach-nesting birds, seabirds, coastal raptors, marine mammals and other wildlife.	Medium (cons)	DEW, NPWSSA, Birdlife Aust, LHF, Council, SA Whale Centre, Encounter Whales, ecotourism operators, coastal community groups, Traditional Owners, First Nations business/ contractors/ rangers.
Aged baseline data and significant gaps in recorded flora and fauna species across the Southern Fleurieu region.		Repeat and integrate historical vegetation surveys into a long-term monitoring program to update records and address data deficiencies.	Medium (cons/ threat)	DEW, LHF, councils, coastal community groups
		Undertake fauna assessments across cells to establish baselines, update records and species distribution, particularly of underrepresented groups (reptiles and invertebrates).	Medium (cons/ threat)	DEW, LHF, councils, coastal community groups
		Identify potential funding sources to repeat these long-term flora monitoring sites and fauna assessments.	High (cons/ threat)	DEW, LHF, councils.
Threat to coastal fauna and flora from pest animals (rabbits, foxes and cats).		Coordinated collaboration between landowners and managers is required to manage pest animals. Ensure control methods refer to cultural heritage protocols.	High (threat)	Councils, land owners, LHF, CPB, Traditional Owners, First Nations business/ contractors/ rangers.
		Report sightings of feral animals (deer, fox, rabbit, cat and declared species) through the feral scan pest animal recording and management tool.	High (threat)	Land managers, community, coastal community groups
Increasing grazing pressure from native and introduced species.		Coordinate with regional grazing pressure programs (kangaroos, Fallow Deer) to monitor populations and control as required to protect remnant vegetation and revegetation efforts.	High (threat)	NPWSSA, DEW, PIRSA, LHF, Traditional Owners, First Nations business/ contractors/ rangers.
		Fencing of remnant and high value vegetation communities on private and Crown land.	High (Cons / Threat)	DEW, LHF, land owners
Multiple community groups and volunteers across coastal areas.		Facilitate opportunities for increased coordination and sharing of skills and information between community groups and volunteers to support landscape scale approach to coastal conservation and management. Implement program of structured cultural education and training for land managers, agency staff and land stewards.	High (cons)	Council, land managers, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups, FLEC
		Continue to support community and private landholder efforts to undertake priority restoration and conservation work in this cell.	High (cons)	Council, LHF, DEW, FLEC

Component	Issue	Proposed Action	Priority	Key Players
Whole cell	Development pressures to infill areas behind the dunes for housing.	Investigate opportunities to protect areas of undeveloped land from increasing development pressure and climate change impacts.	High (threat)	Council, CPB
		Investigate opportunities for coastal dune retreat under future climate change scenarios. Ensure appropriate natural buffers between dune environments and future development.	High (threat/ Cons/ Hazard/ Soc/Econ)	Council, CPB, DEW, LHF
	Development of a linear park and trail between the townships of Yankalilla, Normanville and the coast to buffer development growth areas and improve water quality of the Bungala River.	Ensure trail networks areas are improved for biodiversity and conservation outcomes, limit disturbance to fauna and increase community awareness of environmental values.	High (Cons/ Threat/ Soc/Econ)	Council, coastal community groups, LHF, Traditional Owners, First Nations business/ contractors/ rangers, land owners
	Resilience to climate change effects across landscape.	Strengthen connectivity between coastal ecosystems and nature corridors (Bungala and Yankalilla River).	Medium (Cons)	Council, land managers, DEW, LHF, coastal community groups
	Stormwater impacts from inland development are likely to impact marine intertidal habitats and may accelerate seabed deepening and coastal erosion.  Turbidity from suspended sediments and nutrients are a significant threat to reef and seagrass habitats.	Implementation of the Yankalilla, Normanville and Carrickalinga Stormwater Management Plan (2022).  Consider locations within existing open space to install/retrofit sedimentation or detention areas increasing water quality and improve biodiversity values.	High (Cons/ threat)	Council, LHF
		Investigate opportunities for reusing water from the Normanville Wastewater Treatment Plant, allowing for sufficient environmental flows for estuary health and management.	Medium (cons)	Council, SA Water, LHF, EPA
		Monitor and manage stormwater to minimise impacts in the coast and marine environment.  Implement Water Sensitive Urban Design (WSUD).	High (Threat)	Council, LHF, CPB, Water Sensitive SA
		Develop guidelines for projects within Council areas to support improved stormwater management and reduce land-based impacts on coastal and nearshore marine environments.	Medium (cons/ threat)	Council, LHF, DEW, Stormwater Management Authority
Physical changes on the coast and natural assets from sea level rise (such as coastal squeeze on tidal habitats, erosion, vegetation loss, marine turbidity and light reduction).	Development of a council wide Coastal Hazard Adaptation Plan, including key locations, recommendations and priorities for funding.  Support partnerships for ongoing investigation and monitoring in the coastal zone, working with the Coast Protection Board to identify adaptation options for the future.	High (Cons. Threat)	CPB, Council, community, university and research agencies, Climate Ready Coasts Program	
Tjilbruke / Tjirbruki	Significant cultural story locations within cell and opportunities to increase	Support existing Traditional Owner cultural walks and communications to build broader community education.	High (cons/ threat)	Traditional Owners, First Nations, Council, LHF

Component	Issue	Proposed Action	Priority	Key Players
Dreaming story sites within cell	community cultural education through reconciliation.	Support cultural monitoring and communications to protect significant known heritage sites.	High (cons/ threat)	Traditional Owners, First Nations, Council, LHF, coastal community groups, community
		Support Traditional Owner aspirations to care for Country and provide cultural education for the dunes, estuaries and surrounds.		
		Traditional Owner-led cultural mapping to document cultural values of the dunes, estuaries and surrounds.	High (cons/ threat)	Traditional Owners, First Nations, Council, LHF, coastal community groups, community
Dunes north of Yankalilla River (Normanville Dunes Coastal Reserve)	The dunes include significant habitats and a variety of threats.	Implement Biodiversity Action Plan for the Normanville Dunes. Continued effort in dune revegetation.	High (Cons / threat)	LHF, Council, Traditional Owners, First Nations business/ contractors/ rangers, community groups.
		Monitor changes to dunes through BushRAT or similar monitoring to measure condition assessment and change.	High (cons/ threat)	Council, LHF, Council, community groups.
		Revegetation of key woodland species (Sheoak, Coast Silver Wattle) is needed to retain important woodland habitat.	High (cons)	Council, LHF, Council, Traditional Owners, First Nations business/ contractors/ rangers, community groups.
		Support Traditional Owner aspirations to care for Country and provide cultural education for the dunes  Support cultural monitoring and communications to protect significant known heritage sites	High (Cons/ threat)	Traditional Owners, First Nations, Council, LHF, coastal community groups, community
	Conservation analysis confirms the high value of the dune within the region. In spite of its reserve status, there have been incursions of various kinds into the dunes.	Resist further development incursions into dunes. Retain all existing allotments with State Heritage listing including parcels within and adjoining the Normanville Caravan Park which have been under threat from recent development pressure. Boundary re alignment to absorb historical individual allotments to be incorporated into the one allotment to avoid ongoing future development pressure due to legacy of small allotments that are part of an historical land division within Heritage Dunes that is now null and void.	High (Cons / threat)	Council, landholders, Community DEW (Crown land Branch and Coast ).
	Conservation analysis confirms the high value of the dune within the region. In spite of its reserve status, there have been incursions of various kinds into the dunes.	Review of capacity and management of stormwater from coastal development behind dune system.	High (threat)	Council, LHF, CPB
	Access control issues with multiple pathways throughout dunes (foot and horse trails) impacting geomorphology and stability.	Assessment of access points and closure of horse trail following expiration of permit.	Medium (threat)	Council, CPB,
		Erosion control works and revegetation of closed pathways.	Medium (threat)	Council, coastal community groups
	Dune blow outs increasing erosion and instability of habitats.	Continue works to restore and rehabilitate due blow-outs.	Medium (threat)	Council, CPB, DEW Coast, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
	Lack of development buffer West of the dunes Development setback buffer required to support long term persistence of the Normanville Dunes landform relic to adapt to sea level rise and to provide protection to future development from coastal dune hazard risk.	Continue to influence appropriate setbacks through the Planning and Design Code for future development of land directly abutting the Normanville Sand Dunes.  Coastal dune study to determine potential for dune translocation with predicted sea level rise scenarios to inform development setbacks for this relic to persist in the long term and to protect future development from sand drift hazard risk.	Medium (Cons/ threat)	CPB, DEW, Consultant, Research institutions, Planning SA

Component	Issue	Proposed Action	Priority	Key Players
Dunes south of Yankalilla River (Lady Bay)	Coastal recession in response to storm events and sea level rise over time.	Review Planning and Design Code provisions for land adjoining the Normanville Sand Dunes Crown land reserve: consider change from 'Rural' and 'Tourism Development', to extend the conservation zone 'Conservation Zone' to recognise coastal dunes and hazard potential; consider changing area immediately landward of the dunes from 'Tourist Accommodation' to incorporate a buffer zone to be included in a Coastal Overlay to recognise sand drift hazard risk to future development.	Medium (threat); Low (hazard)	Council, CPB, DEW, Research institutes, consultants. Department for Housing and Urban Development (DHUD), Climate Ready Coasts program.
		Coastal dune study to determine dune translocation potential with sea level rise scenarios to plan for a buffer between the rear of the dunes to the western edge of any future development. This also allows for the long-term persistence of the dune landform to adapt to climate change impacts such as sea level rise to provide a buffer to the dune from being land locked by development.as well as protecting future development from sand dune drift hazard and allowing for maintained public access between the dune and any future development.		
		Support Traditional Owner aspirations to care for Country and provide cultural education for the dunes  Support cultural monitoring and communications to protect significant known heritage sites	High (Cons/ threat)	Traditional Owners, First Nations, Council, LHF, coastal community groups, community
	Impacts to coastal reserves from informal camping and ORV use.	Compliance of informal camping activities and consider public restriction of vehicles to coast via access roads.	High (threat)	Council
Beach	Unpermitted beach activities impacting coastal environments and fauna.	Review of permit requirements for group or events on beaches and seagrass to reduce impact on coastal habitats and fauna (particularly beach-nesting birds).	High (threat)	Council, DEW LHF, BirdLife Australia
		Increase awareness of group and event beach users of impacts on coastal habitats.	Medium (cons)	Council
Boat ramps (Lady Bay and Bungala)	Undefined boat launching areas causing impact to beach habitats	Review boat launching areas at Lady Bay, which impacts reef condition over wider area.	High (threat)	Council, CPB, DEW
		Undefined boat launch areas contribute to unauthorised ORV access and use of beach between Lady Bay and Normanville.	High (threat)	Council
		Increase compliance of boat ramp use and impacts on surround beach habitats.	High (threat/ cons)	Council
Bungala estuary (south of estuary)	Coordinated approach to estuary management across multiple land owner and managers.	Continue to implement the Bungala River Estuary Action Plan (AECOM Australia Pty Ltd (2010) and review as required throughout the life of this plan.	High (Cons/ threat)	Council, landowners, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups.
		Support Traditional Owner aspirations to care for Country and provide cultural education for the estuary  Support cultural monitoring and communications to protect significant known heritage sites	High (Cons/ threat)	Traditional Owners, First Nations, Council, LHF, coastal community groups, community
	Significant stand of Olives in middle reaches of estuary poses significant fire risk to township and continued weed reinfestation of dunes.	Continue discussions and encouragement of land owner to remove all declared weeds as a matter of priority. Failure to comply will require compliance action.	High (threat)	LHF, Council, coastal community groups
	Impact of caravan park users on local wildlife.	Create a buffer between caravan park and coastal habitats through planting of local native coastal species.	Medium (cons/ threat)	Council, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups
		Increase awareness and education of caravan park guest to prevent disturbance and impacts to beach-nesting birds.	Medium (cons)	Council, LHF, BirdLife Australia, Friends of Hooded Plover Volunteers

Component	Issue	Proposed Action	Priority	Key Players
Yankalilla River estuary	Lack of information of biodiversity values, vegetation associations, habitat condition and threats.	Survey and assessment of the Yankalilla River estuary and associated habitats.	High (cons/ threat)	Council, LHF, CPB, Traditional Owners, First Nations business/ contractors/ rangers, land owners
		Support opportunity to collaborate with Traditional Owner for habitat surveying.  Traditional Owner-led cultural mapping to document cultural values of the river estuary and surrounds	High (Cons/ threat)	Traditional Owners, First Nations, Council, LHF, coastal community groups, community
	Need for coordinated approach to management of estuary.	Development of Estuary Management plan for Yankalilla River Estuary to ensure coordinated investment and protection of ecological values.	High (cons/ threat)	Council, LHF, Traditional Owners, First Nations business/ contractors/ rangers, land owners
		Support Traditional Owner aspirations to care for Country and provide cultural education for the estuary  Support cultural monitoring and communications to protect significant known heritage sites	High (Cons/ threat)	Traditional Owners, First Nations, Council, LHF, coastal community groups, community
Estuaries	Weed incursion within estuary reducing biodiversity values.	Active control of weed populations within estuary areas.	High (threat)	Land owners, Traditional Owners, First Nations business/ contractors/ rangers, DEW, LHF,
	Bank instability and multiple areas of erosion evident within estuaries.	Undertake restoration activities to improve bank stabilization and revegetation to reduce further erosion and weed cover.	High threat/ cons)	Landowners, Council, LHF, coastal community groups
	Limited monitoring data of estuary flow and opening and closing durations exist for these estuaries.	Consider monitoring of estuaries to determine the connectivity and functionality with marine ecosystems.	High (cons/ threat)	CPB, LHF, DEW
	Estuary entrance blocked with increasing frequency due to low flows.	Develop an Estuary Entrance Management Support System (EEMSS). (1), including a framework for decision makers considering both the ecological and infrastructure/amenity concerns.	High (Cons / Soc / Econ)	Council, DEW, LHF Traditional Owners, First Nations business/ contractors/ rangers.
	Impact of reduced flow and reduced water quality to aquatic biodiversity values.	Review opportunities to measure and increase environmental flow opportunities through Water Allocation Planning (WAP), low flow bypass on farm dams and other local opportunities (see wastewater treatment plant - stormwater management).	High (cons/ threat)	DEW, Council, LHF
Beach-nesting birds	Hooded Plover nests and breeding areas threatened by disturbance by walkers and dogs.	Community monitoring, fences to mark nests. Signage and awareness raising activities to alert dog walkers.	High (cons / threat)	Council, BirdLife Australia, LHF, Friends of the Hooded Plover, Fleurieu Peninsula volunteers, coastal community groups, Oystercatcher monitoring volunteers, Traditional Owners, First Nations business/ contractors/ rangers.
	Limited community knowledge of local conservation values and threats.	Provide education opportunities to raise awareness and protection of beach-nesting birds, such as Hooded Plovers, Red-capped Plovers and Sooty Oystercatchers (dogs on leads, nesting sites, citizen science projects, managing visitor disturbance).	High (cons)	Council, BirdLife Australia, LHF, Friends of the Hooded Plover, Fleurieu Peninsula volunteers, coastal community groups, Oystercatcher monitoring volunteers
	Protection of natural assets of high conservation values.	Support the introduction and implementation of Council by-laws related to dogs on lead in estuaries and high value areas.	High (threat)	Council, land owners, community, coastal community groups
	Incursion of multiple dune grass weed species is limiting suitable habitat for beach-nesting birds.	Support the staged removal of introduced weedy grasses and restoration of spinifex dunes.	High (threat)	Council, land managers, LHF, Traditional Owners, First Nations business/ contractors/ rangers, coastal community groups, Friends of the Hooded Plover, Fleurieu Peninsula volunteers
	Incursion of multiple dune grass weed species is limiting suitable habitat for beach-nesting birds.	Increase community awareness of habitat needs for beach-nesting bird species.	High (threat/ cons)	Council, land managers, LHF, coastal community groups, Friends of the Hooded Plover, Fleurieu Peninsula volunteers.

Component	Issue	Proposed Action	Priority	Key Players
Nearshore Habitats (Reef, Seagrass)	Sediments and nutrients from the Yankalilla and Bungala Rivers.	Support the implementation of the stormwater management plan for Yankalilla Bay (AWE and SARDI 2020) and the Bungala Estuary Action Plan (AECOM Australia Pty Ltd (2010)).	High (threat)	Council, land managers, LHF
		Minimise the impact development has on flooding and water quality within catchments and receiving environments.	High (threat)	Council, land managers, LHF
		Manage the catchment to meet agreed environmental values and objectives for marine, estuarine and freshwater receiving environments.	High (threat)	Council, land managers, LHF
		Monitor catchment and stormwater impact on nearshore habitats and reefs across the cell.	High (Threat)	Council, DEW, EPA, SA Water, Landscape Boards
	Lack of knowledge of seagrass condition and species diversity in cell.	Collaboration between government agencies, researchers, and community to monitor seagrass cover, species diversity, condition and inform active management.	Medium (Cons/ threat)	DEW, SARDI, EPA, SA Water, LHF, NPWSSA, universities, Council, community
Investigate opportunities to support reduction of land-based impacts to avoid further loss, promote natural recovery of seagrasses and investigate potential for assisted restoration of seagrass habitats with community.		High (cons/threat)	DEW, LHF, SARDI, NPWSSA, Council	
Caring for Sea Country	Culturally significant Sea Country, including fish traps and marine life, are neglected and require Traditional Owner access and self determination to care for Country.	Support Traditional Owner mapping of southern Sea Country.  Support establishment of Traditional Owner-led caring for Sea Country program.  Traditional Owner led restoration of Sea Country and known significant places.	High (cons/ threat)	Traditional Owners, First Nations, NPWSSA, DEW, Council, LHF, coastal community groups
Climate (Cliffs)	More intense rainfall events likely to increase soil erosion.	Restoration of native plant species to assist soil stabilisation.	High (Cons/ threat)	Land owners, coastal community groups, Council, LHF, Traditional Owners, First Nations business/ contractors/ rangers.
	Increased aridity likely to make growing conditions less suitable to native vegetation fragments.	Restoration of native plant species to assist soil stabilisation.	High (Cons/ threat)	Land owners, Council, coastal community groups, LHF, Traditional Owners, First Nations business/ contractors/ rangers.
Climate (Creek/ Estuary)	More intense rainfall events likely to lead to increased pollutants, nutrients and sediments washed into the estuary especially during first flush from the landward end.	Monitor stormwater quality and estuary/creek condition.	Medium (threat)	Council, DEW, LHF, Landowners
	Higher temperatures likely to lead to increased algal blooms with impacts on estuarine fauna.	Monitor stormwater quality and estuary / creek condition.	Medium (threat)	Council, DEW, LHF, land owners
Climate (Seasonal freshwater soaks to rear of Normanville Dunes	There is evidence of freshwater soaks to the rear of some sections of the Normanville sand dunes There is also freshwater pooling of these lower lying areas following high rainfall events and ongoing issues with managing stormwater from incremental land divisions. With more intense rainfall events, the combined interaction of seasonal flooding and interactions with rising saline ground water from sea level rise is increasingly uncertain.	Prior to any major land division of the lower lying lands /seasonal floodplains behind the Normanville Dunes, (particularly between the Yankalilla and Bungala Estuaries), a study, including piezometer testing to ascertain combine risk from rising saline ground water due to sea level rise and seasonal and high rainfall events. This research should be part of stormwater management planning for infill development in these lower lying areas.	Medium (threat)	Developers, Council, CPB

Component	Issue	Proposed Action	Priority	Key Players
Climate (Beach and dunes)	Increased sea levels and more intense storms and higher winds can contribute to more frequent and intense wave action, which accelerates beach and dune erosion.	Restrict public access to fragile dunes.	Medium (threat)	Council, Council, coastal community groups, LHF
		Implement restoration of native plant species.	Medium (threat)	Council, coastal community groups, LHF, Traditional Owners, First Nations business/ contractors/ rangers
	Predicted increases in aridity can lead to reduced vegetation cover and increased dune drift and dune mobility.	Monitoring of cross-shore dune, beach and nearshore sand level profiles.	Low (Hazard) Medium (cons/ threat)	DEW CPB, Research Institutions, Universities.
		Update DEW Coastal Hazard Mapping spatial layer identifying the change in extent and stability of coastal dunes across South Australia since the previous hazard mapping was undertaken approximately 20 years ago.	Medium (hazard) Medium (cons/ threat)	DEW, CPB, Research Institutes, Universities
		Beach and dune topographic and photogrammetry drone surveys to provide detailed 2D and 3D digital surface models for monitoring changes to the coastal landforms over time in response to climate change.	Medium (Hazard) Medium (cons/threat)	DEW CPB, Research Institutions, Universities.
		Support cultural monitoring and communications to protect significant known heritage sites	High (threat)	Council, coastal community groups, LHF, Traditional Owners, First Nations business/ contractors/ rangers.
Climate (Macroalgal reefs and seagrasses)	More intense rainfall events likely to lead to increased pollutants, nutrients and suspended sediments washed into coastal waters especially during first flush.	Monitor stormwater quality and creek condition.	Medium (threat)	Council, DEW, LHF, land owners
		Increased storm surge can cause dislodgment of algae and seagrasses.	Monitor stormwater quality and creek condition.	Medium (threat)
	Higher temperatures can lead to increased incidence and persistence of marine heatwaves and increased stress on temperate reefs and seagrasses, reducing biodiversity.	Monitor stormwater quality and creek condition.	Medium (threat)	Council, DEW, LHF, land owners
	Ocean acidification can impact the life history of marine species.	Monitor stormwater quality and creek condition.	Medium (threat)	Council, DEW, LHF, land owners
		Undertake benthic flora mapping to determine areas or opportunities for restoration.	Medium (threat)	DEW, council, LHF, land owners
Climate (whole cell)	Coastal Hazard Adaptation Planning	Investigate future funding opportunities to undertake coastal adaptation plan for DC Yankalilla to improve understanding of coastal risk, to inform coastal hazard adaptation planning and for evidence-based decisions and investments in the coast.	Medium (threat)	Council, CPB, Climate Ready Coasts Program, LGA, SACCA, DEW, consultancies, research institutions

- (1) An Estuary Entrance Management Support System (EEMSS) has been developed by Deakin University and a number of Victorian Catchment Boards. This system takes into account a number of uses (including recreation use), conservation and hydrological factors in assisting with the decision to open or close an entrance (Arundel (2006) also refer to Appendix 15 in Caton et al 2007).

## Relevant management plans

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## Cell Biota (Flora and Fauna)

Lists provided are specific to this cell from Biological Database of South Australia (BDBSA), technical updates, review of publications and local input. Conservation ratings (National, State and Sub regional) are included for flora and fauna.

Note: Restricted species as per Department for Environment and Water (DEW) specifications have been omitted from the tables due to the size of cells and requirement for 10km<sup>2</sup> buffering of data. However, records are included in the total species numbers per cell. Please contact DEW directly for restricted data requests.

### FLORA Summary

<b>Vegetation Block Metrics</b>	Normanville Dunes Coastal Reserve (Council) Coastal Reserves (Minister Environment and Conservation and Council)			
<b>Terrestrial Habitat Description/s</b>	See Terrestrial biodiversity vegetation communities in cell description.			
<b># Flora in cell</b>	238			
<b># Native Flora in cell</b>	109			
<b># Introduced Flora in cell</b>	129			
<b># Conservation Rated Flora in cell</b>	2 (0 national, 2 state)			
<b># Threatened Ecological Communities (EPBC Act)</b>	-			
<b>Conservation Rated Flora</b>	<b>Species</b>	<b>Common Name</b>	<b>EPBC Act Status</b>	<b>NPW Status</b>
	<i>Crassula sieberiana</i> <sup>^</sup>	Sieber's Crassula		E
	<i>Eucalyptus fasciculosa</i>	Pink Gum		R

### All Native Flora in cell

<b>Species</b>	<b>Common Name</b>	<b>EPBC Status</b>	<b>NPW Act Status</b>	<b>Subregional Status*</b>
<i>Acacia cupularis</i> <sup>^</sup>	Cup Wattle			
<i>Acacia ligulata</i> <sup>^</sup>	Umbrella Bush			
<i>Acacia longifolia ssp. sophorae</i>	Coastal Wattle			LC
<i>Acacia pycnantha</i>	Golden Wattle			LC
<i>Acacia retinodes</i>	Wirilda			
<i>Acacia sp.</i> <sup>^</sup>				
<i>Acacia unciifolia</i> <sup>^</sup>	Coast Silver Wattle			
<i>Acacia verniciflua</i>	Varnish Wattle			RA
<i>Adriana quadripartita</i>	Coast Bitter-bush			NT
<i>Allocasuarina verticillata</i>	Drooping Sheoak			LC
<i>Alyxia buxifolia</i>	Sea Box			RA
<i>Arthropodium strictum</i>	Common Vanilla-lily			LC
<i>Atriplex cinerea</i>	Coast Saltbush			LC
<i>Austrostipa curticoma</i>	Short-crest Spear-grass			LC
<i>Austrostipa flavescens</i>	Coast Spear-grass			LC
<i>Austrostipa scabra ssp. falcata</i>	Slender Spear-grass			LC
<i>Austrostipa spp.</i> <sup>^</sup>	Spear Grass			
<i>Banksia marginata</i> <sup>^</sup>	Silver Banksia			
<i>Boerhavia dominii</i> <sup>^</sup>	Tar-vine			
<i>Bolboschoenus caldwellii</i>	Salt Club-rush			RA
<i>Bursaria spinosa ssp. spinosa</i>	Sweet Bursaria			LC
<i>Caladenia latifolia</i> <sup>^</sup>	Pink Caladenia			

<b>Species</b>	<b>Common Name</b>	<b>EPBC Status</b>	<b>NPW Act Status</b>	<b>Subregional Status*</b>
<i>Calandrinia brevipedata</i>	Short-stalked Purslane			RA
<i>Calandrinia calyptata</i>	Pink Purslane			NT
<i>Calandrinia corrigioloides</i>	Strap Purslane			RA
<i>Calandrinia eremaea</i> ^	Dryland Purslane			
<i>Calandrinia granulifera</i>	Pigmy Purslane			NT
<i>Carex bichenoviana</i> ^	Notched Sedge			
<i>Carpobrotus rossii</i>	Native Pigface			
<i>Cassytha pubescens</i> ^	Downy Dodder-laurel			
<i>Centrolepis strigosa ssp. strigosa</i> ^	Hairy Centrolepis			
<i>Chloris truncata</i> ^	Windmill Grass			
<i>Cladosiphon filum</i>				
<i>Clematis microphylla</i> ^	Old Man's Beard			
<i>Corynophlaea cystophorae</i>				
<i>Crassula colligata ssp. lamprosperma</i>				LC
<i>Crassula decumbens var. decumbens</i>	Spreading Crassula			LC
<i>Crassula sieberiana</i> ^	Sieber's Crassula		E	
<i>Crassula sp.</i> ^				
<i>Cyperus vaginatus</i>	Stiff Flat-sedge			LC
<i>Daucus glochidiatus</i>	Native Carrot			LC
<i>Dianella brevicaulis</i>	Short-stem Flax-lily			LC
<i>Dianella revoluta var.</i>				
<i>Dianella revoluta var. revoluta</i>	Black-anther Flax-lily			LC
<i>Dodonaea viscosa ssp. spatulata</i>	Sticky Hop-bush			LC
<i>Dysphania pumilio</i>	Small Crumbweed			LC
<i>Einadia nutans ssp. nutans</i> ^	Climbing Saltbush			
<i>Enchylaena tomentosa var. tomentosa</i> ^	Ruby Saltbush			
<i>Enteromorpha compressa</i>				
<i>Eucalyptus albopurpurea</i>	Purple-flowered Mallee Box			
<i>Eucalyptus camaldulensis ssp.</i>	River Red Gum			
<i>Eucalyptus camaldulensis ssp. camaldulensis</i>	River Red Gum			
<i>Eucalyptus fasciculosa</i>	Pink Gum		R	NT
<i>Eucalyptus leucoxylon ssp. leucoxylon</i>	South Australian Blue Gum			NT
<i>Euphorbia drummondii</i> ^	Caustic Weed			
<i>Ficinia nodosa</i>	Knobby Club-rush			LC
<i>Giraudia sphacelarioides</i>				
<i>Hormosira banksii f. banksii</i>				
<i>Juncus kraussii</i>	Sea Rush			LC
<i>Juncus pallidus</i>	Pale Rush			LC
<i>Juncus subsecundus</i> ^	Finger Rush			
<i>Kennedia prostrata</i> ^	Scarlet Runner			
<i>Kunzea pomifera</i>	Muntries			RA
<i>Leathesia difformis</i>				
<i>Lepidosperma gladiatum</i>	Coast Sword-sedge			NT
<i>Leucophyta brownii</i>	Coast Cushion Bush			LC
<i>Leucopogon parviflorus</i>	Coast Beard-heath			LC
<i>Lomandra effusa</i> ^	Scented Mat-rush			
<i>Lomandra multiflora ssp. dura</i> ^	Hard Mat-rush			
<i>Lythrum hyssopifolia</i>	Lesser Loosestrife			LC

Species	Common Name	EPBC Status	NPW Act Status	Subregional Status*
<i>Machaerina juncea</i>	Bare Twig-rush			LC
<i>Melaleuca brevifolia</i>	Short-leaf Honey-myrtle			RA
<i>Melaleuca lanceolata</i>	Dryland Tea-tree			NT
<i>Muehlenbeckia gunnii</i>	Coastal Climbing Lignum			LC
<i>Myoporum insulare</i>	Common Boobialla			LC
<i>Myriactula arabica</i>				
<i>Myriactula haydenii</i>				
<i>Myrionema strangulans</i>				
<i>Nitraria billardierei</i>	Nitre-bush			RA
<i>Olearia axillaris</i>	Coast Daisy-bush			LC
<i>Parietaria cardiostegia</i> <sup>^</sup>	Mallee Smooth-nettle			
<i>Parietaria debilis</i>	Smooth-nettle			LC
<i>Pelargonium australe</i>	Austral Stork's-bill			NT
<i>Phragmites australis</i>	Common Reed			LC
<i>Pimelea serpyllifolia</i> ssp. <i>serpyllifolia</i>	Thyme Riceflower			LC
<i>Poa poiformis</i> var. <i>poiformis</i>	Coast Tussock-grass			LC
<i>Portulaca oleracea</i>	Common Purslane			LC
<i>Rhagodia candolleana</i> ssp.	Sea-berry Saltbush			
<i>Rhagodia candolleana</i> ssp. <i>candolleana</i> <sup>^</sup>	Sea-berry Saltbush			
<i>Rhagodia parabolica</i>	Mealy Saltbush			RA
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass			LC
<i>Rytidosperma</i> spp. <sup>^</sup>	Wallaby Grass			
<i>Salicornia quinqueflora</i> ssp. <i>quinqueflora</i>	Beaded Samphire			NT
<i>Samolus repens</i> <sup>^</sup>	Creeping Brookweed			
<i>Santalum acuminatum</i> <sup>^</sup>	Quandong			
<i>Scaevola crassifolia</i>	Cushion Fanflower			RA
<i>Schoenoplectus pungens</i>	Spiky Club-rush			RA
<i>Scytosiphon lomentaria</i>				
<i>Senecio pinnatifolius</i> group	Variable Groundsel			
<i>Senecio pinnatifolius</i> var. <i>maritimus</i> <sup>^</sup>	Coast Groundsel			
<i>Setaria constricta</i> <sup>^</sup>	Knotty-butt Paspalidium			
<i>Spinifex hirsutus</i>	Rolling Spinifex			
<i>Sporobolus virginicus</i>	Salt Couch			LC
<i>Suaeda australis</i>	Austral Seablite			NT
<i>Tetragonia implexicoma</i>	Bower Spinach			LC
<i>Themeda triandra</i> <sup>^</sup>	Kangaroo Grass			
<i>Threlkeldia diffusa</i>	Coast Bonefruit			NT
<i>Triglochin trichophora</i>	Torpedo Arrowgrass			RA
<i>Typha</i> spp. <sup>^</sup>				

<sup>^</sup> denotes records from technical updates, review of publications and local input

\*See Appendices for subregional map

Regional Conservation status, Mount Lofty Ranges IBRA (Interim Biogeographical Regionalisation for Australia) subregion (Gillam & Urban (2014). Regional Species Conservation Assessment Project, Phase 1 Report - Regional Species Status Assessments, Adelaide and Mount Lofty Ranges NRM Region. DEWNR: SA)

RE = Regionally Extinct    CR = Critically Endangered    EN = Endangered  
VU = Vulnerable            RA = Rare                            NT = Near Threatened  
LC = Least Concern        DD = Data Deficient            NE = Not Evaluated

## All Introduced Flora in cell

Species	Common Name	Red Alert Weeds	Declared Weeds	WONS
<i>Acacia cyclops</i>	Western Coastal Wattle	IC		
<i>Acacia longifolia ssp. longifolia*</i>	Sallow Wattle	IC		
<i>Acacia saligna</i>	Golden Wreath Wattle	HP		
<i>Acetosella vulgaris*</i>	Sheep Sorrel			
<i>Aeonium spp.*</i>	Tree Houseleek			
<i>Agave americana*</i>	Century Plant	HP		
<i>Aira cupaniana*</i>	Small Hair-grass			
<i>Aizoon pubescens*</i>	Coastal Galenia	IC		
<i>Aloe arborescens*</i>	Tree Aloe			
<i>Amaranthus muricatus*</i>	Rough-fruit Amaranth			
<i>Ammophila arenaria</i>	Marram Grass	HP		
<i>Arctotheca calendula</i>	Cape Weed	HP		
<i>Arctotis stoechadifolia</i>	White Arctotis	IC		
<i>Argyranthemum frutescens ssp. foeniculaceum*</i>	Teneriffe Daisy	HP		
<i>Artemisia arborescens</i>	Silver Wormwood			
<i>Arundo donax</i>	Giant Reed	HP	Yes	
<i>Asparagus asparagoides*</i>	Bridal creeper		Yes	Yes
<i>Asparagus asparagoides f. asparagoides</i>	Bridal Creeper (form)	IC	Yes	Yes
<i>Asparagus officinalis</i>	Asparagus			
<i>Atriplex prostrata*</i>	Creeping Saltbush			
<i>Avena barbata*</i>	Bearded Oat			
<i>Brassica tournefortii</i>	Wild Turnip			
<i>Briza maxima</i>	Large Quaking-grass			
<i>Bromus catharticus*</i>	Prairie Grass			
<i>Bromus diandrus</i>	Great Brome			
<i>Bromus madritensis*</i>	Compact Brome			
<i>Bromus rubens*</i>	Red Brome			
<i>Cakile maritima ssp. maritima</i>	Two-horned Sea Rocket			
<i>Carpobrotus edulis ssp. edulis*</i>	Hottentot Fig	HP		
<i>Casuarina glauca*</i>	Grey Bul oak	IC	Yes	
<i>Cenchrus clandestinus</i>	Kikuyu	HP		
<i>Cenchrus longisetus</i>	Feather-top	HP		
<i>Cerastium glomeratum*</i>	Common Mouse-ear Chickweed			
<i>Cerastium pumilum</i>	Chickweed			
<i>Chenopodium album</i>	Fat Hen			
<i>Cirsium vulgare</i>	Spear Thistle			
<i>Citrullus amarus</i>	Bitter Melon			
<i>Citrullus lanatus*</i>	Camel Melon			
<i>Coprosma repens*</i>	New Zealand Mirror-bush	IC	Yes	
<i>Cotula coronopifolia</i>	Water Buttons			
<i>Cotyledon orbiculata var.*</i>	Cotyledon			
<i>Cynodon dactylon var. dactylon</i>	Couch			
<i>Cynosurus echinatus</i>	Rough Dog's-tail Grass			
<i>Dimorphotheca ecklonis*</i>	Cape Marguerite			
<i>Dimorphotheca fruticosa</i>	Trailing African Daisy	HP		
<i>Dittrichia graveolens</i>	Stinkweed			

Species	Common Name	Red Alert Weeds	Declared Weeds	WONS
<i>Echium plantagineum</i>	Salvation Jane		Yes	
<i>Ehrharta calycina</i>	Perennial Veldt Grass	HP		
<i>Ehrharta longiflora</i>	Annual Veldt Grass			
<i>Eragrostis cilianensis</i> *	Stink Grass			
<i>Erodium botrys</i>	Long Heron's-bill			
<i>Erodium cicutarium</i> *	Cut-leaf Heron's-bill			
<i>Eucalyptus conferruminata</i> *	Bald Island Marlock			
<i>Eucalyptus gomphocephala</i> *	Tuart			
<i>Eucalyptus platypus ssp. platypus</i>	Round-leaved Moort			
<i>Euphorbia paralias</i>	Sea Spurge	HP		
<i>Euphorbia terracina</i>	False Caper	HP	Yes	
<i>Ferraria crispa ssp. crispa</i> *	Black Flag	IC		
<i>Ficus carica</i> *	Edible Fig			
<i>Fumaria muralis ssp. muralis</i> *	Wall Fumitory			
<i>Galium murale</i>	Small Bedstraw			
<i>Gaudium laevigatum</i> *	Coast Tea-tree		Yes	
<i>Gazania linearis</i> *	Gazania	IC	Yes	
<i>Geranium molle</i>	Soft Geranium			
<i>Geranium purpureum</i>	Little-robin			
<i>Geranium sp.</i> *	Geranium			
<i>Gladiolus tristis</i> *	Evening-flower Gladiolus	HP		
<i>Gomphocarpus cancellatus</i>	Broad-leaf Cotton-bush	HP		
<i>Helminthotheca echioides</i>	Ox-tongue			
<i>Hypochaeris glabra</i>	Smooth Cat's Ear			
<i>Hypochaeris radicata</i>	Rough Cat's Ear			
<i>Lactuca serriola spp.</i> *	Prickly Lettuce			
<i>Lagurus ovatus</i>	Hare's Tail Grass			
<i>Lepidium africanum</i> *	Common Peppergrass			
<i>Lycium ferocissimum</i>	African Boxthorn	IC	Yes	Yes
<i>Lysimachia arvensis</i> *	Pimpernel			
<i>Malva arborea</i> *	Tree Mallow	HP		
<i>Malva parviflora</i> *	Small-flower Marshmallow			
<i>Marrubium vulgare</i>	Horehound	IC	Yes	
<i>Medicago polymorpha</i>	Burr-medic			
<i>Medicago sativa</i> *	Lucerne			
<i>Melaleuca armillaris ssp. armillaris</i> *	Bracelet Honey-myrtle	HP		
<i>Melianthus comosus</i> *	Tufted Honey-flower	IC		
<i>Mesembryanthemum cordifolium</i> *	Heart-leaf Iceplant	HP		
<i>Mesembryanthemum crystallinum</i> *	Common Iceplant	HP		
<i>Monoculus monstrosus</i> *	Tripteris			
<i>Moraea flaccida</i> *	One-leaf Cape Tulip	IC	Yes	
<i>Nicotiana glauca</i>	Tree Tobacco			
<i>Oenothera stricta ssp. stricta</i>	Common Evening Primrose			
<i>Olea europaea ssp. europaea</i>	Olive	IC		
<i>Opuntia spp.</i> *			Yes	Yes
<i>Oxalis pes-caprae</i>	Soursob			
<i>Pinus halepensis</i> *	Aleppo Pine	IC	Yes	

Species	Common Name	Red Alert Weeds	Declared Weeds	WONS
<i>Pinus radiata</i>	Radiata Pine	IC		
<i>Piptatherum miliaceum</i>	Rice Millet			
<i>Plantago coronopus ssp.</i>	Bucks-horn Plantain			
<i>Plantago lanceolata var. lanceolata</i>	Ribwort			
<i>Polygonum aviculare</i>	Wireweed			
<i>Reichardia tingitana*</i>	False Sowthistle			
<i>Rhamnus alaternus</i>	Blowfly Bush	IC	Yes	
<i>Rosa canina</i>	Dog Rose	HP	Yes	
<i>Rumex acetosella</i>	Sorrel			
<i>Rumex crispus</i>	Curled Dock			
<i>Rumex hypogaeus</i>	Three-corner Jack	HP	Yes	
<i>Rumex pulcher ssp. pulcher</i>	Fiddle Dock			
<i>Ruschia tumidula*</i>	Pigface	HP		
<i>Sagina apetala</i>	Annual Pearlwort			
<i>Salvia verbenaca var.*</i>	Wild Sage			
<i>Senecio pterophorus*</i>	African Daisy			
<i>Sixalix atropurpurea</i>	Pincushion	IC		
<i>Solanum elaeagnifolium</i>	Silver-leaf Nightshade	IC	Yes	Yes
<i>Solanum linnaeanum*</i>	Apple Of Sodom	HP	Yes	
<i>Solanum nigrum</i>	Black Nightshade			
<i>Sonchus oleraceus*</i>	Common Sow-thistle			
<i>Stellaria media</i>	Chickweed			
<i>Symphyotrichum subulatum</i>	Aster-weed	HP		
<i>Tamarix sp.*</i>				
<i>Tetragonia decumbens</i>	Sea Spinach			
<i>Thinopyrum junceiforme</i>	Sea Wheat-grass	IC		
<i>Tribulus terrestris</i>	Caltrop		Yes	
<i>Trifolium angustifolium</i>	Narrow-leaf Clover			
<i>Trifolium arvense var. arvense</i>	Hare's-foot Clover			
<i>Trifolium campestre</i>	Hop Clover			
<i>Trifolium scabrum</i>	Rough Clover			
<i>Ulex europaeus*</i>	Gorse	IC	Yes	Yes
<i>Verbascum virgatum</i>	Twiggy Mullein	HP		
<i>Vicia sativa ssp.*</i>	Common Vetch			
<i>Vulpia fasciculata</i>	Sand Fescue			
<i>Watsonia meriana var. bulbifera*</i>	Bulbil Watsonia	IC		

**WONS** = Weeds of National Significance.

**Declared** = Declared under the Landscape South Australia Act 2019. Pest plants that are a significant threat to agriculture, the natural environment and public health and safety are called declared plants. Land owners have a legal responsibility to manage these plants.

**Red Alert** = Weed Threat Level of four or greater out of nine. Plants in this categorised are either designated as requiring immediate control (IC – 6-9) or as a high priority for control (HP – 4-5). See Department for Environment and Water (2024)

**Reference** – Department for Environment and Water (2024). Threatening Processes - Environmental and Priority Weed Species. Southern Fleurieu Coastal Action Plan Review 2024. Prepared by SA Herbarium

## FAUNA Summary

# Fauna in cell	99
# Native Fauna in cell	88
# Introduced Fauna in cell	11
# Conservation Rated Fauna in cell	10 (4 national, 9 state)

Conservation Rated Fauna				
Species	Common Name	Class	EPBC Act Status	NPW Act Status
<i>Haematopus fuliginosus fuliginosus</i> <sup>^</sup>	Sooty Oystercatcher	AVES		R
<i>Haematopus longirostris</i> <sup>^</sup>	Pied Oystercatcher	AVES		R
<i>Haliaeetus leucogaster</i> <sup>^</sup>	White-bellied Sea Eagle	AVES		E
<i>Neophema elegans elegans</i> <sup>^</sup>	Elegant Parrot	AVES		R
<i>Pandion haliaetus cristatus</i> <sup>^</sup>	Eastern Osprey	AVES		E
<i>Platycercus elegans</i>	Crimson Rosella	AVES	ssp	
<i>Thinornis cucullatus cucullatus</i>	Hooded Plover	AVES	VU	V
<i>Zanda funerea whiteae</i> <sup>^</sup>	Yellow-tailed Black Cockatoo	AVES		V
<i>Pteropus poliocephalus</i> <sup>^</sup>	Grey-headed Flying-fox	MAM	VU	R
<i>Tachyglossus aculeatus</i> <sup>^</sup>	Short-beaked Echidna	MAM	ssp	ssp

## All Native Fauna in cell

Species Name	Common Name	Class	EPBC Act Status	NPW Act Status	Subregional Status
<i>Galaxias brevipinnis</i>	Climbing Galaxias	ACT			
<i>Galaxias maculatus</i>	Common Galaxias	ACT			VU
<i>Galaxias olidus</i> <sup>^</sup>	Mountain Galaxias	ACT			
<i>Philypnodon grandiceps</i>	Big-headed Gudgeon	ACT			LC
<i>Pseudaphritis urvillii</i>	Congolli	ACT			EN
<i>Crinia signifera</i> <sup>^</sup>	Common Froglet	AMP			NT
<i>Rawlinsonia ewingi</i> (NC) <sup>^</sup>	Brown Tree Frog	AMP			
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	AVES			LC
<i>Acanthiza pusilla samueli</i>	Brown Thornbill (MLR)	AVES			
<i>Acanthorhynchus tenuirostris halmaturinus</i>	Eastern Spinebill (KI, MLR, southern FR)	AVES			
<i>Anas gracilis gracilis</i>	Grey Teal	AVES			
<i>Anthochaera carunculata</i>	Red Wattlebird	AVES			LC
<i>Aquila audax audax</i>	Wedge-tailed Eagle	AVES			RA
<i>Cacatua sanguinea gymnopis</i>	Little Corella	AVES			LC
<i>Caligavis chrysops samueli</i>	Yellow-faced Honeyeater (MLR, southern FR)	AVES			
<i>Charadrius ruficapillus</i>	Red-capped Plover	AVES			RA
<i>Chenonetta jubata</i>	Maned Duck	AVES			LC
<i>Chroicocephalus novaehollandiae novaehollandiae</i>	Silver Gull	AVES			LC
<i>Colluricincla harmonica</i>	Grey Shrikethrush	AVES			LC
<i>Coracina novaehollandiae</i>	Black-faced Cuckooshrike	AVES			LC
<i>Corvus mellori</i>	Little Raven	AVES			LC
<i>Dacelo novaeguineae novaeguineae</i>	Laughing Kookaburra	AVES			
<i>Egretta novaehollandiae</i>	White-faced Heron	AVES			LC
<i>Elanus axillaris</i>	Black-shouldered Kite	AVES			LC
<i>Eolophus roseicapilla</i>	Galah	AVES			LC
<i>Falco cenchroides cenchroides</i>	Nankeen Kestrel	AVES			LC
<i>Gavicalis virescens</i>	Singing Honeyeater	AVES			LC

Species Name	Common Name	Class	EPBC Act Status	NPW Act Status	Subregional Status
<i>Grallina cyanoleuca cyanoleuca</i>	Magpielark	AVES			LC
<i>Gymnorhina tibicen</i>	Australian Magpie	AVES			LC
<i>Haematopus fuliginosus fuliginosus</i> <sup>^</sup>	Sooty Oystercatcher	AVES		R	VU
<i>Haematopus longirostris</i> <sup>^</sup>	Pied Oystercatcher	AVES		R	VU
<i>Haliaeetus leucogaster</i> <sup>^</sup>	White-bellied Sea Eagle	AVES		E	EN
<i>Hirundo neoxena neoxena</i>	Welcome Swallow	AVES			LC
<i>Hydroprogne caspia</i>	Caspian Tern	AVES			LC
<i>Larus pacificus georgii</i> <sup>^</sup>	Pacific Gull	AVES			LC
<i>Malurus cyaneus</i>	Superb Fairywren	AVES			LC
<i>Malurus cyaneus leggei</i>	Superb Fairywren (Mainland SA)	AVES			
<i>Microcarbo melanoleucos melanoleucos</i>	Little Pied Cormorant	AVES			LC
<i>Neophema elegans elegans</i> <sup>^</sup>	Elegant Parrot	AVES		R	RA
<i>Nymphicus hollandicus</i>	Cockatiel	AVES			RA
<i>Ocyphaps lophotes lophotes</i>	Crested Pigeon	AVES			LC
<i>Pandion haliaetus cristatus</i> <sup>^</sup>	Eastern Osprey	AVES		E	
<i>Pardalotus striatus substriatus</i>	Striated Pardalote	AVES			NT
<i>Parvipsitta porphyrocephala</i>	Purple-crowned Lorikeet	AVES			LC
<i>Petrochelidon nigricans</i>	Tree Martin	AVES			LC
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	AVES			LC
<i>Phalacrocorax varius hypoleucos</i>	Australian Pied Cormorant	AVES			LC
<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	AVES			LC
<i>Phylidonyris novaehollandiae novaehollandiae</i>	New Holland Honeyeater (mainland SA)	AVES			
<i>Platycercus elegans</i>	Crimson Rosella	AVES	ssp		LC
<i>Psephotus haematonotus</i>	Red-rumped Parrot	AVES			LC
<i>Psephotus haematonotus haematonotus</i>	Red-rumped Parrot (eastern SA except NE)	AVES			
<i>Ptilotula penicillata</i>	White-plumed Honeyeater	AVES			LC
<i>Rhipidura albiscapa</i>	Grey Fantail	AVES			LC
<i>Rhipidura leucophrys leucophrys</i>	Willie Wagtail	AVES			LC
<i>Sericornis frontalis rosinae</i>	White-browed Scrubwren (MLR)	AVES			
<i>Strepera versicolor melanoptera</i>	Black-winged Currawong (MLR, MM, SE)	AVES			
<i>Thalasseus bergii cristatus</i>	Greater Crested Tern	AVES			LC
<i>Thinornis cucullatus cucullatus</i>	Hooded Plover	AVES	VU	V	EN
<i>Trichoglossus moluccanus moluccanus</i>	Rainbow Lorikeet	AVES			LC
<i>Vanellus miles</i>	Masked Lapwing	AVES			LC
<i>Zanda funerea whiteae</i> <sup>^</sup>	Yellow-tailed Black Cockatoo	AVES		V	RA
<i>Zosterops lateralis</i>	Silvereye	AVES			LC
<i>Danaus petilia</i> <sup>^</sup>	Lesser Wanderer	INV			
<i>Danaus plexippus plexippus</i> <sup>^</sup>	Monarch	INV			
<i>Delias aganippe</i> <sup>^</sup>	Wood White	INV			
<i>Jalmenus icilius</i> <sup>^</sup>	Icilius Hairstreak	INV			
<i>Junonia villida calybe</i> <sup>^</sup>	Meadow Argus	INV			
<i>Lampides boeticus</i> <sup>^</sup>	Long-tailed Pea-blue	INV			
<i>Nacaduba biocellata biocellata</i> <sup>^</sup>	Two-spotted Line-blue	INV			
<i>Ocybadistes walkeri hypochlora</i> <sup>^</sup>	Southern Grass-dart	INV			
<i>Ogyris olane</i> <sup>^</sup>	Olane Azure	INV			
<i>Pieris rapae rapae</i> <sup>^</sup>	Cabbage White	INV			
<i>Taractrocera papyria papyria</i> <sup>^</sup>	White-banded Grass-dart	INV			
<i>Theclinesstes albocinctus</i> <sup>^</sup>	Bitter-bush Blue	INV			
<i>Theclinesstes miskini miskini</i> <sup>^</sup>	Wattle Blue	INV			
<i>Theclinesstes serpentatus serpentatus</i> <sup>^</sup>	Salt-bush Blue	INV			
<i>Vanessa itea</i> <sup>^</sup>	Australian Admiral	INV			
<i>Vanessa kershawi</i> <sup>^</sup>	Australian Painted Lady	INV			
<i>Zizina otis labradus</i> <sup>^</sup>	Common Grass-blue	INV			

Species Name	Common Name	Class	EPBC Act Status	NPW Act Status	Subregional Status
<i>Macropus fuliginosus</i> <sup>^</sup>	Western Grey Kangaroo	MAM			LC
<i>Phascolarctos cinereus</i> <sup>^</sup>	Koala	MAM			
<i>Pseudocheirus peregrinus</i> <sup>^</sup>	Common Ringtail Possum	MAM			
<i>Pteropus poliocephalus</i> <sup>^</sup>	Grey-headed Flying-fox	MAM	VU	R	
<i>Tachyglossus aculeatus</i> <sup>^</sup>	Short-beaked Echidna	MAM	ssp	ssp	
<i>Hemiergis peronii</i> <sup>^</sup>	Four-toed Earless Skink	REP			
<i>Pogona barbata</i> <sup>^</sup>	Eastern Bearded Dragon	REP			
<i>Tiliqua rugosa</i> <sup>^</sup>	Sleepy Lizard	REP			

**Class:** **ACT** = Actinopteri, **AMP** = Amphibia, **AVES** = Aves, **INV** = Invertebrates, **MAM** = Mammalia, **REP**= Reptilia

### All Introduced Fauna in cell

Species	Common Name
<i>Carduelis carduelis britannica</i>	European Goldfinch
<i>Cervus dama</i> <sup>^</sup>	Fallow Deer
<i>Columba livia</i>	Feral Pigeon
<i>Felis catus</i> <sup>^</sup>	Domestic Cat (Feral Cat)
<i>Mus musculus</i> <sup>^</sup>	House Mouse
<i>Oryctolagus cuniculus</i> <sup>^</sup>	Rabbit (European Rabbit)
<i>Passer domesticus domesticus</i>	House Sparrow
<i>Spilopelia chinensis</i>	Spotted Dove
<i>Sturnus vulgaris vulgaris</i>	Common Starling
<i>Turdus merula merula</i>	Common Blackbird
<i>Vulpes vulpes</i> <sup>^</sup>	Fox (Red Fox)



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